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AIR FORCE OFFICE OF SCIENTIFIC RESEARCH

Air Force Systems Command

AFOSR

TECHNICAL REPORT SUMMARIES



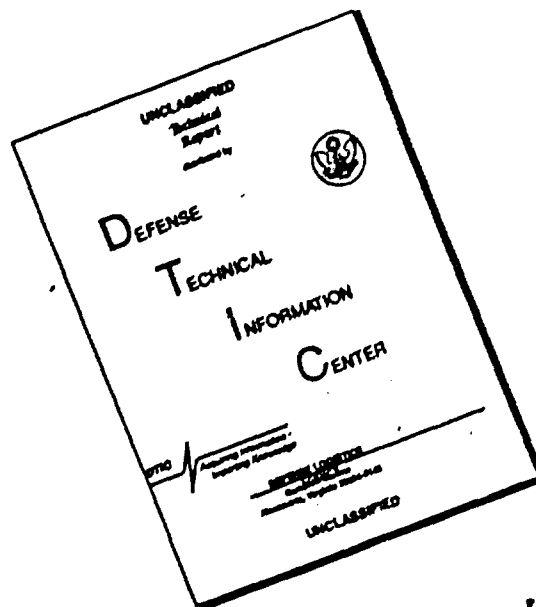
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AFOSR

TECHNICAL REPORT SUMMARIES

FOURTH QUARTER 1986

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INTRODUCTION

The Air Force Office of Scientific Research Technical Report Summaries are published quarterly as of March, June, September, and December of each calendar year. They consist of a brief summary of each AFOSR technical report received in the Technical Information Division and submitted to the Defense Technical Information Center (DTIC) for that quarter. The summaries contain two indexes for easily locating the technical reports that may be of interest to the user. These are followed by abstracts of the reports.

1) SUBJECT INDEX

- a. Subject Field
- b. Title of Report
- c. AD Number (Accession Number)

2) PERSONAL AUTHOR INDEX

- a. Primary Author
- b. Title of Report
- c. AD Number

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PURPOSE

The purpose of this report is to inform Air Force Laboratories about the science that the Air Force Office of Scientific Research is supporting.

AFOSR MISSION

The Air Force Office of Scientific Research (AFOSR) is the Single Manager of the Air Force Defense Research Sciences Program (Program Element 61102F) and the primary Air Force agency for the extramural support of fundamental scientific research. The AFOSR is organizationally under the DCS/Science and Technology, Air Force Systems Command.

AFOSR awards grants and contracts for research in areas of science relevant to the needs of the Air Force. Research is selected for support from unsolicited proposals originating from scientists investigating problems involving the search for new knowledge and the expansion of scientific principles. Selection is on the basis of scientific potential for improving Air Force operational capabilities, originality, significance to science, the qualification of the principal investigators, and the reasonableness of the proposed budget.

KEY TO READING THE DATA

The summaries consist of two indexes and the abstracts. From one of the two indexes, locate the AD number of the report that is of interest to you. Use this number to locate the abstract of the report in the abstracts section. The first report submitted to DTIC during the quarter (the one with the lowest AD number) appears on the last page of the abstracts section. The last report submitted to DTIC during the quarter (the one with the highest DTIC number) appears on the first page of the abstracts section. The following terms will give you a brief description of the elements used in each summary of this report.

DTIC Report Bibliography - DTIC's brief description of a technical report.

Search Control Number - A number assigned by DTIC at the time a bibliography is printed.

AD Number - A number assigned to each technical report when received by the DTIC.

Field & Group Numbers - (appearing after the AD number) First number is the subject field and the second number after the slash is the particular group under that subject field.

Corporate Author/Performing Organization - The organization; e.g., college/university, company, etc., at which the research is conducted.

Title - The title of the technical report.

Descriptive Note - Gives the type of report; e.g., final, interim, etc., and the period of the time of the research.

Date - Date of the technical report.

Pages - Total number of pages contained in the technical report.

Personal Author - Person or persons who wrote the report.

Contract/Grant Number - The instrument control number identifying the contracting activity and funding year under which the research is initiated.

Project Number - A number unique to a particular area of science; e.g., 2304 is the project number for mathematics.

task Number - An alphanumeric number unique to a specific field of the main area of science; e.g., 2304 is the project number for mathematics and A3 is the task number for computational sciences.

Monitor Number - The number assigned to a particular report by the government agency monitoring the research. The number consists of the government monitor acronym, the present calendar year and the technical report assigned consecutively; e.g., AFOSR-IR 83-0001 is the first number used for the first technical report processed for Calendar Year 1983.

Supplementary Note - A variety of statements pertaining to a report. For example, if the report is a journal article, the supplementary note might give you the journal citation, which will include the name of the journal the article it appears in, and the volume number, date, and the page numbers of the journal.

Abstract - A brief summary describing the research of the report.

Descriptors - Key words describing the research.

Identifiers - Commonly used designators, such as names of equipment, names of projects or acronyms, the AFOSR project and task number, and the Air Force Research Program Element number.

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Rate Constants for Coupled
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by Annealing

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A national survey of 125
 Supercenters, 300 Super U's, 100
 of 100 Division Forecasts
 2000-2001

REPORT

AP-5 (ED) has already
submitted 4008 individual
identifying data to the FBI

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NOTICE OF PUBLIC HEARING
ON THE PROPOSED
SOUTH COAST LIGHT RAIL SERVICES

The above party of company
 was reported at the
 following place:
 100-100-100

For every
country in
the world,
we have
developed
a unique
solution.

100

[illegible]

Directly from *n*-Alkyl Iodides and *n*-Alkyl Bromide and Cadmium Metal
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... Musäus in

Low Temperature Optical Absorption,
in Al x Ga 1-x As Grown by
Molecular-Beam Epitaxy,
on April 885

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AD B104 967

MISE, TAKAYA
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C5H5 4 H Cl 2 H Cl 2 Cl 2 Cl 2 Cl 2
Cl 2 Cl 2 H Cl 2 H Cl 2 Cl 2 Cl 2 Cl 2

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NIN-PAI

UNCLASSIFIED

Alkyl Lithium Polymers
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AD A171 800
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- Mesoscale Severe Weather Development under Orographic Influences
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AD A172 736
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A MINDO 3 Study of the Ethylene Dication.
- Modification of Chemical Reactivity via Inclusion Complex Formation: Photochemistry of Dibenzyl Ketones and Benzyl Phenylacetates.
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- RAMAMURTHY, VAIDHYANTHAN
Modification of Chemical Reactivity by Cyclodextrins: Observation of Moderate Effects on Norrish Type I and Type II Photobehavior.
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- RAU, BANTU N.
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UNCLASSIFIED EVN548

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UNCLASSIFIED

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Shaw, J. P. R. and Shaw, J. P. R.
Shaw, J. P. R. and Shaw, J. P. R.

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Effects of Different Convection
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Krypton L-MM Auger Spectra. New
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Characterization of Platinum
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Systems Engineering Methodologies
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Development Methodology Users
Manual, Part 3. System Development
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AD B104 966
- *SMITH, R. M. . . .
Numerical Evaluation of
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10. *Phragmites australis* (Cav.) Trin. ex Steud.

[illegible][illegible][illegible]

the 1990s, the number of people in the world who are undernourished has declined from 1.1 billion to 800 million. The number of people who are malnourished has declined from 1.5 billion to 1.1 billion. The number of people who are obese has increased from 100 million to 300 million. The number of people who are overweight has increased from 100 million to 300 million. The number of people who are obese and overweight has increased from 100 million to 300 million. The number of people who are obese and overweight has increased from 100 million to 300 million.

Age Group	1990	1995	2000	2005
0-14	18	16	14	12
15-24	12	13	14	15
25-34	15	14	13	12
35-44	12	13	14	15
45-54	15	14	13	12
55-64	12	13	14	15
65-74	15	14	13	12
75+	12	13	14	15

Applications Using MNDI
AO 0172 135

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**Key Parameters for Silicon
Devices**

YOUNG

[illegible]

Figure 1

[illegible]

10

Division of Metal Fabrication
 10000 Highway 200, Suite 200
 Dallas, Texas 75243
 Tel: 214/343-1234
 Fax: 214/343-1234

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N₂O₂12W, mol² (10.4 CO₂ 10.5
CH₄ and N₂12W) T₂U₂OR mol²
2.7 CO₂ 10.5 10.5 2.7 10.5
10.5 10.5

WITKOWER MICHAEL

THE UNIVERSITY OF CHICAGO

THEY DON'T

Comparative tests of the proposed procedures for studying community reactions.

- STRAUCH, R. G.

The Diurnal Variation of
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STURE, STEIN

Finite Elements and Localized Failure
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populations, the present authors have
 measurements for 502, 254, 146, 100
 females in a Magnolia
 confined plant colony
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SULLIVAN ARTHUR

On the Use of Singular Values
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WIMERS, DEISS, M

A Review of Sample Compression
Techniques for the Study of
High Pressure Phenomena
in the Laboratory

Abstract: This review discusses
the various techniques used for
the study of high pressure
phenomena in the laboratory.

Keywords: High pressure, Sample
compression, Laboratory, Phenomena,
Techniques, Study, Review.

1. Introduction
The study of high pressure
phenomena in the laboratory
has been a major area of
research for many years.

2. Sample Compression
Techniques
There are several techniques
used for the study of high
pressure phenomena in the
laboratory.

3. High Pressure Phenomena
The study of high pressure
phenomena in the laboratory
has been a major area of
research for many years.

4. Laboratory Techniques
The study of high pressure
phenomena in the laboratory
has been a major area of
research for many years.

5. Conclusion
The study of high pressure
phenomena in the laboratory
has been a major area of
research for many years.

WILLSON, ROBERT F

Millisecond Pulse Spikes from the
Pulsed M-Flow Rate Amplifier
AD A72 003

Abstract: This paper describes
the design and construction of
a millisecond pulse spikes
amplifier.

Keywords: Millisecond, Pulse
spikes, Amplifier, Design,
Construction.

1. Introduction
The design and construction of
a millisecond pulse spikes
amplifier is described in this
paper.

2. Design and Construction
The design and construction of
a millisecond pulse spikes
amplifier is described in this
paper.

3. Results and Discussion
The results and discussion of
the design and construction of
a millisecond pulse spikes
amplifier are presented in this
paper.

4. Conclusion
The design and construction of
a millisecond pulse spikes
amplifier is described in this
paper.

5. References
The references for the design
and construction of a
millisecond pulse spikes
amplifier are listed in this
paper.

6. Appendix
The appendix for the design
and construction of a
millisecond pulse spikes
amplifier is included in this
paper.

7. Index
The index for the design and
construction of a
millisecond pulse spikes
amplifier is included in this
paper.

Glow Discharge Source Atomization
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Dibutyltin Dihalides in a Glow Discharge
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Absorption Spectrometric Detector
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AD A72 121

A Study of the Effect of
Temperature on the
Rate of Reaction
AD A72 122

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A Study of the Effect of
Temperature on the
Rate of Reaction
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A Study of the Effect of
Temperature on the
Rate of Reaction
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HARRIS CORP MELBURN VIC GOVERNMENT RE-SPACE SYSTEMS
DIV

D MEOP Maximum Entropy Optimal Projection Stochastic
Modelling and Reduced Order Design by Thesis

DESCRIPTIONS (U) SPACECRAFT ATTITUDE CONTROL SYSTEMS,
VIBRATION ISOLATORS, MATHEMATICAL ANALYSIS, CONTROL
THEORY, SHAPE ALIGNMENT, ENTROPY STOCHASTIC PROCESSES,
FINITE ELEMENT ANALYSIS, GAUSSIAN QUADRATURE, FLEXIBLE
STRUCTURES, LYAPUNOV FUNCTIONS

DESCRIPTIVE NOTE UNIT report 1 Feb 64 20 pages 04

IDENTIFIERS (U) MEOP Maximum Entropy Optimal Projection
PEG1102F WUAFOSR230281

APR 64 2028

PERSONAL SERVICES (U) David G. Greenley S
W. S. S. S.

CONTRACT NO 1962-1-1-0015

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TEST NO 81

MONITOR 81

10 10 6435

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and delivery 2 10 64. Other test data must be referred
to AF 58 200 8101 410 Washington DC 20332 6418

Abstract (U) Increased interest in developing large
flexible spacecraft has focused attention on active
structural control techniques to exploit structural advances
in vibration suppression, pointing systems, and shape
control. The structural complexity of such systems and the
lack of simple, tractable elements in such models present
serious design challenges. This report presents
recommendations for various Government research programs
Maximum Entropy Optimal Projection (MEOP) Stochastic
Modelling and Reduced Order Design by Thesis is a
rigorous approach to this class of problems. Inspired
by Statistical Energy Analysis, a branch of dynamic modal
analysis designed for analyzing complex vibration
problems, MEOP provides a fundamental generalization of
classical modal state estimation and linear quadratic
control and optimal control theory. The present scope
of the thesis includes robust reduced order modelling
estimation and control for continuous time discrete time
and sampled data systems.

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Section 1000, Title 10, Michigan Code of Laws, as amended by
 Act 100 of 1970, MCL 100.1000, and Act 100 of 1971, MCL
 100.1000, is hereby amended to read:

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AD 8104 965 13 2 9 2 HUGHES AIRCRAFT CO FULLERTON CA
Computer Aided Manufacturing User's Manual Part 3 System
Development Methodologies

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Computer Aided Manufacturing User's Manual Part 3 System
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Systemic Engineering Methodology - Systemic Engineering Methodology
Computer Aided Design - Computer Aided Design
Development Methodology - Development Methodology
Development Methodology Architecture - Development Methodology Architecture

UNCLASSIFIED REPORT
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MASSACHUSETTS INST OF TECH CAMBRIDGE 02139 OF MATERIALS
SCIENCE AND ENGINEERING

10. Investigation of Device and Electrode Interactions Associated with Gas Device Production

IDENTIFIERS U WJAFQSR230581 PE61102F

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PERSONAL AFFAIRS Gatos Henry C. 1940-1941

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Investigation is made of defect and electronic interactions in gallium compounds along three lines especially important for defect engineering in organic and control of active media levels in GaAs and GaAlIn and control of impurity concentrations. Employed are 15 new measurements of photoluminescence spectra under different magnetic parameters to give a detailed understanding of the trap levels, the charge states at 0.15 eV and 0.77 eV, the conduction band. These levels are most likely due to nitrogen and double donor levels or the arsenic anti-site and Ga defect. The same samples are currently being used for photoluminescence in order to obtain the low level luminescence spectra with transition to the charge spectra. Our study of vanadium doped GaAs has led to identification of the vanadium acceptor state V2+ 3D3 at 0.15 eV below the conduction band. No impurity levels other than E12 could be detected showing that vanadium plays no direct role in the compensation process. In Si GaAs

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IDENTIFIERS: (U) Flame holders, combustion stability, vortex shedding, acoustic fields, shock waves, variable pressure, low frequency laboratory equipment, combustors, blunt bodies, combustion augmentation, flow visualization, addition, burners, flame holders, acoustics, diffusers, isotherms, shear properties, spectral energy distribution, inlets, layers, linearity, nonlinear systems, numerical analysis, oscillation, pressure production, ramjet engines, spectral lines, viscosity, vortices

IDENTIFIERS: (U) Dump combustors, shear layers, self excited oscillation, WUAFOSR2308A2, PE61102F

DESCRIPTION: None

PERSONAL AUTHOR: (U) F. E. Marble, Frank E. Zukoski

SEP 85

CONTRACT NO

PROJECT NO

TASK NO

MONITOR

AFOSR

TR 85 1061

UNCLASSIFIED REPORT

ABSTRACT (U) Analytical work devoted to the global acoustics has been concerned with both linear and nonlinear behavior. Good agreement has been found between calculations of the mode shapes and data taken at the Naval Weapons Center. Numerical calculations are in progress to provide representation of the nonlinear, unsteady behavior of a normal shock wave in an inlet diffuser, including viscous effects. Experimental investigations of combustion have been carried out with pressure spectral line intensity and flow visualization techniques in a burner equipped with a bluff body flameholder. When the combustion is stable, the flameholder shear layers has many of the characteristics of isothermal shear layers. When unstable combustion occurs, the shear layers are characterized by large vortices which are shed from the flame holder lip. The self excited oscillations appear to result from a coupling between the vortex production mechanism and nonsteady heat addition in the vortex. Both steady and nonsteady processes are being studied. Calculations of the combustion augmentation associated with the interaction of a burning vortex with a wall show a well-defined combustion rise but somewhat less marked than was expected on the basis of experimental observations.

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AEROMETRICS INC. MAINVIEW 6A
AD A113 572 CONTINUED
velocity in turbulent spray flames with swirl and recirculation.
DESCRIPTORS: 'U' 'MIE SCATTERING' 'PARTICLE SIZE' 'LIGHT SCATTERING' 'FLAMES' 'MEASUREMENT' 'DOPPLER EFFECT' 'PHASE SHIFT' 'FREQUENCY SHIFT' 'COMPLEX VARIABLES' 'REFLECTION' 'SPRAYS' 'GAUSSIAN QUADRATURE' 'BACKSCATTERING' 'REFRACTIVE INDEX' 'QUANTUM EFFICIENCY' 'SHOT NOISE' 'TURBULENCE' 'COMBUSTION STABILITY'

IDENTIFIERS 'U' WUAFOSR2308A3 PEG1102F

PROJECT NO. 2308

TASK NO. 2308

MONITOR 2308
2308 2308

UNCLASSIFIED REPORT

ABSTRACT: J. An innovative method for measuring the particle size and velocity simultaneously using the Doppler difference frequency and the phase shift of the scattered light was described, analyzed, and evaluated experimentally. Initially, the theoretical analysis of the dual beam laser light scattering phenomena were performed using simple geometrical optics theory. This approach provided insight of the complex scattering phenomena associated with the method. In particular, the difficulties that may occur when scattering amplitudes due to reflection and refraction are of similar order of magnitude were easily investigated. Numerous experiments using monodispersed drop streams were used to assess the measurement accuracy and possible errors produced by the mixed scattering components. The Lorenz Mie theory was derived for the dual beam scattering and used to evaluate the measurement capability for particles on the order of a micron in diameter. Experiments were conducted using polystyrene latex spheres to demonstrate that particles as small as 0.5 micron can be measured. Comparisons with sampling probe data, nozzle flowrate, and light extinction measurements were in good agreement. A broad range of frequency shifting into the system allowed the measurement of the drop angle of trajectory and reversed flow velocity components while eliminating undesirable flow components produced by merged flows. Subsequent measurements for a broad range of drop sizes and

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10. The following are the names of the persons who have been appointed to the various committees of the Board of Directors:

DISCRIPTION: NGF Annual Technical report : Sep 25 31 Aug 96

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CLASIFICACION ALFABETICA

CONTRACT NO. A-05-84-0347

PROJECT NO. 22-5

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ABSTRACT: We investigate one of both the macroscopic and microscopic properties of the thin superconducting materials are being carried out. Compounds under study are either technologically significant or involve possible unique mechanisms for superconductivity. These realization may extend the range of critical parameters. Under study are low carrier density superconductors, selected Heavy Fermion Compounds and Chevrel phase superconductors. High quality superconducting films of both $PbTe_{1-x}$ and mixtures of $La2S3-La3S4$ have been prepared. These materials are low carrier density superconductors. This work is an important step in the direction of fabricating thin-film superconducting devices. Films of $PbTe_{1-x}$ have been produced which exhibit superconductivity. The goal of demonstrating the nature of superconducting pairing in this Heavy Fermion compound using tunneling and the proximity effect is, in sight. Some n-dil superconductivity has been demonstrated in the ferromagnetic phase of $HoCdS_2$, a Chevrel phase compound which is a constraint superconductor.

DESCRIPTORS	U	SUPERCONDUCTIVITY, THIN FILMS
SUPERCONDUCTORS, HIGH METAL-INSULATOR MIXTURES	10	

AD-A113 504

Q. Now, you're going to tell me that the defendant was not in the car at the time of the shooting, is that correct?

[illegible]

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Figure 1. The effect of the concentration of the *Agrobacterium* suspension on the transformation efficiency of *Agrobacterium* strains. The *Agrobacterium* strains were incubated with the plant explants for 24 h. The explants were then cultured on the selective medium. The number of explants transformed was counted. The results are the mean $\pm$ SD of three independent experiments. * indicates a significant difference ($p < 0.05$) between the control and the treated explants.

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DTIC REPORT BIBLIOGRAPHY

SEARCH CONTROL NO EVN548

AD-A173 509 CONTINUED

LANTHANUM INTERMETALLICS, SULFUR COMPOUNDS, ELECTRON
DENSITY FIELD EFFECT TRANSISTORS, FERROMAGNETIC
MATERIALS

IDENTIFIERS -U- PE61102F, WUAFOSR2306C1

AD-A173 490 11/9 20/3

VIRGINIA UNIV CHARLOTTESVILLE DEPT OF MATERIALS SCIENCE

(U) Physical Techniques for the Study of Sorption,
Diffusion, Electrical Properties, and Interfacial
Effects in Ordered Polymers: Charge Transport and
Conduction Mechanisms in Polymer Fibers

DESCRIPTIVE NOTE: Final rept. 9 Sep 84-8 Sep 85.

JUL 86 292P

PERSONAL AUTHORS: Barker, R. E. Jr; Hawk, J. A.

REPORT NO UVA/525646/MS87/101

CONTRACT NO AFOSR-82-0290

PROJECT NO 2303

TASK NO A3

MONITOR: AFOSR
TR-86 0831

UNCLASSIFIED REPORT

ABSTRACT: (U) Electrical conduction in several types of polymer fibers has been investigated under a variety of environmental conditions. The configuration and circumstances of these experiments are quite different from the ordinary types of measurements reported in the literature dealing with the conductivity of thin films. Methods for separating the surface component of the total conductivity from the volume component are developed and experiments are performed on both doped and undoped samples. Experimental results indicate that the surface is the major region of current flow for some fibers. In this work, special techniques and instrumentation previously utilized by Chen and Barker have been further developed to measure electrical conductivities of small diameter polymer fibers as small as 10 micrometers. The fibers studied included the Air Force ordered polymers PPBT (polyparaphenylene benzobisthiazole) and 88L (benzimidazo benzophenanthroli). For comparison nylon6, nylon6, 6, polypropylene, and polyethylene also were included in the study. Several types of dopants were used in this research; these included metal-salts solutions (e.g., LiCl, NaCl, etc.), organic liquids (e.g., n-pentane,

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D.I.C. REPORT BIBLIOGRAPHY

SEARCH CONTROL NO EVN548

AD-A173 490 CONTINUED

AD A173 466

7/3

phenol etc and charge transfer complex forming dopants e.g. I2. The effect on fibers of this doping produced variations in the electrical conductivity which sometimes were surprising.

DESCRIPTORS (U) *POLYMERS *FIBERS *CHARGE TRANSFER *ELECTRICAL CONDUCTIVITY SURFACES *SORPTION *DIFFUSION *INTERFACIAL TENSION *POLYPHENYLENES *BENZENE *THIAZOLES *NYLON *POLYPROPYLENE *POLYETHYLENE *DOPING

IDENTIFIERS (U) PPBT Polyparaphenylene Benzobisthiazole BBL Benzimidazo Benzophenanthroline WUAFOSR2303A3 PE61102F

WISCONSIN UNIV-MADISON DEPT OF CHEMISTRY

(U) Synthon for the Silicon-Silicon Triple Bond.

86 3P

PERSONAL AUTHORS: Sekiguchi, Akira; Zigler, Steven S.; West, Robert

CONTRACT NO. F49620-83-C-0044, F49620 84-C-0065

PROJECT NO. 2303

TASK I.C. B2

MONITOR: AFOSR
TR-86-0980

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of the American Chemical Society, v108 p4241-4242 1986.

ABSTRACT: (U) The disilole, di(o-methyl)-2,3,4,5-tetraphenyl-1-silacyclopentadien-1-yl) 1, reacts with benzyne to yield di(2,3-benzo-7-methyl-7-silaborbornadien-7-yl) 2. When heated with anthracene to 250 C., 2 transfers the CH3SiCH3 fragment giving 2,3,5,6,10,11,13,14-tetrabenzo-7,8-dimethyl-7,8-disilatetracyclo 2,2,2,2,0, tetradeca 2,5,10,13-tetraene 4, the formal 9,10-adduct of dimethyldisilyne with two molecules of anthracene. The spectral properties and crystal structure of 4 are reported, and possible mechanisms for its formation are discussed.

DESCRIPTORS (U) *SILICON COMPOUNDS *ORGANIC COMPOUNDS *CHEMICAL BONDS *SPECTRA *ANTHRACENES *MOLECULES *METHYL RADICALS *BENZENE *CHEMICAL REACTIONS *CRYSTAL STRUCTURE *REPRINTS

IDENTIFIERS (U) PE61102F, WUAFOSR2303B2

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SEARCH CONTROL NO. EVNS43

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AD-A173 463 20.6

WISCONSIN UNIV MADISON DEPT OF CHEMISTRY

ENVIRONMENTAL RESEARCH INST OF MICHIGAN ANN ARBOR

(U) Structural and Chemical Properties of 1,3-Cyclodisiloxanes.

(U) Phase Retrieval Using Boundary Conditions.

86 9P

FEB 86 6P

PERSONAL AUTHORS: Michalczyk, Michael J.; Fink, Mark J.; Haller, Kenneth J.; West, Robert; Michl, Josef.

PERSONAL AUTHORS: Fienup, James R.

CONTRACT NO. F49620-83-C-0044

CONTRACT NO. F49620-82-K-0018

PROJECT NO. 2303

PROJECT NO. 2311

TASK NO. B2

TASK NO. A

MONITOR: AFOSP

MONITOR: AFOSR

TR 86 0991

TR-86-0947

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Organometallics, v5 n3 p531-538 1986

SUPPLEMENTARY NOTE: Pub in Jnl. of the Optical Society of America A, v3 n2 p284-288 Feb 86

ABSTRACT: (U) The synthesis and x-ray crystal structures for tetramethylcyclodisiloxane, 4-trans-1,3-dimethyl-1,3-dimethylbutylcyclodisiloxane, 5a, and cis-1,3-dibis(trimethylsilyl)aminol-1,3-dimethylcyclodisiloxane, 6b, are reported. Crystals of 4 are isomorphous with space group P1. Crystals of 5a and 6b are triclinic of space group P1. Both 4 and 6b have slightly puckered four-membered rings while the ring in 5a is planar. The silicon-silicon nonbonded distances in 4, 5a and 6b are 230.6, 239.5 and 234.9 pm, respectively, close to the values seen for normal silicon-silicon single bonds (234-235 pm). These short distances are believed to arise from ring distortions due to an antibonding interaction between the oxygen atoms. Some representative chemical reactions of 4, 5a and 6b are also presented.

DESCRIPTORS: (U) SILOXANES; CYCLIC COMPOUNDS; ORGANOMETALLIC COMPOUNDS; VALUE; DISTORTION; RINGS; CHEMICAL PROPERTIES; CRYSTAL STRUCTURE; X RAYS; ATOMS; OXYGEN; SHORT RANGE DISTANCE; MOLECULAR STRUCTURE; BUTYL RADICALS; METHYL RADICALS; SYNTHESIS; CHEMISTRY; REPRINTS

IDENTIFIERS: (U) PEG1102F; WUAFOSR210382

AD A173 455

AD A173 463

ABSTRACT: (U) It is shown that a priori knowledge of the edges of an object is not sufficient to ensure that it can be uniquely reconstructed from the modulus of its Fourier transform or from its autocorrelation function). Furthermore, even in those cases for which the ultimate solution is unique, in intermediate steps in the solution by the recursive Hayes-Quatieri algorithm there can be ambiguities. An extension of the recursive algorithm that finds the solution for solutions is suggested, and it is shown that the recursive method can be applied to complex-valued objects.

DESCRIPTORS: (U) FOURIER TRANSFORMATION; AMBIGUITY; REPRINTS; ALGORITHMS; AUTOCORRELATION; BOUNDARIES; PHASE; RECURSIVE FUNCTIONS

IDENTIFIERS: (U) Phase retrieval; Hayes Quatieri algorithm; PEG1102F; WUAFOSR2311A1

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AD-A173 450 12 1 NORTH CAROLINA STATE UNIV AT RALEIGH DEPT OF MATHEMATICS

AD-A173 450 12 1

(U) Consistent Initial Conditions for Linear Time Varying Singular Systems.

86 7P

PERSONAL AUTHORS: Campbell, Stephen L

CONTRACT NO AFOSR-84-0240

PROJECT NO 2304

TASK NO. A1

MONITOR: AFOSR
TR-86-1038

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub in Frequency Domain and State Space Methods for Linear Systems. p313-318 1986.

ABSTRACT: (U) A fairly direct method given for calculating the consistent initial conditions for a wide class of implicit linear time varying systems $A(t)x'(t) + B(t)x(t) = f(t)$ with $A(t)$ singular

DESCRIPTORS: (U) LINEAR SYSTEMS, NUMERICAL METHODS AND PROCEDURES, COMPUTATIONS, DIFFERENTIAL EQUATIONS, REPRINTS

IDENTIFIERS: (U) Time Varying Singular Systems. PE61102F, WJAFOSR2304A1

AD-A173 450

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AD-A173 459 20/8 20/10

STATE UNIV OF NEW YORK AT BUFFALO AMHERST

(U) Wigner Phase-Space Description above and Below the Classical Threshold for the $H + H_2$ Reaction.

JUN 86 4P

PERSONAL AUTHORS: Lee, Han-Woong; George, Thomas F.

CONTRACT NO F49620-86-C-6448, F49620-86-C-0009

PROJECT NO. 2303

TASK NO. A2

MONITOR: AFOSR
TR-86-0975

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Put. in Jnl. of Chemical Physics. v84 n11 p6247-6249, 1 Jun 86.

ABSTRACT: (U) The Wigner phase space representation offers a semiclassical way of describing molecular collisions. In this paper the collision $H + H_2$ exchange reaction is studied using the Wigner phase space approach. The general behavior of the calculated Wigner reaction probabilities as a function of the collision energy is consistent with that of the exact quantum-mechanical probabilities reported in the past. Quantitative disagreements between the Wigner and quantum-mechanical probabilities arise mainly from the neglect of dynamical tunneling in the Wigner approach due to the use of real valued classical trajectories. Nevertheless, the Wigner approach is capable of describing some aspect of tunneling as the high momentum tail of the initial Wigner distribution function is likely to exhibit tunneling. Thus the approach yields a nonzero reaction probability below the classical threshold energy.

DESCRIPTORS: (U) QUANTUM THEORY, PARTICLE COLLISIONS, HYDROGEN, YIELD, DYNAMICS, COLLISIONS, MOLECULES, ENERGY, THRESHOLD EFFECTS, MOMENTUM PROBABILITY, REPRINTS, TUNNELING(ELECTRONICS), EXCHANGE REACTIONS

IDENTIFIERS: (U) Wigner Distribution function, PE61102F, WJAFOSR2303A2

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SEARCH CONTROL NO. EVN548

AD-A173 456 12/1

AD-A173 412 11/6 20/11 14/2

NORTHWESTERN UNIV EVANSTON IL DEPT OF MECHANICAL AND
NUCLEAR ENGINEERING

SRI INTERNATIONAL MENLO PARK CA

(U) A Controller for Robust Asymptotic Tracking in Systems
with Time Varying Uncertainties.

(U) Dynamic Fracture Behavior of Structural Materials.

DESCRIPTIVE NOTE: Final rept. Feb 81-Jan 86.

JUN 86 5P

JUL 86 224P

PERSONAL AUTHORS: Hopp T H (Schmitendorf W E

PERSONAL AUTHORS: Giovanola J. H. (Shockey, D. A

CONTRACT NO. AFOSR 85-0051

CONTRACT NO. F49620-81-K-0007

PROJECT NO. 2904

PROJECT NO. 2306

TASK NO. A3

TASK NO. A1

MONITOR: AFOSR

MONITOR: AFOSR

TP 86 1037

TR-86-0818

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub in AIAA Guidance and Control
Conference, pp691-694 Jun 86

ABSTRACT (U) This reprint considers a class of linear systems in which there is time-varying uncertainty and additive disturbances. A control law is determined which produces practical tracking. Practical tracking guarantees that the asymptotic tracking error can be made arbitrarily small. Existing theory provides asymptotic tracking only for systems where the uncertainty is unknown but constant. The theory presented here is able to accommodate the more realistic situation of time-varying uncertainty.

DESCRIPTORS: U LINEAR SYSTEMS; CONTROL SYSTEMS;
CONTROL THEORY; GUARANTEES; REPRINTS; TRACKING;
ASYMPTOTIC NORMALITY

IDENTIFIERS: U WJAFOSR2304A3 PE51102F

ABSTRACT: (U) This report presents results of a program to improve understanding of dynamic fracture behavior by investigating both crack tip loading conditions and material properties for fracture at high loading rates. A new test procedure, the one-point bend test was analyzed and further developed to test a wide range of materials at impact loading rates. The test uses inertial loading to load the crack tip and affords an unambiguous measurement of the dynamic initiation toughness. The test's usefulness in producing small controlled increments of crack extension and in crack propagation studies was also demonstrated. Moreover, the concept of inertial loading was extended to study dynamic mixed mode crack initiation under controlled mixed mode I and II conditions. These new test techniques were used to establish the dynamic fracture behavior of 4340 steel (HRC 50). It was shown that, for loading times to fracture as short as 20 microseconds, no time modified criterion is necessary to predict crack initiation. The classical fracture criterion equating the applied stress intensity to the dynamic fracture toughness is adequate, provided the dynamically applied stress intensity is correctly evaluated. Under mixed mode I and II loading with K_{II} sub II K_{I} values between 0 and 0.5, it was demonstrated that dynamic crack initiation is essentially controlled by the mode I stress intensity and by the mode I dynamic fracture toughness.

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OTIC REPORT BIBLIOGRAPHY

SEARCH CONTROL NO EVN54B

AD-A173 412 CONTINUED

DESCRIPTORS: (U) CRACKING, FRACTURING, FRACTURE MECHANICS, STRUCTURAL STEEL, CONSTRUCTION MATERIALS, CRACK PROPAGATION, CRACKS, DYNAMICS, HIGH RATE, IMPACT, INERTIAL SYSTEMS, LOADS, FORCES, RANGE, EXTREMES, STRESS CONCENTRATION, TEST METHODS, TOUGHNESS, DYNAMIC LOADS, DYNAMIC RESPONSE, DYNAMIC TESTS, IMPULSE LOADING

IDENTIFIERS: (U) Cracking Tip Loading, One Point Bend Tests, Crack Initiation, Steel 4340, Fracture Toughness, LPN-SRI-PYU 2777 WUAFOSR2306A1, PEG1102F

AD A173 411 17/9 20/6 20/1 9/3

CALIFORNIA INST OF TECH PASADENA DEPT OF ELECTRICAL ENGINEERING

(U) Acousto-Optic Processing of 2-D Signals Using Temporal and Spatial Integration

DESCRIPTIVE NOTE. Final rept.

APR 85 170P

PERSONAL AUTHORS: Psaltis, Demetri

CONTRACT NO. AFOSR-82-0128

PROJECT NO. 2305

TASK NO. B1

MONITOR: AFOSR
TR-86-0847

UNCLASSIFIED REPORT

ABSTRACT: (U) The report describes research to develop acousto-optic information processing systems capable of processing two dimensional signals. The general methodology that was developed for accomplishing this, is the use of a combination of temporal and spatial integrations in the optical system. Acousto-optic processors for synthetic aperture radar image formation were designed and experimentally demonstrated. The radar imaging processor is capable of forming images in real time with relatively low size and power requirements. Several processors were also developed for pattern recognition applications and an acousto-optic system capable of producing two dimensional correlations of images at standard video rates was experimentally demonstrated. The same signal processing method was applied to two dimensional spectrum analysis and the processing of signals from broadband adaptive phased arrays. In both instance acousto-optic architectures were developed and initial experimental demonstrations were performed.

DESCRIPTORS: (U) OPTICAL PROCESSING, RADAR IMAGES, ACOUSTOOPTICS, INFORMATION PROCESSING, PATTERN RECOGNITION, ADAPTIVE SYSTEMS, PHASED ARRAYS, TWO DIMENSIONAL, SYNTHETIC APERTURE RADAR, PATTERN

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SEARCH CONTROL NO. EVN548

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AD-A173 370 20/12

RECOGNITION, SPECTRUM ANALYSIS, DYNAMIC RANGE, BIAS

HUGHES RESEARCH LABS MALIBU CA

IDENTIFIERS (U) WUAFOSR230581, PEG1102E

(U) Nonlinear Optical Properties and Subpicosecond Dynamics of Excitons and Electron-Hole Plasmas in Multiple Quantum Well Structures.

DESCRIPTIVE NOTE: Annual rept. Jul 84-Jul 86.

AUG 86 142P

PERSONAL AUTHORS: Smirl, A. L.; McFarlane, R. A.; Lam, J. F.

CONTRACT NO. F49620-84-C-0083

PROJECT NO. 2305

TASK NO. B4

MONITOR: AFOSR
TR-86-0837

UNCLASSIFIED REPORT

ABSTRACT (U) Progress is reported in measuring the nonlinear optical properties and picosecond dynamics of carriers in multiple quantum wells and other bulk and Molecular Beam Epitaxially grown structures. Discussions of our progress are divided into six parts: 1) fabrication and characterization; 2) picosecond time-resolved transient absorption; 3) picosecond time-resolved photoluminescence; 4) theory of dressed excitons; 5) picosecond photorefractive effects; and 6) picosecond and femtosecond laser development. Keywords: Nonlinear Optics; Optical Devices; Ultrafast Phenomena; Multiple Quantum Wells

DESCRIPTORS (U) SOLID STATE PHYSICS; QUANTUM THEORY; EPITAXIAL GROWTH; MOLECULAR BEAMS; BULK MATERIALS; DYNAMICS; ELECTRONS; HIGH RATE; HOLES; ELECTRON DEFICIENCIES; LASERS; MOLECULAR BEAMS; NONLINEAR SYSTEMS; OPTICAL EQUIPMENT; OPTICAL PROPERTIES; OPTICS; PHOTOLUMINESCENCE; PLASMAS (PHYSICS); STRUCTURES; HETEROJUNCTIONS; GALLIUM ARSENIDES; ALUMINUM GALLIUM ARSENIDE

IDENTIFIERS (U) Quantum Wells; Photorefractance.
PEG1102E, WUAFOSR230584

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PAGE 15 E JN513

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DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN54E

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AD-A173 356 CONTINUED

STANFORD UNIVERSITY DEPT OF MATERIALS SCIENCE AND ENGINEERING

(U) An Investigation of the Structure and High Temperature Mechanical Properties of Oxide Dispersion Strengthened Alloys

DESCRIPTIVE NOTE Final rept. 1 Oct 80-30 Sep 85

SEP 86 32P

PERSONAL AUTHORS Nix William D.

CONTRACT NO AFOSR-81-0022

PROJECT NO. 2306

TASK NO A1

MONITOR: AFOSR
TR 86-1002

UNCLASSIFIED REPORT

ABSTRACT: (U) The research work deals with the structure and mechanical properties of high temperature metals and alloys in which a significant contribution to strengthening is made by dispersed second phase particles. Because the research has been conducted on both aluminum and nickel based alloys, this report is organized along these lines. We have studied, for the first time, the combined effects of oxide dispersion and solute strengthening at high temperatures in an ODS aluminum-magnesium alloy. We find that the oxide particles contribute significantly to the strength at high temperatures, as expected, but that the strength of the ODS alloy at intermediate temperatures is actually lower than that for the solid solution without oxide particles. This suggests that solute strengthening cannot be combined efficiently with oxide strengthening in the design of ODS alloys. Because rapidly solidified aluminum alloys are so similar to ODS aluminum alloys, a study of the high temperature strength properties of Al-Fe-Ce alloys has also been conducted. We find these alloys to be much stronger than ODS aluminum at low and intermediate temperature but they are much weaker than the ODS alloys at very high temperatures. This weakening effect is caused mainly by twinning deformation of the

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EVN54B

intermetallic particles at high temperatures. This suggests that much more refractory particles, such as oxides or carbides, are needed for high temperature strength

DESCRIPTORS: (U) *NICKEL ALLOYS, *OXIDES, *ALUMINUM ALLOYS, *HIGH STRENGTH ALLOYS, ALLOYS, ALUMINUM, CARBIDES, CERIUM ALLOYS, DEFORMATION, DISPERSING, DISPERSION HARDENING, HIGH STRENGTH, HIGH TEMPERATURE, INTERMETALLIC COMPOUNDS, IRON ALLOYS, MECHANICAL PROPERTIES, METALS, PARTICLES, SOLID SOLUTIONS, SOLIDIFICATION, SOLUTES, STRENGTH(GENERAL), STRENGTH(MECHANICS), TEMPERATURE, TWINNING(CRYSTALLOGRAPHY), OXIDATION RESISTANCE

IDENTIFIERS: (U) ODS(Oxide Dispersion Strengthened),
PE61102F, WUAFOSR2306A1

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY

SEARCH CONTROL NO EVN548

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AD-A173 351 7/3

NORTH TEXAS STATE UNIV DENTON DEPT OF CHEMISTRY

UNIVERSITY OF SOUTHERN CALIFORNIA LOS ANGELES LOKER
HYDROCARBON RESEARCH INST

(U) Synthesis of the Two Epimeric 5 Carbomethoxy 5 Dimethyl endo tricyclo 5 2 1 0 2 3 1 dec 2 en-3 Ones. Unequivalent Structural Assignment of the 5 Alpha and 5 Beta Isomers via Two Dimensional NMR Spectroscopy

86 4P

86 9P

PERSONAL AUTHORS Smith William B Marchand Alan P
Suri Suresh C Jain Per Wen

PERSONAL AUTHORS Pat Yim-Ming Servis, Kenneth L Weber,
William P

CONTRACT NO AFOSR 84 0045

CONTRACT NO AFOSR 82-0003

PROJECT NO 2 03

PROJECT NO 2304

TASK NO P2

TASK NO A6

MONITOR AFOSR
TR 86 0972

MONITOR AFOSR
TR 86-1066

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Jnl of Organic Chem stry,
v51 n15 p1052-1054 1986

SUPPLEMENTARY NOTE Pub in Organometallics, v5 n4 p683-
690 1986

ABSTRACT (U) Alkylation of 1 methyl cyclo 5 carbomethoxy tricyclo 5 2 1 0 2 3 1 dec 2 en-3 one with Me2CuLi yields a mixture of epimeric 5 carbomethoxy 1 5 dimethyl endo tricyclo 5 2 1 0 2 3 1 dec 2 en-3 ones 1 and 2. The compound ratios of 1 and 2 were 1:1. Compound 1 is a combination of 1 and 2 were 1:1. In addition, the results of a corresponding NMR study, performed on a closely related tricyclo 5 2 1 0 2 3 1 dec 2 en-3 one, confirmed the assignments of 1 and 2.

DESCRIPTORS (U) POLYMERS SILOXANES
SYNTHESIS CHEMISTRY ALKYLATION METHYL RADICALS
CHLORINE REACTION KINETICS ALKYL RADICALS LITHIUM

UNCLASSIFIED REPORT AD-A173 351

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DESCRIPTORS (U) POLYMERS SILOXANES
SYNTHESIS CHEMISTRY ALKYLATION METHYL RADICALS
CHLORINE REACTION KINETICS ALKYL RADICALS LITHIUM

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STATION CONTROL NO. EVNS48

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EXCHANGE REACTIONS, CLEAVAGE, AND FOR MAGNETIC RESONANCE SPECTROSCOPY, REPRINTS

STATE UNIV OF NEW YORK AT BUFFALO DEPT OF CHEMISTRY

IDENTIFIERS OLIGOMERS PEG1102F WJAF03R2304A6

Structure of the Iodine Columns in Iodinated Nylon 6.

50
top

PERSONAL AUTHORS: Burzynski, Ryszard, Prasad, Paras N ;
Murthy, N S

REPORT NO. SUNY-AB/TR-6

CONTRACT NO F49620-85-C-0052

PROJECT NO 2303

TASK NO. B3

MONITOR: AFQSR
TR-86-0953

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Jnl of Polymer Science
Polymer Physics Edition v24 p133-141 1986

ABSTRACT: (U) Halogenated materials such as polyiodide or polybromide complex and halogen-doped polymers have been extensively investigated in recent years. The interest in these systems stems from the tremendous increase in the electrical conductivity upon halogen doping. Many of these intercalated polyhalide materials behave as low-dimensional conductors. Much of the research effort has been devoted to the study of the nature of these halogen species and to determine if charge transfer between the dopant and the donor or a partial oxidation of the original material leads to an increase in the conductivity. A study of iodine-complexed nylon 6 films by polarized resonance Raman spectra shows the presence of both $I_{3,4,5}$ and $I_{5,6,7}$ species; the latter most likely in the form of $I_2 \cdot I_{3,4,5}$ complex polarization characteristics or the Raman spectra show that the $I_2 \cdot I_{3,4,5}$ units are oriented along the polymer chain and the $I_{5,6,7}$ ions are perpendicular to the chain axis. The $I_2 \cdot I_{3,4,5}$ units are in a more stable moiety than the $I_{5,6,7}$ species. These Raman results are consistent with the x-ray diffraction data.

DESCRIPTORS · U · ·NYLON · IODINE ·MOLECULAR STRUCTURE

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PHOTOMERIAL FILMS, ELECTRICITY, RESEARCH, STABILITY, SPECIFICATIONS, X-RAYS, ORIENTATION, FILM, STABILITY, COPIES, CHARGE, TRANSMISSION, OXIDATION, POLYMERIZATION, REPRINTS, X-RAY DIFFRACTION

IDENTIFICATION: A18052222-88-00000000

SEARCH CONTROL NO: EVNGAB

AD 5173 348 20 5 20 7 20 3

MASSACHUSETTS INST OF TECH CAMBRIDGE RESEARCH LAB OF ELECTRONICS

U The Rapped Field Magnetron Cross Field Free Electron Laser

DEC 25 86

PERSONAL AUTHORS: Hartmann, E. (Baker, L. S. (Sheter, R. E.

CONTRACT NO: AF 33(6) 44 0025

PROJECT NO: 2300

TASK NO: A1

MONITOR: AFOSR
TR 86 0040

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PUB. IN IEEE TRANSACTIONS ON PLASMA SCIENCE, VPS 13, 6, p484-491 Dec 85

ABSTRACT: U. Millimeter wave emission from the rapped field magnetron cross field free electron laser (FEL) is investigated experimentally and theoretically. In this device, electrons move in quasi-circular orbits under the combined action of a radial electric field, a uniform axial magnetic field, and a total electric field, a transverse magnetic field, and a radial magnetic field. The device is observed in two crossed spectral lines whose frequency can be tuned continuously from 100 GHz to 1 THz. The device is operated as a FEL type of magnetron. Accelerated electrons in the periodic orbit of a cross of electrons, rapped in the periodic orbit, rapped in the orbit.

DESCRIPTORS: FEL, MAGNETRON, ELECTRICAL LASERS, FREE-ELECTRON LASERS, CROSS-FIELD DEVICES, ELECTRON, PLASMA, ELECTRON, CROSS-FIELD MAGNETRON, MAGNETIC FIELD, MAGNETIC FIELD

IDENTIFIERS: U. Rapped Field Magnetron Cross Field Free Electron Laser, Rapped Field Magnetron Cross Field Free Electron Laser, Rapped Field Free Electron Laser, Rapped Field Free Electron Laser

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STRUCTURES, COMPOUNDS, PHYSICAL PROPERTIES, REACTIONS, MECHANISMS
WUAFOSR2303B2 PEG1102F

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TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY
U. Aspects of Organomercury Chemistry.

85 8P

PERSONAL AUTHORS: Devan Michael S. ; Merz, Kenneth M. , Jr.,

CONTRACT NO F49620 83-C-0024

PROJECT NO 2303

TASK NO B2

MONITOR AFOSR
TR-86-1045

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Organometallics, v4 n11 p1967-
1972 1985.

ABSTRACT: (U) Mercury has long been an element of
special interest to both inorganic and organic chemists,
partly because of its varied chemistry and partly because
its compounds are readily available. Since MNDG has now
been parameterized for mercury, we decided to study two
topics of interest in the organomercury area, partly in
the hope of resolving uncertainties and partly to check
the ability of MNDG to deal with an element from the
sixth row. The topics studied were a) sandwich and half-
sandwich(cyclopentadienyl) mercury compounds and b) the
addition of mercury cations to olefins(oxymercuration).

DESCRIPTORS: (U) ORGANOMETALLIC COMPOUNDS, MERCURY,
QUANTUM THEORY, MOLECULAR STRUCTURE, CYCLIC COMPOUNDS,
ADDITION REACTIONS, CATIONS, OLEFIN POLYMERS, HEAT OF
FORMATION, REPRINTS

IDENTIFIERS: (U) MNDG, Modified Neglect of Differential
Overlap, WUAFOSR2303B2 PEG1102F

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AD-A173 324 20 6 9 2
UNIVERSITY OF SOUTHERN CALIFORNIA LOS ANGELES SIGNAL AND
IMAGE PROCESSING INST
(U) Nonlinear Real-Time Optical Signal Processing
DESCRIPTIVE NOTE Annual rept 1 Jul 84 30 Jun 85
JUL 86 27P
PERSONAL AUTHORS Sawchuk A A (Jenkins B A)
CONTRACT NO AFGSR 84 0181
PROJECT NO 2305
TASK NO 81
MONITOR AFGSR
TO AC 0834

AD-A173 324 CONTINUED
INTERCONNECTIONS, CIRCUITS, DEMONSTRATIONS, DIAGRAMS,
DIGITAL SYSTEMS, GATES-CIRCUITS, HIGH VELOCITY, HYBRID
SYSTEMS, MAPPING, OPTIMIZATION, POSITION, LOCATION

IDENTIFIERS: (U) WUAFQSR2305B1, PE61102F

UNCLASSIFIED REPORT

ABSTRACT: (U) During the period 1 July 1984 - 30 June 1985, the research under Grant AFGSR-84 0181 has concentrated on four major areas. First, work has continued on an experimental sequential optical binary parallel architecture that is constructed from an array of binary optical switching elements (NOR gates) with interconnections done by a computer-generated hologram. We are examining new binary array (1M x high efficiency, high space bandwidth product, SBW) interconnection holograms and compact reflectorless versions of the general architecture with the intent of building a larger demonstration system with greater capabilities. Next, we have studied improved methods of recording the interconnections in these systems by the use of hybrid digital-analog fabric holograms. We have examined analytical techniques for mapping circuit diagrams into gate locations and hologram arrays and optimization procedures to determine the minimum set of necessary space-invariant binary functions or minimum set of space-invariant holograms. A major area of study has been the evaluation of access and materials for high speed optical switching and bistability.

DESCRIPTORS: OPTICAL COMMUNICATIONS, OPTICAL
SWITCHING, GATES, CIRCUITS, GATES-CIRCUITS, NOR GATES,
DIGITAL SYSTEMS, ARCHITECTURE, HIGH VELOCITY, HIGH SPEED

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AD-A173 323 21 2

ELECTROMAGNETIC LAUNCH RESEARCH INC CAMBRIDGE MA

(U) Metallic Induction Reaction Engine

PROPULSION ESCAPE VELOCITY, PLASMAS PHYSICS, METALS, RINGS, ENERGY TRANSFER, MAGNET COILS, THRUSTERS, HIGH ACCELERATION, PULSES, MAGNETIC FIELDS

DESCRIPTIVE NOTE Final Sept. 15 Aug 34 15 Aug 85

IDENTIFIERS: (U) Reaction engines, Electromagnetic launchers, Pulse coils, Pulsed power, Induction reaction engines, WUAFOSR2308A1, PE61102F

NOV 85 24P

PERSONAL AUTHORS Hart, Douglas; Mongeau, Peter P.; Kolm, Henry H.

REPORT NO EML-85-AF002

PROJECT NO 2308

TASK NO A1

MONITOR AFOSR TR 85-0933

UNCLASSIFIED REPORT

ABSTRACT (U) Metal rings placed close to a pulsed field coil have been accelerated at 200 million gee to 5 km/s in a 2 cm length by Jandoletov in the USSR Bandoletov, 1977. We have studied the basic phenomena and ultimate limitations of the pulsed induction process both theoretically and experimentally to determine its usefulness as a reaction engine. It is possible in principle to accelerate metal rings at high efficiency, and impart sufficient energy to ensure melting and evaporation so that the reaction mass is ultimately ejected in the form of plasma. In practice the process is limited by electrical, mechanical and thermal failure of the induction coil. Over a hundred shots were fired including several in which 12 gram rings were accelerated to over 700 m/s at efficiencies above 30 percent. This is equivalent to the performance of a high power rifle with a one inch long barrel. An unexpected result of these studies is the discovery that to achieve maximum velocity, the mutual inductance gradient between induction coil and projectile ring in the firing position must be reduced to minimize the initial acceleration. This reduces the back-voltage and increases the interaction time, resulting in maximum energy transfer.

DESCRIPTORS: (U) ELECTRIC PROPULSION, MAGNETIC INDUCTION, ION ENGINES, MASS, MELTING, LAUNCHERS, SPACE

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DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN548

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AD A173 321 CONTINUED

TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY

ENTHALPY, HEAT OF REACTION, ACTIVATION ENERGY

(U) MNDO Parameters for Silicon. Revision.

IDENTIFIERS: (U) MNDO Modified Neglect of Differential Overlap. WUAFOSR2303B2. PES1102F

86 7P

PERSONAL AUTHORS: Dewar Michael J., Friedheim James J., Grady Gilbert, Healy, Eamonn F., Stewart James J.

CONTRACT NO. F49620-83-C-0024

PROJECT NO. 2303

TASK NO. B2

MONITOR AFOSR

TR 85 1048 REV

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Organometallics v5 n2 p375 379 1986

ABSTRACT: (U) While MNDO calculations, using the original parameters for silicon, have given satisfactory results in many cases, recent extensive calculations here and elsewhere, have revealed certain inadequacies. In particular, calculations with the previous parameters showed an undue preference for divalent silicon. One manifestation of this was to be seen in reactions involving Si₂ species. Reactions involving the formation of such silylenes were invariably predicted to be much too exothermic. The original MNDO carbon also performed badly for compounds containing multiply bonded silicon greatly underestimating the strengths of the multiple bonds. For example, silaethylenes and silaethylene were predicted to have bond orders of 1 and 2, respectively. Large errors also occurred in calculations for compounds of silicon with other heteroatoms, most notably oxygen. MNDO has been reparametrized for silicon. The results for a wide variety of silicon-containing compounds are in much better agreement with experiment. Enthalpies of reaction and activation are compared with results from recent high level ab initio calculations.

DISSEMINATION: SILICON ACTIVATION ENERGY, REPRINTS, HEAT OF REACTION, IONIZATION POTENTIALS, DIPOLE MOMENTS, SILICON COMPOUNDS, VIBRATIONAL FREQUENCIES, PARAMETERS

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BRISTOL UNIV (ENGLAND) DEPT OF INORGANIC CHEMISTRY

PITTSBURGH UNIV PA SURFACE SCIENCE CENTER

(U) Heteronuclear Star Clusters: (Ni₂Pt₂W₄) (mu₃-CPh)₄(CO)₈ (eta-C₅H₅)₄ and (Ni₂Pt₂W₄) (mu₂-CR)(mu₃-CR)₃(CO)₈ (eta-C₅H₅)₄ (R=Ph or p-C₆H₄Me)

(U) ESDIAD (Electron Stimulated Desorption Ion Angular Distribution) Studies of the Structure of Species Chemisorbed on Ni(110). The Surface Bonding of NH₃, NH₂, and CO.

DESCRIPTIVE NOTE Journal article

FEB 86

4P

OCT 84

6P

PERSONAL AUTHORS Elliott, Gregory P.; Howard, Judith A.; Mise, Takaya; Nunn, Christine M.; Stone, F. G.

PERSONAL AUTHORS: Yates, John T., Jr.; Klauber, C.; Alvey, M. D.; Metiu, H. M.; Lee, J.

PROJECT NO 2303

CONTRACT NO. NSF-CHE83-10106

TASK NO B2

PROJECT NO. 2310

MONITOR AFOSR

TASK NO. A2

TR 86 1042

MONITOR: AFOSR

TR-86-1060

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Angewandte Chemie, v25 n2 p190-192 Feb 86

SUPPLEMENTARY NOTE: Pub. in Proceedings of International Workshop, Desorption Induced by Electronic Transitions DIET-II, (2nd) German D.R., 15-17 Oct 84.

ABSTRACT: (U) Treatment of the trimetal compounds, PtW₂(mu₂-CR)₂(CO)₄(eta-C₅H₅)₂ (R=Ph or C₆H₄Me-4) with bis(cyclo-octa-1,5-diene) nickel affords separable mixtures of the cluster compounds Ni₂Pt₂W₄(mu₃-CR)₄(CO)₈(eta-C₅H₅)₄ and Ni₂Pt₂W₄(mu₂-CR)(mu₃-CR)₃(CO)₈(eta-C₅H₅)₄. An X-ray diffraction study on Ni₂Pt₂W₄(mu₃-CPh)₄(CO)₈(eta-C₅H₅)₄ has revealed a novel 'star' configuration for the eight metal atoms

DESCRIPTORS (U) METAL COMPOUNDS, HETEROCYCLIC COMPOUNDS, PLATINUM, TUNGSTEN, ORGANIC PHOSPHORUS COMPOUNDS, ISOMERS, REPRINTS, CARBONYL COMPOUNDS, METHYL RADICALS, DIENES, NICKEL, CLUSTERING, MOLECULAR STRUCTURE, LIGANDS

IDENTIFIERS (U) Tetrahydrofuran WUAFOSR230382, PE61102F

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SEARCH CONTROL NO. EVN54B

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DESCRIPTORS: (U) 'CHEMISORPTION', 'AMMONIA', 'CARBON MONOXIDE', 'REPRINTS', 'SURFACE CHEMISTRY', 'MOLECULAR STRUCTURE', 'NICKEL', 'DESORPTION', 'TEMPERATURE', 'ADSORPTION', 'ROTATION', 'AZIMUTH

IDENTIFIERS: (U) ESDIAD: Electron Stimulated Desorption Ion Angular Distribution; WUAFOSR2310A2 PEG1102F

AD-A173 310 20/4 14/2

MICHIGAN STATE UNIV EAST LANSING TURBULENCE STRUCTURE LAB

(U) Experimental Study of Turbulence Production Mechanisms in Boundary Layer Flows

DESCRIPTIVE NOTE: Final rept. 1 Oct 82-30 Sep 84.

MAY 85 76P

PERSONAL AUTHORS: Falco, R. E.

REPORT NO. TSL-85-1

CONTRACT NO. F49620-82-K 0003

PROJECT NO. 2307

TASK NO. A2

MONITOR: AFOSR
TR-86-0960

UNCLASSIFIED REPORT

ABSTRACT: (U) Studies of turbulence structure near a wall show that the production process has many manifestations. Detailed experiments, involving visual information in two mutually orthogonal planes, and simultaneous multiple hot-wire anemometry, along with both experimental and numerical simulations were performed in an attempt to determine the underlying conceptual framework. Results indicate that the wide variety of evolutions observed during the turbulence production process near a wall are all manifestations of the evolution of vortex ring like eddies with the wall and the wall layer. Additional important evolutions result from the interaction of two of these vortex ring wall interactions occurring with small spatial and temporal differences. Boundary layer interactions have been divided into 4 classes ranging from weak interactions to ones producing strong turbulence. These classes were simulated experimentally vortex ring moving wall interactions, and within the constraints of two dimensions qualitatively by simple numerical vortex in cell simulations. The instantaneous local thickness of the viscous sublayer and the flow field of the large scale motions play dominant roles in determining which

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Class of evolution is observed.

CINCINNATI UNIV OH SOLID STATE ELECTRONICS LAB

DESCRIPTORS: (U) *TURBULENCE, *EDDIES, *FLUID MECHANICS, *BOUNDARY LAYER, WALLS, VORTICES, PRODUCTION, RINGS, INTERACTIONS, STRUCTURAL PROPERTIES, VISCOSITY, LAYERS, THICKNESS, CONVECTION, EVOLUTION, GENERAL, MODEL TESTS, MATHEMATICAL MODELS, FLOW VISUALIZATION, HOT WIRE ANEMOMETERS, DRAG, HEAT TRANSFER

(U) Integration of Detectors with Optical Waveguide Structures.

DESCRIPTIVE NOTE: Interim rept. 15 Mar 85-15 Mar 86.

MAY 86 27P

IDENTIFIERS: (U) Turbulence production, Vortex in cell, Vorticity. PE61102F

PERSONAL AUTHORS: Boyd, J. T. ;

CONTRACT NO. F49620-85-C-0044

PROJECT NO. 2305

TASK NO. 81

MONITOR: AFOSR
TR-86-0817

UNCLASSIFIED REPORT

ABSTRACT: (U) Major accomplishments during this report period occurred in the areas of (1) photodetectors formed on optical waveguide surfaces; (2) high-speed complementary metal-oxide-semiconductor electronic devices for signal processing circuitry associated with these photodetectors; (3) improved techniques for laser recrystallization of silicon; (4) low loss optical waveguides; (5) theoretical analysis of low loss optical waveguides on silicon and gallium arsenide substrates, and (6) characterization of the materials used in the above devices by Raman spectroscopy with microprobe.

DESCRIPTORS: (U) *OPTICAL WAVEGUIDES, *PHOTODETECTORS, LOW LOSS, COMPLEMENTARY METAL OXIDE SEMICONDUCTORS, SIGNAL PROCESSING, CIRCUITS, RECRYSTALLIZATION, SILICON, LASER APPLICATIONS, SILICON, GALLIUM ARSENIDES, SUBSTRATES, RAMAN SPECTROSCOPY, INTEGRATED SYSTEMS

IDENTIFIERS: (U) PE61102F

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CALIFORNIA UNIV BERKELEY DEPT OF PHYSICS

CALIFORNIA INST OF TECH PASADENA DIV OF CHEMISTRY AND
CHEMICAL ENGINEERING

(U) Quantum Limits of Superconducting Heterodyne Receivers.

DESCRIPTIVE NOTE: Annual rept 15 May 85-14 May 86.

(U) Theoretical and Experimental Studies in Reactive
Scattering.

AUG 86 5P

DESCRIPTIVE NOTE: Final rept. 1 Oct 82-30 Sep 85.

PERSONAL AUTHORS: Richards, Paul L.

AUG 86 428P

CONTRACT NO. AFOSR-85-0230

PERSONAL AUTHORS: Kuppermann, Aron ;

PROJECT NO. 2305

CONTRACT NO. AFOSR-82-0341

TASK NO. C3

PROJECT NO. 2303

MONITOR AFOSR
TR 85 0833

TASK NO. B1

MONITOR: AFOSR
TR-86-0870

UNCLASSIFIED REPORT

ABSTRACT: (U) The goal of this research is to produce quantum limited SIS quasiparticle heterodyne receivers at submillimeter wavelengths. The approach used is to build prototype matching structures for 90 GHz and test them thoroughly. These matching structures will then be scaled to smaller dimensions to investigate their performance at submillimeter wavelengths. Substantial progress has been made toward these goals during the first grant year.

DESCRIPTORS: (U) MIXERS-ELECTRONICS; HETERODYNING.
LIMITATIONS: MATCHING, PARTICLES, PROTOTYPES, QUANTUM
THEORY, RECEIVERS, SUBMILLIMETER WAVES, SUPERCONDUCTORS,
RADIO RECEIVERS, EXTREMELY HIGH FREQUENCY

IDENTIFIERS: (U) SIS Superconductor Insulator
Superconductor, Quasiparticle Heterodyne Receivers,
PEG1102F WJAFOSR2305C3

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ABSTRACT: (U) This project performed accurate calculations of chemical reaction cross sections for collinear and three dimensional systems of importance for the fundamental aspects of chemical dynamics and for advanced technologies of interest to the United States Air Force. Some of these calculations are used to test different transition state theories. Experiments involving beams of He atoms, H atoms and metastable H3 molecules are performed aimed at the determination of potential energy surfaces involving these systems.

DESCRIPTORS: (U) QUANTUM CHEMISTRY, CHEMICAL REACTIONS,
REACTION KINETICS, QUANTUM THEORY, CROSS SECTIONS, HELIUM,
ATOMIC BEAMS, HYDROGEN, ATOMS, MOLECULES, METASTABLE
STATE, DYNAMICS, THREE DIMENSIONAL, POTENTIAL ENERGY,
SURFACES, EXCHANGE REACTIONS, ANISOTROPY, MODELS

IDENTIFIERS: (U) Atom Molecule interactions

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TENNESSEE UNIV SPACE INST TULLAHOMA

WUAFOSR2307A4

(U) Contamination and Distortion of Steady Flow Field
Induced by Various Discrete Frequency Disturbances in
a Aircraft Gas Turbines.

DESCRIPTIVE NOTE: Annual rept. 1 Jan-31 Dec 85.

APR 86 181P

PERSONAL AUTHORS: Kurosaka, M. ;

CONTRACT NO AFOSR-83-0049

PROJECT NO. 2307

TASK NO. A4

MONITOR: AFOSR
TR 86-0820

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Original contains color plates. All
DTIC and NTIS reproductions will be in black and white

ABSTRACT: (U) The objective of this investigations was
to acquire a fundamental understanding of two
aerothermodynamic effects of vortices as related to
aircraft gas turbines: (a) the total temperature and
total pressure separation; and (b) the negative entropy
spots. In the period covered here, the theoretical
explanation for (a) has been finished and it was found
that the separation of total temperature and pressure is
caused by the time-varying static pressure field around
vortices; they were in favorable agreement with the
preliminary experimental results obtained by an
aspiration probe. Preparations for the search of negative
entropy spots around vortices were also made. Keywords:
Karman vortex street, negative entropy.

DESCRIPTORS: (U) *VORTICES, *FLOW FIELDS, *STEADY FLOW,
AEROTHERMODYNAMICS, AIRCRAFT, ASPIRATORS, CONTAMINATION,
DISTORTION, ENTROPY, FREQUENCY, GAS TURBINES, PRESSURE,
PROBE, SEPARATION, STATIC PRESSURE, TIME, VARIATIONS,
ENTROPY

IDENTIFIERS: (U) Negative entropy, PE61102F.

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TUFTS UNIV MEDFORD MA DEPT OF PHYSICS

ACTIVITY, LOOPS, BREMSSTRAHLUNG, SUNSPOTS, ELECTRON ENERGY, MAGNETIC FIELDS

(U) Compact Variable, Moving Sources on the Sun at 2 CM Wavelength.

IDENTIFIERS: (U) VLA/Very Large Array, Magnetograms, PEG1102F

SEP 86 RP

PERSONAL AUTHORS Lang, Kenneth R ; Willson, Robert F ;

CONTRACT NO AFOSR-83 0019

PROJECT NO 2311

TASK NO A1

MONITOR AFOSR
TR 26 0987

UNCLASSIFIED REPORT

ABSTRACT: (U) The high angular resolution provided by the Very Large Array (VLA) has permitted the spatial resolution of solar microwave sources and opened the way for comparisons with observations of similar angular resolution at optical and X ray wavelengths. High resolution VLA observations of solar active regions at relatively long wavelengths of 6 cm and 20 cm have, for example, led to the discovery of the microwave counterpart of the ubiquitous coronal loops that had previously only been observed by X ray telescope lofted above the Earth's atmosphere. The microwave emission of the coronal loops is attributed to the gyroresonant radiation and/or the bremsstrahlung of million-degree thermal electrons trapped within the loops by strong magnetic fields; observations of this emission have provided valuable new insights into the nature of solar active regions and eruptions from the Sun and nearby stars. In contrast, the short wavelength 2 cm emission of solar active regions is poorly understood. In spite of numerous VLA solar observations at 2 cm, there are only two published results. In both instances, compact angular sizes about 15 sec, highly polarized (degree of circular polarization 80% to 90%) sources were found in regions of strong magnetic field (strength H about 2,000 G) above sunspots.

DESCRIPTORS: (U) SOLAR RADIATION, MICROWAVES, SOLAR CORONA, EMISSION SPECTRA, RADIO TELESCOPES, X RAYS, SOLAR

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GEORGIA INST OF TECH ATLANTA SCHOOL OF PHYSICS

(U) Basic Expression for the Rates of Termolecular Recombination and Dissociation.

DESCRIPTIVE NOTE Rept for 1 Jul 85-14 Feb 86

85 6P

PERSONAL AUTHORS: Flannery, M. R. ;

REPORT NO. GIT-85-007

CONTRACT NO AFOSR-84-0233

PROJECT NO 2301

TASK NO. A4

MONITOR: AFOSR
TR-86 0969

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Physics B: Atomic and Molecular Physics, v18 pL839-L844 1985.

ABSTRACT (U) It is noted that the usual identification of the rate R Superscript $A(t)$ for termolecular recombination at time t with the downward current past a bound energy level is appropriate to cases which involve energy distributions that satisfied the quasi-steady state (QSS) condition to the exact master equation. A general expression for R superscript $A(t)$ is derived which is valid for both QSS and non-QSS distributions, such as those non-QSS distributions obtained from both the diffusional and variational methods or from numerical approximation to the exact QSS condition.

DESCRIPTORS: (U) RECOMBINATION REACTIONS, REPRINTS, TRANSPORT PROPERTIES, DISSOCIATION, DISTRIBUTION, ENERGY, ENERGY LEVELS, EQUATIONS, VARIATIONAL METHODS, THERMAL PROPERTIES

IDENTIFIERS: (U) WUAFOSR2301A4

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AD-A173 276 14 2 20 6 7/4

YALE UNIV NEW HAVEN CT DEPT OF MECHANICAL ENGINEERING

(U) Proposal for Research Instrumentation

DESCRIPTIVE NOTE: Final rept 1 Jul 83-30 Jun 84

DEC 85 23P

PERSONAL AUTHORS: Long, Marshall B. ; Chang, Richard K. ; Chu, Boa-Teh ;

CONTRACT NO. AFOSR-83-0285

PROJECT NO. 2308

TASK NO. A3

MONITOR: AFOSR
TR-86-0928

UNCLASSIFIED REPORT

ABSTRACT: (U) A summary is given of the progress to date using two new laser/multichannel detection systems obtained with DoD-University Research Instrumentation Program funding. Progress has been made in several different areas including: (1) high-speed mapping of gas concentrations in turbulent flows, (2) use of Rayleigh scattering for temperature mapping in turbulent diffusion flames, (3) measurement of the full three-dimensional scalar gradient in a plane, and (4) measurement of multipoint three-component velocities in a large volume. A summary of research in these areas is given along with a description of future studies to be carried out using the equipment acquired under this program. Keywords: laser diagnostics.

DESCRIPTORS: (U) *DIAGNOSIS (GENERAL), *LASERS, *INSTRUMENTATION, *FLAMES, *MAPPING, *TEMPERATURE, DIFFUSION, GRADIENTS, RAYLEIGH SCATTERING, SCALAR FUNCTIONS, THREE DIMENSIONAL, TURBULENCE, TURBULENT FLOW, VOLUME

IDENTIFIERS: (U) PE61102F, WUAFOSR2308A3

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WISCONSIN UNIV. MADISON DEPT OF CHEMISTRY

(U) 29Si NMR Observation of an Unprecedented Rearrangement
in Tetraaryldisilenes

86

4P

PERSONAL AUTHORS: Yokelson, Howard B.; Mark, Jim (Siegel),
David A.; West, Robert

CONTRACT NO. F49620-86 C 0010

PROJECT NO. 2303

TASK NO. B2

MONITOR AFOSR

TR-86 0956

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of the American Chemical
Society, 108 p4239-4241 1986.

ABSTRACT: (U) We report here the first observation of a facile intramolecular rearrangement of tetraaryldisilenes involving the exchange of two aryl substituents between the silicon atoms of the silicon-silicon double bond. The disilenes were generated photochemically by irradiation of their trisilane precursors in pentane solution at -60 C and the crude photolysates were examined by Silicon 29 NMR in benzene. Pure disilenes were produced by photolysis of trisilanes and gave (in benzene) only a single Silicon 29 signal in the disilene region, at 63.68 and 64.06 ppm, respectively.

DESCRIPTORS: (U) *SILICON COMPOUNDS; *ARYL RADICALS; *MOLECULAR STRUCTURE; *SPECTROSCOPY; *NUCLEAR MAGNETIC RESONANCE; MOLECULE MOLECULE INTERACTIONS; EXCHANGE REACTIONS; PHOTOLYSIS; SILANES; REPRINTS

IDENTIFIERS: (U) PE61102F, WUAFOSR2303B2

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SEARCH CONTROL NO. EVN548

AD-A173 271 12/1

MICHIGAN UNIV. ANN ARBOR DEPT OF ELECTRICAL ENGINEERING
AND COMPUTER SCIENCE(U) Block-Oriented, Local-Memory-Based Linear Equation
Solution on the CRAY-2.

AUG 86 5P

PERSONAL AUTHORS: Calahan, D. A.

PROJECT NO. 2304

TASK NO. A2

MONITOR: AFOSR
TR-86-1039

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Proceedings of the
International Conference on Parallel Processing, n.p.,
Aug 86.

ABSTRACT: (U) The performances of a number of algorithms for the solution of (dense) linear equations are presented for the CRAY-2. Measurements show as much as a 6:1 speedup of blocked algorithms over conventional vectorized Gauss elimination. Execution rates in the range of 400 MfLOPS are achieved.

DESCRIPTORS: (U) *LINEAR ALGEBRA; ALGORITHMS; SUPERCOMPUTERS; SOLUTIONS (GENERAL); LINEAR ALGEBRAIC EQUATIONS; COMPUTER ARCHITECTURE; REPRINTS

IDENTIFIERS: (U) CRAY 2 Supercomputer, PE61102F,
WUAFOSR2304A2

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MASSACHUSETTS INST OF TECH CAMBRIDGE RESEARCH LAB OF ELECTRONICS

TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY

(U) Off-Axis Electron Orbits in Realistic Helical Wigglers for Free Electron Laser Applications.

(U) Cruciaromaticity in Organometallic Compounds.

DEC 85 7P

86 9P

PERSONAL AUTHORS Tajans, J. Kirkpatrick, D. A. (Bekefi, G. James, Dewar, Michael J., Healy, Eamonn F., Ruiz,

CONTRACT NO AFOSR-84-002E

CONTRACT NO. F49620-83-C-0024

PROJECT NO 2301

PROJECT NO. 2303

TASK NO A1

TASK NO B2

MONITOR AFOSR TR 85 0962

MONITOR AFOSR TR 86-1058

UNCLASSIFIED REPORT

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UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Pure and Applied Chemistry, v58 n1 p67-74 1986.

ABSTRACT: (U) Off axis electron orbits in free electron laser beams of finite thickness, subjected to combined helical wiggler and axial guide fields, have been studied analytically. A semiempirical equation for the electron velocity components, averaged over the electron's oscillatory betatron motion, has been derived as a function of the radial displacement of the radial displacement of the electron guiding center. The predictions from the equation are compared with single particle numerical simulations, and with free electron laser experiments. Good agreement is found.

DESCRIPTORS (U) *FREE ELECTRON LASERS, *LASER BEAMS, PUMPING-ELECTRONICS, BETATONS, COMPARISON, SIMULATION, GAIN, REPRINTS

IDENTIFIERS (U) Wiggler Magnets PE61102F, WUAFOSR2301A1

ABSTRACT: (U) A recent suggestion, that transition metal complexes of unsaturated ligands can be regarded as cruciconjugated, is explored by studies of various complexes of Fe(II), the aromaticity of the resulting pi systems being analyzed in terms of PMO theory. This approach is also applied to porphyrin. The conclusions are supported by preliminary pi SCF and MNDO calculations.

DESCRIPTORS: (U) *ORGANOMETALLIC COMPOUNDS, *TRANSITION METAL COMPOUNDS, *AROMATIC COMPOUNDS, LIGANDS, METAL COMPLEXES, IRON, PORPHYRINS, SPIN STATES, COMPUTATIONS, REPRINTS

IDENTIFIERS: (U) Conjugation, PE61102F, WUAFOSR230382

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TUFTS UNIV MEDFORD MA DEPT OF PHYSICS

IDENTIFIERS (U) Coronal Loops, VLA Very Large Arrays, PEG1102F, WJAFUSP2311A1

(U) Coronal Plasmas on the Sun and Nearby Stars

SEP 86 12P

PERSONAL AUTOPS Lang Kenneth R

CONTRACT NO AFOSR 83 0019 N00014 89 2 0 65

PROJECT NO 2311

TASK NO A1

MONITOR AFOSR
TR 85 0385

UNCLASSIFIED REPORT

ABSTRACT (U) The Very Large Array (VLA) has been used to observe solar microwave sources with a range of arc angular resolution. Both the quiescent and non-flaring microwave sources and the flaring ones are usually resolved. They are often associated with the apex and or legs of the ubiquitous coronal loops. Such structures have been associated only with x-ray telescopes seen above the atmosphere. Multiple acceleration and observations give specificity to structure, location and structure of the magnetic field, and coronal loops, while also providing constraints on the electron density and electron temperature of the plasma trapped within the coronal loops. The next section discusses various thermal radiation mechanisms that are involved in most of the microwave emission. It also discusses what current amplified magnetic fields or new models of radiation may be required in some instances. This is followed by a discussion of the microwave radiation in coronal loops and the thermal cyclotron lines that partially specify their magnetic field strength. The 20 cm and x-ray emission of the coronal plasma are then compared. The coronal or nearby stars are discussed where coherent radiation processes seem to prevail.

DESCRIPTORS (U) SOLAR RADIATION, MICROWAVES, EMISSION SPECTRA, SOLAR CORONA, PLASMA PHYSICS, X RAYS, MAGNETIC FIELDS, PLASMA PHYSICS, TELECOMMUNICATIONS, ELECTRON ENERGY, PLASMA PHYSICS, RESONANCE RADIATION

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PITTSBURGH UNIV. PA SURFACE SCIENCE CENTER

TEXAS A AND M UNIV COLLEGE STATION DEPT OF MECHANICAL ENGINEERING

(U) Metastable Angular Distributions from Electron-Stimulated Desorption

(U) Delamination Fracture in Graphite/Epoxy Materials

JAN 86 5P

DESCRIPTIVE NOTE Annual rept 1 Apr 85-31 Mar 86

PERSONAL AUTHORS Alex Mark D Dresser Miles J Yates John T Jr

PERSONAL AUTHORS Bradley Walter L

CONTRACT NO AFOSR 82 0133

CONTRACT NO AFOSR-84-0064

PROJECT NO 2303

PROJECT NO 2302

TASK NO A2

TASK NO B2

MONITOR AFOSR TR 85 0229

MONITOR AFOSR

TR-86-0941

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

SUPPLEMENTARY REPT Pub in Physical Review Letters. v56 n4 p367-370 27 Jun 85

ABSTRACT (U) We have for the first time measured by electron stimulated desorption the angular distribution of electronically excited metastable species from CO adsorbed on Ni(110). The angular distribution of metastable desorption is strongly peaked in normal direction as is also found for ionic desorption products. This indicates that the metastable is repelled along the direction of the bond being broken. We also observe an asymmetry in the azimuthal angular distribution which is correlated with the substrate crystal structure. The metastable exhibits a maximum in its yield versus coverage.

DESCRIPTORS (U) DESORPTION CARBON MONOXIDE ANGLES ASYMMETRY AZIMUTH CRYSTAL STRUCTURE DISTRIBUTION METASTABLE STATE SUBSTRATES ELECTRON TRANSFER ADSORPTION NICKEL REPRINTS

IDENTIFIERS U PE61102F WUAFOSR2303A2

DESCRIPTORS (U) EPOXY COMPOSITES FRACTURE MECHANICS GRAPHITED MATERIALS LAMINATES LAYERS

IDENTIFIERS (U) Delamination PE61102F WUAFOSR2302B2

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OHIO STATE UNIV RESEARCH FOUNDATION COLUMBUS

(10) Strength and Structure of GA-1 vs. IN-100 Alloys

DESCRIPTIVE NOTE Quarterly rept no 3 1 May 31 Aug 86.

JUL 25 11F

PERSONAL ACTIVITIES

CONTRACT NO. F49620-35-C-0129 APPR. ORDER 5525

IN 1973

TASK NO. 12

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AFROR
12-15

DECLASSIFIED REPORT

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DE SUBSTITUOS. II. CALCIUM ARSENATE, COPPER, ZINC, AND
CERAMIC MECHANICS. TEST METHOD, MATERIALS, PRO-
PORTION, MECHANICAL PROPERTIES, CRYSTAL STRUCTURE
STRENGTH MECHANICS, COMPRESSIVE PROPERTIES

IDENTITY NO. 0051102 WUAT 052912A? LPN OSURF
004977 1100

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TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY

U-13 A MINDO/3 Study of the Ethylene Dication.

55 7p

PERSONAL AUTHORS: Dewar, Michael J.; Reynolds, Charles H.

CONTRACT NO. F49620 83-C 0024

PROJECT NO. 2303

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MONITOR AFOSR
TR 86 1055

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub. in Jnl. of Molecular Structure
'Theochem' V135 p209-214 1956

ABSTRACT (U) Mass spectral evidence was recently presented for the formation of the dication derived from ethylene. Since this seems to be the smallest organic dication whose existence has been unequivocally demonstrated, its structure and other properties are of theoretical interest. The original report included the results of an ab initio calculation for the dication which, however, was carried out assuming its geometry to be the same as that of ethylene. Since the geometry was not optimized, this amounted to a calculation of the vertical double ionization of ethylene and did not address either the structure or the properties of the ground state dication itself. This gap has been filled by a recent ab initio investigation by Lammertsma et al. in which the $C2H4^{2+}$ potential surface was explored in some detail. Five stationary points were located, of which, however, only one proved to be a definite minimum, this having a D sub 2d structure in which the methylene groups are planar but orthogonal to one another. MINDO 3 calculations are reported for the dication, $C2H4^{2+}$ derived from ethylene, four minima, corresponding to species of similar energies, were located on the corresponding potential surface.

DESCRIPTORS: (U) 'ETHYLENE', 'ATIONS, MASS SPECTRA, SURFACES, GROUND STATE METHYLENES, IONIZATION, VERTICAL'

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AD A173 251 7/3 20/10

ORIENTATION COMPUTATIONS. MASS SPECTROSCOPY MOLECULAR
STRUCTURE. ISOMERS

TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY

(U) MNDO Study of the Reaction of Tetramethylstannane with
Bromine.

IDENTIFIERS U MNDO-Modified Intermediate Neglect of
Differential Overlap Dications. WUAFDSR2303B2 PE61102F

86 3P

PERSONAL AUTHORS: Dewar, Michael J.; Kuhn, Daniel R.;

CONTRACT NO F49620-83-C-0024

PROJECT NO. 2303

TASK NO. B2

MONITOR: AFOSR
TR-86-1057

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of the Americal Chemical
Society, v108 p551-552 1986.

ABSTRACT: (U) The mechanism of the brominolysis of alkyl
tin compounds has been considerable interest to
organometallic chemists primarily due to the observation
of stereochemical inversion, as well as retention, at
carbon under certain conditions. A wide range of
mechanistic pathways have been proposed for this reaction,
which has been found, in general, to be first order in
both Br₂ and the alkyltin. These proposed mechanisms
included both concerted, stepwise, and charge-transfer
processes. To rationalize the observed stereochemistry at
carbon, three transition states (TS) have been proposed.

DESCRIPTORS: (U) *TIN COMPOUNDS, *STEREOCHEMISTRY,
*METHYL RADICALS, CARBON, CHEMISTS, ORGANOMETALLIC
COMPOUNDS, TRANSITIONS, BROMINE, CHARGE TRANSFER,
RANGE (EXTREMES), CHEMICAL REACTIONS, SUBSTITUTION
REACTIONS, COMPUTATIONS, MATHEMATICAL MODELS, REPRINTS

IDENTIFIERS: (U) MNDO-Modified Neglect of Differential
Overlap, WUAFDSR2303B2, PE61102F

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CONTROL DATA CORP MINNEAPOLIS MN METEOROLOGY RESEARCH CENTER

(U) Variability of Turbulence, 4-20 km, in Colorado and Alaska from MST Mesosphere, Stratosphere, Troposphere, Radar Observations.

MAY 85 14P

PERSONAL AUTHORS NASTROM, G D Gage, F S Ecklund, W L

CONTRACT NO F19620 P2 C 0029

PROJECT NO 2-10

TASK NO A1

MONITOR AFOSR TP 85 0971

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub in Jnl of Geophysical Research, v91 n06 p6722-6734 20 May 86

ABSTRACT (U) The variability of small scale atmospheric turbulence on time scales from a few minutes to the annual scale and at altitudes from about 4 to 20 km is studied using clear air Doppler radar data from Poker Flat, Alaska, and other sites. Conceptually, the variable used for this study is the refractive index turbulence structure constant κ sub n squared. The frequency distribution of κ sub n squared is found to be lognormal during all seasons at all altitudes. Using data at 4 min intervals, it is found that the autocorrelation function of κ sub n squared can be modeled as the sum of a first order autoregressive process and a random process. The associated integral time scale increases with altitude from 25 to 45 min in the troposphere to about 18 min in the stratosphere. The power spectrum of log κ sub n squared follows a power law relation with frequency, at periods greater than about 2 hours the spectral slope is near -5/3 and at periods less than 2 hours the slope is larger. Monthly mean values of log κ sub n squared are shown in the winter and show a secondary maximum in summer. The winter peak is apparently related to increased jet stream and baroclinic storm activity, and

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EVN54B

the summer peak is believed to be due to convective activity. The correlation of 3 hour values of κ sub n squared with wind speed over monthlong periods ranges as high as 0.8 and has a median value near 0.3. During certain periods, κ sub n squared also depends on other variables such as boundary layer inversions and gravity wave activity.

DESCRIPTORS: (U) ATMOSPHERIC MOTION, RADAR REFLECTIONS, TURBULENCE, ATMOSPHERIC REFRACTION, TROPOSPHERE, REGRESSION ANALYSIS, GRAVITY WAVES, TEMPERATURE INVERSION, POWER SPECTRA, SEASONAL VARIATIONS, PEAK VALUES, WIND VELOCITY, BOUNDARY LAYER, REPRINTS

IDENTIFIERS: (U) WUAFOSR2310A1, Pe6110F

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AD-A173 245 29 12

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STANFORD UNIV CA STANFORD ELECTRONICS LABS

ARIZONA STATE UNIV TEMPE COLL OF ENGINEERING AND APPLIED SCIENCES

(U) Instrumentation for Research on Ultra-Small GaAs Devices

DESCRIPTIVE NOTE Final rept 16 Oct 85 15 Oct 86.

(U) Investigation of Material Problems for High Temperature, High Power Space Energy-Conversion Systems.

AUG 86 9P

DESCRIPTIVE NOTE: Final rept. 1 May 83-30 May 86.

PERSONAL AUTHORS: Harris James S

JUL 86 415P

CONTRACT NO N00014 83 K 0077 AFOSR-34-0253

PERSONAL AUTHORS: Jacobson, Dean L.; Morris, James F.; Ramalingam, Mysore; Shih, Shlomo; Bice, Charles

PROJECT NO 2917

CONTRACT NO. AFOSR-83-0067

TASK NO A3

PROJECT NO. 2308

MONITOR AFOSR

TR 86-0815

TASK NO. K1

UNCLASSIFIED REPORT

MONITOR: AFOSR
TR-86-0819

ABSTRACT: (U) This grant, under the DoD University Research Instrumentation Program funded the purchase of processing equipment for GaAs structures and devices this processing facility is now completed and in operation.

UNCLASSIFIED REPORT

DESCRIPTORS (U) GALLIUM ARSENIDES, PROCESSING EQUIPMENT, STRUCTURES, PROCUREMENT, FACILITIES, PROCESSING, INSTRUMENTATION, UNIVERSITIES

IDENTIFIERS (U) WUAFOSR2917A3, PE61102F

ABSTRACT: (U) The final report has been divided in six sections. The first one is an introduction. In the second section, the theory of dilute-solutions ultrallloys from tungsten sintering with special eutectic applications is presented, together with a comprehensive literature survey including 95 references. In the third one, the results for the work function evaluation of tungsten-rhenium sintered alloys, obtained by using thermionic emission microscopy, are presented. The influence of rhenium content in the range 3 percent to 30 percent, and temperature, between 1946 to 239K in the work function are reported. The fourth section includes the determination of effective work function, normal spectral emissivity, recrystallization temperature and microhardness of tungsten-rhenium and tungsten-rhenium-thoriated alloys, in the temperature range between 1400 to 2500K. Section No. 5 summarizes the research on the influence of heating time, temperature and alloying content of rhenium in the work function of tungsten alloys as determined in the Vacuum Emission vehicle. Finally, in the last section, the mechanical properties of tungsten-30 percent rhenium were investigated by using an Instron tensile testing equipment with a high

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temperature, ultrahigh vacuum system. The relationship between the normalized Young's modulus, ultimate tensile strength, yield strength, elongation and test temperature was examined. (Author)

DESCRIPTORS: (U) TUNGSTEN ALLOYS, PHENIUM ALLOYS, SINTERING, EUTECTICS, ACTIVATION, MICROSCOPY, THERMIONIC EMISSION, WORK FUNCTIONS, TEST METHODS, HIGH TEMPERATURE, HIGH VACUUM, SPACE SYSTEMS, ENERGY CONVERSION

IDENTIFIERS: (U) Ultralloys, WUATOSR2308K1 PEG1102F

AD-A173 242 11/9 7/3

ARIZONA UNIV TUCSON DEPT OF CHEMISTRY

(U) Thermal Polymerization of Isomeric Dodecadiendiols.

AUG 86 21P

PERSONAL AUTHORS: Maldar, N. N.; Burillo, S. G.; Ogawa, Takeshi; Marvel, C. S.

CONTRACT NO. AFOSR 82-0007

PROJECT NO. 2303

TASK NO. 82

MONITOR: AFOSR
TR-86 1017

UNCLASSIFIED REPORT

ABSTRACT: (U) Recently the polymerization of acetylenic compounds having two or more acetylene units, R-C≡C triple bond C≡C-R', has attracted much attention and numerous reports have been published. In the case of diacetylenes, n=2, the majority of studies are concerned with the unique topochemical polymerization in crystalline states. However, little has been studied on the thermal behavior of these polyacetylenic compounds, except for diphenyl diacetylenes, although it is known that many of them simply undergo polymerization on heating. When n is greater than four and R=H, the compounds become unstable and in many cases it is difficult to prevent their polymerization on standing. Jones and his coworkers have synthesized many polyacetylenic compounds including those occurring naturally in plants of Composite family. These polyacetylenes contain four or five conjugated acetylenic units linked to the terminal vinyl groups and are reported to be dangerously unstable. Nakagawa has prepared diphenyltetraacetylene, which is stable in the dark. Korshak et al. have claimed that a polyyne with a structure H-C≡C triple bond C≡C-H, and stable up to 2300 °C was obtained by the oxidative dehydropolycondensation of acetylene. Although the relationships between stability and structure are not yet clear, all of these compounds are interesting as potential heat resisting materials with high carbon contents.

DESCRIPTORS: (U) ACETYLENES, POLYMERIZATION, LINKAGES.

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OTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO EVN548

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CARBON HEATING VINYL PLASTICS BIPHENYL POLYMERS HEAT
THERMAL PROPERTIES HEAT TREATMENT THERMAL STABILITY
HEAT RESISTANT MATERIALS ISOMERS

AD A173 241 9/3

HARVARD UNIV CAMBRIDGE MA

(U) Geometric Problems in Adaptive Control

IDENTIFIERS U Dodecadiendiydiols

DESCRIPTIVE NOTE Final rept. 1 Jan 81-30 Apr 85.

APR 86 13P

PERSONAL AUTHORS: Brockett, R. W. ;

CONTRACT NO AFOSR-81-0054

PROJECT NO 2304

TASK NO A6

MONITOR: AFOSR
TR-86-0967

UNCLASSIFIED REPORT

ABSTRACT: (U) Adaptive control has become practical in recent years because of the increased use of VLSI technology in implementing feedback control. The work described here has lead to the first proofs of convergence for some adaptive algorithms for stabilizing linear time invariant, but unknown, systems. It has also clarified robustness issues associated with this class of adaptive control algorithms. With the use of geometrical methods it has been possible to establish the impossibility of achieving several types of adaptive behavior. New directions for expanding the field of adaptive control have been explored. (Author)

DESCRIPTORS: (U) ADAPTIVE CONTROL SYSTEMS, APPLIED MATHEMATICS, ALGORITHMS, GEOMETRY, LINEAR SYSTEMS, FEEDBACK, CONVERGENCE, SYSTEMS ENGINEERING

IDENTIFIERS (U) ROBUSTNESS, WDAFOSR2304A6, PE61102F

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OKLAHOMA UNIV NORMAN DEPT OF MATHEMATICS

NORTHWESTERN UNIV EVANSTON IL DEPT OF CIVIL ENGINEERING

U1 Estimation and Control of Distributed Models for
Certain Elastic Systems Arising in Large Space
Structures

(U) Efficient Finite Element Methods for Transient
Analysis of Shells.

DESCRIPTIVE NOTE Annual rept 1 Jul 84-1 Jul 85

DESCRIPTIVE NOTE Final rept. Feb 81-Feb 84.

JUL 85

APR 85

85P

PERSONAL AUTHORS White, Luther W

PERSONAL AUTHORS Belytschko, Ted ;

CONTRACT NO AFOSR 84-0271

CONTRACT NO F49620-82-K-0013

PROJECT NO 2-04

PROJECT NO 2302

TASK NO A1

TASK NO B1

MONITOR AFOSR

MONITOR AFOSR

19 85-0985

TR-86-1009

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

ABSTRACT: U1 During the reporting period progress was made toward the goal of developing efficient and accurate estimation and control algorithms for elastic structures composed of beams and plates. Specifically, results were obtained that determine necessary and sufficient conditions for uniqueness in discrete versions of second order elliptic estimation of elastic coefficients for static and dynamic models of beams and plates. The control of the shape of static beams and plates by means of actuators of small support and the optimal placement of actuators to control the shape of beams and plates. These efforts have produced computer codes on which experimentation is currently being conducted to test methods and algorithms. (Author)

ABSTRACT: (U) Efficient and accurate elements for the large displacement, transient analysis of shells have been developed. The essential feature of these elements is the use of minimal quadrature, which consists of 1 point quadrature in the 4-node quadrilateral or the 3-node triangle, and 2x2 quadrature in the 9-node element. Since these minimal quadrature elements possess spurious singular modes, their use requires effective control of these modes. A control procedure has been developed which satisfies consistency and hence does not impair the convergence of the element. This is achieved through a special gamma-projection which is orthogonal to linear fields, hence these elements are called gamma-elements. In addition to these developments, the following was achieved in this project: (1) the identification of the membrane locking phenomenon which impedes the convergence of any fully integrated curved element; (2) the development of general methods for ameliorating membrane locking through both explicit mode decomposition projections and through implicit projections by means of reduced integration; (3) the development of stabilization procedures for higher order elements such as the 9 node element which satisfy basic consistency and the patch test. (Author)

DESCRIPTORS: U1 SPACE SYSTEMS CONTROL THEORY, FLEXIBLE STRUCTURES, ELASTIC PROPERTIES, BEAMS, STRUCTURAL PLATES, MATHEMATICAL MODELS, CONTROL ALGORITHMS

IDENTIFIERS: (U) Large space structures. WUAFOSR2304A1. PE6102F

DESCRIPTORS: (U) 'SHELLS' STRUCTURAL FORMS ' STRUCTURAL

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ANALYSIS: SHEAR PROPERTIES, NODES, MEMBRANES

UNITED TECHNOLOGIES RESEARCH CENTER EAST HARTFORD CT

IDENTIFIERS: (U) Membrane locking analysis. WUAFOSR230281, PE61102F

Transient structural

(U) Examination of Mechanisms and Fuel-Molecular Effects on Soot Formation.

DESCRIPTIVE NOTE: Annual rept. 15 Nov 84-14 Nov 85.

DEC 85 32P

PERSONAL AUTHORS: Colket, Meredith B. III; Seery, Daniel J.; Sanjiovanni, Joseph J.

REPORT NO. UTRC/R85-957047

CONTRACT NO. F49620-85-C-0012

PROJECT NO. 2308

TASK NO. A2

MONITOR: AFOSR
TR-86-1051

UNCLASSIFIED REPORT

ABSTRACT: (U) Acetylene, vinylacetylene, and benzene have been pyrolyzed in a single-pulse shock tube over the temperature range of 1000 to 2400K and for dwell times of approximately 700 microseconds. Gas samples of reactant, intermediate, and final products were collected and analyzed using gas chromatography. Experimental data were used in conjunction with a computer model to develop (or confirm existing) detailed chemical kinetic models for several of the hydrocarbons that were pyrolyzed. Model results agreed well with experimental data not only for the decomposition of the parent compound and formation and decomposition of single-ring aromatic species. The formation processes are believed to lead to the production of polycyclic aromatic hydrocarbons, soot precursors, and eventually soot.

DESCRIPTORS: (U) *ACETYLENE, *SOOT, *BENZENE, *FUELS, *PYROLYSIS, CHEMICAL REACTIONS, MODELS, REACTION KINETICS, DECOMPOSITION, GASES, SAMPLING, AROMATIC HYDROCARBONS, POLYCYCLIC COMPOUNDS, PRECURSORS, COMPUTERIZED SIMULATION, GAS CHROMATOGRAPHY, HYDROCARBONS, PRODUCTION, TEMPERATURE

IDENTIFIERS: (U) WUAFOSR2308A2, PE61102F

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STANFORD UNIV CA DEPT OF MECHANICAL ENGINEERING

(U) An Investigation of Flow Structure Mixing and
Chemical Reaction in Combusting Turbulent Flows

VELOCITY, VARIABLE PRESSURE, LASER INDUCED FLUORESCENCE
IDENTIFIERS: (U) Reacting Flows, Turbulent Mixing, Flow
Structures, Unsteady Reaction Process, WUAFOSR2308A2,
PE61102F

DESCRIPTIVE NOTE: Annual technical rept 1 Sep 84-31 Aug
85.

OCT 85 12P

PERSONAL AUTHORS Bowman, Craig T Cantwell, Brian J

CONTRACT NO AFOSR-84-0373

PROJECT NO 2343

TASK NO A2

MONITOR AFOSR
TR 86 1054

UNCLASSIFIED REPORT

ABSTRACT (U) An experimental investigation of the relationship between flow structure and chemical reaction structure in a combustor turbulent flow has been initiated. The objective is to study the spatial structure of the unsteady reaction process as it relates to the unsteady velocity field. This configuration chosen for study is a co-flowing, non-premixed jet flame, with methane in the core flow and air in the surrounding flow. Initial experiments show that under suitable forcing conditions a very periodic and controllable flow suitable for conditional sampling can be produced. Preliminary results from single component velocity measurements indicate that when the jet is forced at a particular frequency the flame breaks up into a periodic series of flamelets and the flow acceleration and turbulence intensity on the jet axis is substantially reduced. Significant progress has been made in the development of a planar laser-induced fluorescence technique for radical species visualization in the flame. Single-shot images of both CH and C2 fluorescence have been obtained in hydrocarbon air flames.

DESCRIPTORS: (U) COMBUSTION, JET FLAMES, TURBULENT
FLOW, STRUCTURAL PROPERTIES, CHEMICAL REACTIONS, MIXING
CHEMICAL RADICALS, METHANE, AIR FLOW, HYDROCARBONS.

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PRINCETON UNIV NU PLAMA PHYSICS LAB

BRISTOL UNIV (ENGLAND) DEPT OF INORGANIC CHEMISTRY

(U) Population Inversion and Gain Measurements for Soft X-Ray Laser Development in a Magnetically Confined Plasma Column

(U) Cyclisation of Metal Chain Complexes: X-Ray Crystal Structures of (Pt3W4)(u-CR)2-(u3-CR)2(CO)8(n-C5H5)4 and (Pt4W4)(u-CR)(u3-CR)3(CO)8(n-C5H5)4 (R = C6H4Me-4).

DESCRIPTIVE NOTE Final progress rept. 1 Nov 83-30 Sep 85.

86 5P

SEP 85 40P

PERSONAL AUTHORS: Elliot, Gregory P.; Howard, Judith A.; Nunn, Christine M.; Stone, F. G.;

PERSONAL AUTHORS: Suckewer, Simon;

CONTRACT NO AFOSR-84-0025

CONTRACT NO AFOSR-82-0070

PROJECT NO. 2301

PROJECT NO. 2303

TASK NO A8

TASK NO. P2

MONITOR AFOSR

MONITOR: AFOSR

TR-86-0825

TR-86-0972

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

ABSTRACT: (U) The following was accomplished in the x ray laser experiments underway: 1) A new optical system was built for the CO-2 laser which allowed an order of magnitude higher power density in the focal plane. 2) The time evolution of the laser pulse was improved. 3) Work continued on the jet stream gas target. 4) A number of carbon targets were developed and tested. 5) EUV axial and transverse instruments were modified for measuring line intensities as a function of time. 6) Modifications were made to the computer simulation code and 7) Single pass gains of between 2.8 and 3.5 were made for various carbon targets.

DESCRIPTORS: (U) CARBON DIOXIDE LASERS, LASER TARGET INTERACTIONS, LASER COMPONENTS, FAR ULTRAVIOLET RADIATION, GAIN, X RAYS, COMPUTERIZED SIMULATION, PLASMAS/PHYSICS, X RAY SPECTRA, CARBON, FLUORINE, ALUMINUM, SILICON, OXYGEN, NEON, RESEARCH MANAGEMENT

IDENTIFIERS: (U) X Ray Lasers, Laser Targets, Carbon Targets, WUAFOSR2301AS, PEG1102F

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SUPPLEMENTARY NOTE: Pub. in Jnl. of the Chemical Society, Chemical Communications, p431-433 1986.

ABSTRACT: (U) The peritannuclear metal complex (Pt3W2(mu sub 3-CR)2(CO)4(cod)2(pi-C5H5)2) (R = C6H4Me-4, cod = cyclo-octa-1,5-diene) reacts with W(triple bond CR)(CO)2(Eta-C5H5) to give (Pt3W4(mu sub 3 -CR)2(mu sub 3 -CR)2(CO)8(Eta -C5H5)4), and the latter with (Pt(C2H4)3), prepared in situ from (Pt(cod)2), yields (Pt4W4(mu -CR) (mu sub 3 -CR)3(CO)8(mu -C5H5)4) containing a Pt4W4 ring, the structures of these metal cluster complexes have been established by X-ray diffraction.

DESCRIPTORS: (U) METAL COMPLEXES, PLATINUM, TUNGSTEN, CYCLIC COMPOUNDS, MOLECULAR STRUCTURE, CHEMICAL REACTIONS, ORGANOMETALLIC COMPOUNDS, DIENES, REPRINTS

IDENTIFIERS: (U) WUAFOSR2303B2, PEG1102F

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SEARCH CONTROL NO EVN548

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MISSISSIPPI STATE UNIV MISSISSIPPI STATE DEPT OF
AEROSPACE ENGINEERING

SOUTHWEST RESEARCH INST SAN ANTONIO TX

U Numerical Grid Generation in Arbitrary Surfaces
through a Second Order Differential Geometric Model.

(U) Nonlinear Fracture Mechanics Analysis with Boundary
Integral Method

DESCRIPTIVE NOTE: Final rept. 2 Apr 84-30 May 86.

MAY 86

16P

MAY 86

101P

PERSONAL AUTHORS: Wurst Z U

PERSONAL AUTHORS: Gruse, T. A.; Polch, E. Z.

CONTRACT NO AFOSR 80 0135

REPORT NO. SWRI-06-8044

PROJECT NO 2304

CONTRACT NO. F49620-84-C-0042

TASK NO 33

PROJECT NO. 2302

MONITOR AFOSR

TR 86 1035

TASK NO. 82

MONITOR AFOSR

TR-86-0862

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Jnl of Computational Physics.
/54 r1 p22 05 May 86

UNCLASSIFIED REPORT

ABSTRACT (U) In this paper a set of second-order partial differential equations for the generation of coordinates in a given surface has been developed and then solved numerically to demonstrate its potential for surface coordinate generation. The proposed equations are not some arbitrarily chosen equations, but are a consequence of the formulate of Gauss and thus carry with them an explicit dependence on the geometric properties of the given surface. Furthermore, these equations are easy to solve and require only the specification of the bounding curve to provide the complete boundary conditions for their solution. Results of coordinate generation both in simply and doubly connected regions on some known surfaces, with the option of coordinate redistribution, have been presented. Extension of this technique to arbitrary surfaces seems to be straightforward.

DESCRIPTORS: U COORDINATES; NUMERICAL METHODS
AND PROCEDURES; PARTIAL DIFFERENTIAL EQUATIONS; CARTESIAN
COORDINATES; MATHEMATICAL MODELS; REPRINTS

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WLAFC522-03483

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ABSTRACT (U) The first goal of the originally proposed program was to extend an existing planar elastic fracture mechanics analysis based on the BIE methodology to the analysis of plastic zones around cracks. The second proposed goal was to establish fundamental results for crack tip elastoplastic behavior, based on a numerical and analytical study of the elastoplastic BIE formulation. The third proposed goal was to establish the credibility of the elastoplastic BIE formulation relative to the finite element method for refined numerical analysis of the nonlinear fracture mechanics problem, and to apply the capability to important problems of fatigue crack growth modeling for advanced aerospace structures. The goal for the second year of the effort was to extend the research to the problem of modeling crack extension under elastoplastic conditions. This report summarizes key findings of the current research effort. The next section summarizes the basic two dimensional elastoplastic formulation and applications. Included in this work are the preliminary applications of the new method to crack extension into prior plastic zones. The next section reports on the use of the new BIE formulation for elastic crack extension. This new result allows for the direct computation of crack weight functions. The last section

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SEARCH CONTROL NO EVN548

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reports on some recent work, for the 3D BIE fracture mechanics formulation. Some contrast with the 2D formulation is noted. Further work on the 3D problem is expected in the subsequent research program.

DESCRIPTORS: U, FRACTURE MECHANICS, CRACK PROPAGATION, ALPFRAMES, FATIGUE MECHANICS, ELASTIC PROPERTIES, PLASTIC PROPERTIES, CRACKS, MATHEMATICAL MODELS

IDENTIFIERS: U, Crack Tips, Boundary integral equations, BIE-Boundary integral equations, PEG1102F, WUAFDSR2302B2

AD A173 215 13.13 12.1

NORTHWESTERN UNIV EVANSTON IL DEPT OF CIVIL ENGINEERING

U, Effective Finite Elements for Shell Analysis

DESCRIPTIVE NOTE: Final rept. 1 Feb 83-30 Jan 84.

FEB 84 87P

PERSONAL AUTHORS: Belytschko, T.; Stolarski, H.; Liu, W. K.; Carpenter, N.

CONTRACT NO.: F49620-82-K-0013

PROJECT NO.: 2302

TASK NO.: B1

MONITOR: AFOSR
TR-86-0891

UNCLASSIFIED REPORT

ABSTRACT: (U) One of the major difficulties in the formulation of effective shell elements has been identified to be the phenomenon of membrane locking. Membrane locking occurs in curved shell elements when the in-plane displacement approximation is not of higher order than the transverse displacement approximation and inextensional bending of the shell cannot take place. Inextensional bending is an important mode of deformation, and when an element is not capable of representing inextensional bending, parasitic membrane energy is generated in many modes of deformation. In the same manner that parasitic shear causes shear locking, this spurious membrane energy causes membrane locking. Membrane locking severely reduces the rate of convergence of shell elements, particularly in deep shells and in situations where the bending of the shell is the dominant mode of deformation. In this report, two methods for eliminating membrane locking in curved shell elements are presented.

DESCRIPTORS: (U), SHELLS (STRUCTURAL FORMS), FINITE ELEMENT ANALYSIS, BENDING, DEFORMATION, MEMBRANES, LOCKING, ELECTRONICS, SPURIOUS EFFECTS

IDENTIFIERS: (U) PEG1102F, WUAFDSR2302B1

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SEARCH CONTROL NO. EVN54B

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AEROCHEM RESEARCH LABS INC PRINCETON NJ

U. Ionic Mechanisms of Soot Formation in Flames

DESCRIPTIVE NOTE Annual rept 15 Sep 83-14 Sep 84

MAR 86 30P

DESCRIPTORS: (U) 'SOOT, 'FLAMES, IONS, THEORY, COMBUSTION, TEMPERATURE, PROFILES, LOW PRESSURE, ACETYLENE, OXYGEN, THERMOCOUPLES, MEASUREMENT, ION DENSITY, DECAY, REACTION KINETICS, FUELS, MIXTURES, LANGMUIR PROBES, SPECTROSCOPY

IDENTIFIERS: (U) Ion Molecule Interactions, PE61102F, WUAFOSR2308A2

PERSONAL AUTHORS Calcote H F, Olson Douglas B

REPORT NO AEROCHEM TP 455

CONTRACT NO F49620-83 C 0150

PROJECT NO 23:3

TASK NO A2

MONITOR AFOSR TP 86 1005

UNCLASSIFIED REPORT

ABSTRACT II The ionic theory of incipient soot formation has been further evaluated. Accurate temperature profiles through a series of low pressure, 2-7 kPa, acetylene-oxygen flames on either side of the threshold soot index were measured using radiation loss compensated electrically heated thermocouples. With these data and Langmuir probe curves determined in these same flames, the absolute ion concentrations were obtained. These were in excellent agreement with similar data obtained by others using a molecular beam ion sampling technique. It was thus demonstrated that the ion concentration peak precedes the appearance of soot, the ion concentration is greater than the concentration of soot particles, and ions decay as soot appears. Characteristic times were calculated for a phi = 3 flame which indicate that ion molecule reaction rates are sufficient to account for soot formation. They also indicated the reactions which must be included in any detailed computer model of the process of soot formation. The ultimate goal of this study, experimental temperature dependence of the soot threshold of flames of varying fuel-oxygen mixtures produced the surprising result that the experimental temperature was a constant 2300 K. Although the absolute flame temperature varied over a large range.

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TENNESSEE UNIV. KNOXVILLE MEMORIAL RESEARCH CENTER AND HOSPITAL

U Fluorocarbon Tolerant Action on a Membrane Channel.
Effects of Formycin Derivatives, Cell Recovery and Detoxification

The capacity for cell division recovered during two additional days of incubation at 37 C. Cell recovery from each of the three formycin derivatives was accelerated by a simultaneous treatment with dilazep. The cell recovery technique is suggested as potential procedure to demonstrate toxicant selectivity for different cell types.

DESCRIPTIVE NOTE Final technical rept 1 Aug 82-31 Jul 86.

SEP 85 20P

PERSONAL AUTHORS Wigler Paul W

CONTRACT NO. AFOSR 82-0261

PROJECT NO. 2312

TASK NO. A5

MONITOR: AFOSR
TP 86 0926

UNCLASSIFIED REPORT

ABSTRACT U. Treatment of L5178Y mouse lymphoma cells with perfused n-decanoic acid (PDAS) at 30 C produced inactivation of a channel in the cell membrane; activity of the channel was estimated from the efflux of 2-aminopurine (AP). The cells were preloaded with 100 micromoles AP, put in a flow system, and AP efflux was estimated continuously at 21 C from the fluorescence emission of AP at 370 nm. The initial rate of AP efflux for control cells increased with AP was inhibited by the presence of uric acid in the external buffer with an apparent inhibition constant value of 355 micromoles for urate. These observations indicate a urate-sensitive channel for AP in the membrane of L5178Y cells. The AP channel was markedly inactivated by 150 micrograms/ml PFDA for 24 hr at 30 C. There was no significant recovery of AP flux after 3 days at 30 C in fresh growth medium; however, recovery was significant after 6 days. Recovery of activity of the AP channel occurred in one day at 37 C. Cell recovery studies were continued by experiments to show the effect of the drug dilazep on the recovery of L5178Y cells from treatment with three nucleoside toxins. A one day treatment at 37 C with formycin A, formycin B, or 5 deoxyformycin A produced an arrest in cell growth

DESCRIPTORS: (U) MEMBRANES (BIOLOGY), *TOXICOLOGY, *LYMPHOMAS, DRUGS, FATTY ACIDS, AMINES, PURINES, *FLUORINATED HYDROCARBONS, CELLS (BIOLOGY), CELL DIVISION, BUFFERS, CONSTANTS, CONTROL, DETOXIFICATION, EMISSION, EXTERNAL, FLOW, FLUORESCENCE, FLUORINATED HYDROCARBONS, GROWTH (GENERAL), INHIBITION, NUCLEOSIDES, RECOVERY, TOXIC AGENTS, TOXINS AND ANTITOXINS, URIC ACID, VALUE

IDENTIFIERS: (U) Formycin B, PG61102F, WUAFOSR2312A5

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AD A173 211 CONTINUED

LEHIGH UNIV BETHLEHEM PA DEPT OF METALLURGY AND
MATERIALS ENGINEERING

IDENTIFIERS (U) Fatigue crack propagation, Nickel alloy LC Astroloy, Hot isostatically pressed alloys

(U) A Study of Fatigue Crack Propagation in Powder Metallurgy Hot Isostatically Pressed Nickel-Base Alloy

DESCRIPTIVE NOTE Final rept. 1 Jan 83 30 Jun 86

AUG 86 32P

PERSONAL AUTHORS Hertzberg, Richard W

CONTRACT NO AFOSR 83 0029

PROJECT NO 4 96

TASK NO A1

MONITOR AFOSR
TR 86 0029

UNCLASSIFIED REPORT

ABSTRACT (U) LC Astroloy contains a complex distribution of rounded cuboidal gamma prime precipitates 0.1 micrometers edge dimension, encasing gamma prime 0.1 micrometers dia, and prior particle boundary particles of MC ZrO2. Alpha Al2O3 and M2B2, the majority of MC carbides were not found in conjunction with ZrO2 particles, as was previously assumed. With a sub-th value range found to vary with specimen geometry with lower values being associated with more cylindrical specimen geometries, with four point bending being the least identified increased grain size was in agreement with previous findings. The present work has identified several anomalies which exist with respect to crack closure measurements and their correlation of RCP rates. Closure values differed markedly in reported decreasing threshold determinations even though fatigue crack growth rates remained unchanged. The introduction of an artificial porosity in the wake of the crack tip in a 2024 aluminum alloy gave rise to large measured values of closure which had little influence on the crack growth rates. Apparently, crack closure had little influence on associated crack growth rates.

UNCLASSIFIED REPORT CRACK PROPAGATION
POWDER METALLURGY FATIGUE MECHANICS (AFOSR 83 0029)

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PENNSYLVANIA STATE UNIV UNIVERSITY PARK DEPT OF
MATERIALS SCIENCE AND ENGINEERING(U) High Temperature Oxidation Studies on Alloys
Containing Dispersed Phase Particles and Clarification
of the Mechanism of Growth of SiO₂

DESCRIPTIVE NOTE Annual rept. no. 1, 15 Aug 85 14 Aug 86.

AUG 86 58P

PERSONAL AUTHORS Simkovich, G.

PROJECT NO 2305

TASK NO. A2

MONITOR AFOSR

TR 85 0836

UNCLASSIFIED REPORT

ABSTRACT: (U) A relatively wide variety of oxidation tests were conducted on iron-based, cobalt-based and nickel-based alloys. Basically, these tests were conducted on alloys with various concentrations of the alloying elements chromium and/or silicon in the iron matrix with variable additions of Si₃N₄ particles. The Si₃N₄ particles dissolved to a major extent in the matrix material and also reacted with any oxygen present. Thus, the final alloy composition was iron + various levels of chromium + silicon at a number of levels + particles of unreacted Si₃N₄ and SiO₂. Kinetic studies were made at a number of temperatures at about 1 atm of dry oxygen. It was found that the rates of oxidation were extremely slow and were comparable to many of the slowest growing commercial alloys. Nickel and cobalt based alloys were also tested with additions of Si₃N₄ particles and were found to behave in a manner quite similar to that of the iron based alloys described above. A small number of oxidation tests at 1000 C with P sub O₂ approx. 1 atm. were also made with additions of SiAlON, a high temperature compound found in the Si-Al-O-N system, to cobalt-chromium alloys. The oxidation behavior of Ni-Cr-SiO₂ alloys has also been investigated. The final effort described in this report relates to the electrical short circuiting of SiO₂ layers growing on SiO₂ or Si₃N₄.
Keywords: Thermogravimetric Analysis, Microscopy

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DESCRIPTORS: (U) COBALT ALLOYS, DISPERSIONS, OXIDATION, IRON ALLOYS, NICKEL ALLOYS, CHROMIUM, PARTICLES, COMPOSITION (PROPERTY), COMMERCIAL EQUIPMENT, DRY MATERIALS, OXYGEN, HIGH TEMPERATURE, IRON, KINETICS, SILICON, MICROSCOPY, TEMPERATURE, OXIDATION, TEST METHODS, RATES, MATRIX MATERIALS, NICKEL, THERMOGRAVIMETRIC ANALYSIS, SILICON DIOXIDE, PHASE STUDIES, SILICON NITRIDES, REACTION KINETICS, PARTIAL PRESSURE, SILICON CARBIDES

IDENTIFIERS: (U) Dispersed phase particles, PE51102F, WUAFOSR2306A2

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO EVN54B
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AD A173 205 9 1 14 2

STATE UNIV OF NEW YORK AT BUFFALO DEPT OF CHEMISTRY

(U) Novel Application of the Quartz Crystal Microbalance
to Study Langmuir Blodgett Films

86 4P

STEARATES, MICROBALANCES, CRYSTAL OSCILLATORS, QUARTZ,
CRYSTALS, MASS, MEASURING INSTRUMENTS, SENSITIVITY, GOLD,
MOLECULAR STRUCTURE, REPRINTS

IDENTIFIERS: (U) WUAFDSR230383, PES1102F

PERSONAL AUTHORS: McGaffrey, Robert R.; Bruckenstein,
Stanley; Prasad, Paras N.

REPORT NO: SUN/ AB TR 1

CONTRACT NO: F49620 85 C 0052

PROJECT NO: 2 3 3

TASK NO: 83

MONITOR: AFOSR
TP 85 0954

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub in Langmuir, 12 12 p228-229 1986.

ABSTRACT: (U) An oscillating quartz crystal can be used as a very sensitive mass measuring device because its resonance frequency changes upon the deposition of a given mass to the crystal surface. The application of this phenomenon is widespread and has lead to terming this use of a quartz crystal as the quartz crystal microbalance. Sensitives on the order of 1 ng are readily obtained and the change in frequency is a linear function of the mass attached to the surface of the crystal. The sensitivity characteristics of the quartz crystal microbalance make it ideally suited to study fractional monolayer and multilayer films. Interest in Langmuir Blodgett films is widespread and, for example, one can form highly ordered ultrasubmicron thin films with interesting electronic and optical properties. In this paper we report our initial results applying the quartz crystal microbalance technique to study calcium stearate monolayer and successively deposited multilayer Langmuir Blodgett films. The determination of the mass deposited can provide useful information about molecular organization in such films.

DESCRIPTORS: (U) THIN FILMS, CALCIUM COMPOUNDS.

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NATIONAL BUREAU OF STANDARDS BOULDER CO ELECTROMAGNETIC TECHNOLOGY DIV

(U) Transient Losses in Superconductors

DESCRIPTIVE NOTE Final rept 1 Oct 82-30 Sep 85

JUN 86 63P

PERSONAL AUTHORS Goldfarb, R. B.

CONTRACT NO AFOSR-ISSA-82-00047

PROJECT NO 2306

TASK NO C1

MONITOR AFOSR
TR 86 0872

UNCLASSIFIED REPORT

ABSTRACT: (U) Under steady state conditions, there are no losses in superconducting wires. However, when subjected to alternating or transient magnetic fields or transport currents, losses in type II superconductors can become significant. This report deals with hysteresis losses at 4K measured by magnetization and ships between ac susceptibility. The theoretical and experimental relationships between ac susceptibility and magnetization as functions of dc field were examined in terms of the critical state model. Minor loop hysteresis loss was shown to be obtainable by direct measurement of loop area, from the imaginary component of ac susceptibility, and from the reversible susceptibility plus the critical current density or full-penetration field. Hysteresis and transport losses measured simultaneously in a Nb-Ti superconducting coil were found to agree substantially with the predictions of Minervini's two dimensional model. Hysteresis loss measurements in a series of fine filament Nb3Sn superconductors showed that the effective filament diameter is a function of interfilament separation and local area ratio of matrix material to Nb. A review of internal fields in superconductors showed the importance of demagnetization factors and internal fields for the correct analysis of magnetic data. A theoretical method of calibrating ac susceptometers for cylindrical specimens, which is based on a mutual-inductance

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calculation, was developed.

DESCRIPTORS: (U) *SUPERCONDUCTORS, *ELECTRICAL IMPEDANCE, *ALTERNATING CURRENT, ELECTROMAGNETIC SUSCEPTIBILITY, HYSTERESIS, TRANSIENTS, LOSSES, MAGNETIZATION, MAGNETOMETERS, NIOBIUM ALLOYS, TIN ALLOYS, TIN ALLOYS, TITANIUM ALLOYS

IDENTIFIERS: (U) Magnetic Susceptibility, Susceptometers, Type 2 Superconductors, WUAFOSR2306C1, PE61102F

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OREGON UNIV EUGENE DEPT OF PHYSICS

NORTH CAROLINA UNIV AT CHAPEL HILL CENTER FOR STOCHASTIC PROCESSES

(U) Krypton L-MM Auger Spectra: New Measurements and Analysis.

(U) Extension of Three Theorems for Fourier Series on the Disc to the Torus.

FEB 86 10P

JUN 86 21P

PERSONAL AUTHORS: Levin, Jon C.; Sorensen, Stacey L.; Grassemann, Bernd; Chen, Mau H.; Brown, George S.

PERSONAL AUTHORS: Miamee, A. G.

CONTRACT NO. F49620-85-C-0040

REPORT NO. TR-84

PROJECT NO. 2301

CONTRACT NO. F49620-82-C-0009

TASK NO. 14

PROJECT NO. 2304

MONITOR: AFOSR
TR 86-0970

TASK NO. A5

MONITOR: AFOSR
TR-86-0999

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub. in Physical Review A, v33 n2 p968 976 Feb 86.

UNCLASSIFIED REPORT

ABSTRACT (U) Krypton L-MM Auger spectra have been measured with good resolution and statistics and have been compared with relativistic calculations in intermediate coupling with configuration interaction. ground-state correlation and Coster-Kronig fluctuation shifts are found to be significant. A previously reported anomaly in the L2-M2,3M4,5 spectrum may be due to a phase error in earlier calculations.

SUPPLEMENTARY NOTE Pub. in Bulletin of the Australian Mathematical Society, v33 n3 p335-350 Jun 86

ABSTRACT: (U) Three well known facts of Fourier series on the disc are extended to Fourier series on the torus, a theorem of Szego, and the fact that any function in H^1 can be factored as the product of two functions in H^2 . Here the role of negative integers is played by the lattice points in the third quadrant. In earlier extensions of these theorems this role was played by half planes.

DESCRIPTORS (U) AUGER ELECTRON SPECTROSCOPY, KRYPTON, AUGER ELECTRON SPECTROSCOPY, ATOMIC SPECTRA, RELATIVITY THEORY, ELECTRON ENERGY, ELECTRON TRANSITIONS, REPRINTS

DESCRIPTORS: (U) FOURIER SERIES, FUNCTIONAL ANALYSIS, TOROID, HILBERT SPACE, REPRINTS

IDENTIFIERS (U) Coster-Kronig Transition Probabilities, Hartree-Fock Slater Approximation, AB Initio Calculations, WUAFDSR22301A4, PE61102F

IDENTIFIERS: (U) Noneuclidian Geometry, Stationary Fields, Riesz theorem, Szego theorem, WUAFDSR2304A5, PE61102F

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OKLAHOMA STATE UNIV STILLWATER DEPT OF CHEMISTRY

(U) Theoretical Studies of Vibrationally Assisted Reactions of the O₃ NO van der Waals Complex.

APR 86 14P

PERSONAL AUTHORS Arnold Craig Gettys, Nancy S Thompson,
Donald L Raff, Lionel M

CONTRACT NO AFOSR-82-0311

PROJECT NO 2303

TASK NO A2

MONITOR AFOSR
TR 86 0974

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub. in Jnl. of Chemical Physics. V84
n7 p3803-3813 1 Apr 86.

ABSTRACT: (U) The exchange reaction and dissociation dynamics of two O₃ dot NO van der Waals complexes upon vibrational excitation has been determined at two different internal energies form the results of quasiclassical trajectories. The dynamics for such complexes is found to resemble that for chemical reactions occurring under matrix isolation conditions and to be significantly different from the O₃ + NO bimolecular collision dynamics. Model specificity is found for reaction vibrational predissociation, and intermode energy transfer. Structure specificity is also observed for the van der Waals complexes. In most cases, the asymmetric stretching mode of O₃ is found to be the most effective in promoting reaction for predissociation and intermode energy transfer, the O bending mode is usually the most effective. A five-step mechanism consisting of two non RRKM reactions, a non-RRKM energy transfer step, and two RRKM steps is required to explain the overall reaction. Excitation of the hindered rotational of NO about the O₃ symmetry axis is found to significantly influence the dynamics in that partitioning of less than 2% of the energy into such motion dramatically increases the predissociation rate and by inference the intermode energy transfer rate. Excitation

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of the NO vibrational mode is found to be much less effective in promoting reaction or vibrational predissociation on this potential energy surface

DESCRIPTORS: (U) *EXCHANGE REACTIONS, *OZONE, *NITROGEN OXIDES, MOLECULAR VIBRATION, COVALENT BONDS, ENERGY TRANSFER, CHEMICAL DISSOCIATION, PARTICLE COLLISIONS, REPRINTS

IDENTIFIERS: (U) Van der waals forces, Internal energy, WUAFOSR2303A2, PE61102F

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AD-A173 196 7/3

TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY

SAN DIEGO STATE UNIV CA DEPT OF CHEMISTRY

(U) MNDO Calculations for the Dehydrocyclooctatetraenes.

(U) Gas-Phase Dyotropic Rearrangement of (Chloromethyl)dimethylsilane.

85 7P

PERSONAL AUTHORS: Dewar, Michael J.; Merz, Kenneth M., Jr.

86 5P

CONTRACT NO F49620-83C-0024

PERSONAL AUTHORS: Martin, J. G.; Ring, M. A.; O'Neal, H. E.;

PROJECT NO. 2303

CONTRACT NO. AFOSR-83-0209

TASK NO. B2

PROJECT NO. 2303

MONITOR: AFOSR

TASK NO. B2

TR 85-1049

MONITOR: AFOSR

TR 86-1065

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl of the American Chemical Society, v107 n22 p6175-6179 1985.

SUPPLEMENTARY NOTE: Pub. in Organometallics, v5 n6 p1228-1230 1986.

ABSTRACT: (U) MNDO, UMNDO, and MNDO/CI calculations are reported for the four dihydrocyclooctatetraenes and bicyclic valence tautomers: pentalene, benzocyclobutadiene, and bicyclo[5.1.0]octatetraene. MNDO predicts that bicyclo[5.1.0]octatetraene should be as stable as the parent dihydrocyclooctatetraene, which is known to exist. Two novel cyclic dienes formed by conrotatory or disrotatory ring opening of benzocyclobutene are also predicted by MNDO to be stable species.

DESCRIPTORS: (U) CYCLIC COMPOUNDS; HYDROGEN COMPOUNDS; QUANTUM CHEMISTRY; BENZENE COMPOUNDS; BUTADIENES; BUTENES; DIMERS; COMPUTATIONS; REACTANTS

IDENTIFIERS: (U) Octatetraenes; MNDO; Modified Neglect of Differential Overlap; Tautomers; Pentalene; WUAFOSR230382; PE61102F

DESCRIPTORS: (U) SILANES; METHYL RADICALS; CHLORINE; ISOMERIZATION; VAPOR PHASES; MOLECULAR STRUCTURE; FREE RADICALS; REACTION KINETICS; QUENCHING; ACTIVATION ENERGY; REPRINTS

IDENTIFIERS: (U) WUAFOSR2303B2; PE61102F

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MASSACHUSETTS UNIV. AMHERST. DEPT. OF PHYSICS. 34

(U) Computer Assisted Microscope for Adaptive Network Research

DESCRIPTIVE NOTE Final rept 1 Jun 85 31 May 86.

JUL 86 5P

PERSONAL AUTHORS Moore John W.

CONTRACT NO AFOSR 85 0079

PROJECT NO 2312

TASK NO A1

MONITOR: AFOSR
TR 85-0827

UNCLASSIFIED REPORT

ABSTRACT: (U) A computer-assisted light microscope (Leitz MPV-DADS) was purchased with funds provided by the S DoD Instrumentation Grant. The system is capable of photometric image scanning of autoradiographic material and very low power dark field and fluorescent photomicroscopy. These capabilities are essential for neuroanatomical research being conducted in two laboratories at this institution.

DESCRIPTORS: (U) *COMPUTER APPLICATIONS, *MICROSCOPES, IMAGES, ADAPTIVE SYSTEMS, AUTORADIOGRAPHY, DARKNESS, IMAGES, LABORATORIES, LOW POWER, MATERIALS, NETWORKS, PHOTOMETRY, SCANNING

IDENTIFIERS: (U) Fluorescent photomicroscopy, Neuroanatomy

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SPECTRON DEVELOPMENT LABS INC COSTA MESA CA

(U) Optical Technique for the Measurement of High Temperature Material Erosion

DESCRIPTIVE NOTE Annual rept 1 Mar 81 Mar 85.

APR 86 48P

PERSONAL AUTHORS: Arunkumar, K. D., Azzazy, M., Trolinger, J. O.

REPORT NO. SDL-86-2439-03

CONTRACT NO F49620-85-C-0046

PROJECT NO. 2308

TASK NO A3

MONITOR: AFOSR
TR-86-1053

UNCLASSIFIED REPORT

ABSTRACT: (U) A differential Michelson's interferometer capable of measuring path length variation of the order of 0.002 microns has been developed and tested. It has also been proven that this interferometer can be used to measure surface heights on diffuse objects. This ability of the interferometer will be used in profiling surfaces eroded electrically. To generate electrically eroded surfaces, a discharge chamber has been built and tested. Using copper electrodes, glow discharge has been struck and characterized. Work done on an eroded electrode with holographic interferometry shows that overall surface erosion of approximately lambda can be detected using this technique.

DESCRIPTORS: (U) *MICHELSON INTERFEROMETERS, *HIGH RESOLUTION, SURFACE ROUGHNESS, EROSION, HEIGHT, HOLOGRAPHY, INTERFEROMETRY, ELECTRODES, GLOW DISCHARGES, COPPER, PROFILES

IDENTIFIERS: (U) PE61102F, WUAFOSR2308A3

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DTIC REPORT BIBLIOGRAPHY

SEARCH CONTROL NO. EVN54B

AD-A173 183 14/2 17/1 20 13

STANFORD UNIV CA EDWARD L GINZTON LAB OF PHYSICS

(U) Cryogenic Acoustic Microscopy

DESCRIPTIVE NOTE: Annual technical rept 1 Apr 85-31 Mar 86.

JUL 86 35P

PERSONAL AUTHORS Quate C. F. ;

REPORT NO GL 4063

CONTRACT NO AFOSR 85-0103

PROJECT NO 2306

TASK NO A2

MONITOR AFOSR
TR 85-0832

UNCLASSIFIED REPORT

ABSTRACT (U) The progress on the ultra-high resolution acoustic microscope is described. Two main areas are investigated: signal to noise ratio and a mechanical scanner. The signal to noise ratio SNR is improved by developing higher efficiency acoustic transducers for generating coherent sound and superconducting bolometers for broadband detection of sound. Some experiments to understand the effects of pressure on liquid helium on the propagation of high intensity sound waves in superfluid helium are described. The possibility of utilizing parametric amplification of sound in liquid helium to improve the SNR is reported. Finally, the design and development of a new scanner which will have a wider scanning range with great resolution operating in pressurized liquid helium are also described.

DESCRIPTORS (U) ACOUSTIC MICROSCOPES SUPERFLUIDITY LIQUID HELIUM ELECTRONIC SCANNERS ACOUSTIC WAVES SIGNAL TO NOISE RATIO BOLOMETERS ACOUSTIC DETECTORS ZINC OXIDES GALLIUM ARSENIDES

IDENTIFIERS (U) Superconducting Bolometers PE61102F
WIAFOSR2406A2

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AD-A173 187 20/11

UNITED TECHNOLOGIES RESEARCH CENTER EAS HARTFORD CT

(U) Plastic Strain Localization in Superalloy Single Crystals.

DESCRIPTIVE NOTE: Final rept. Mar 83-Jun 86.

JUL 86 102P

PERSONAL AUTHORS Anton D. L. ; Giamei, A. F. ;

REPORT NO UTRC/R86-916534-3

CONTRACT NO F49620-83-C-0104

PROJECT NO 2306

TASK NO A1

MONITOR AFOSR
TR-86-0821

UNCLASSIFIED REPORT

ABSTRACT (U) Nickel-base superalloys are notorious for their inhomogeneous deformation and poor fatigue behavior. Previous studies that the slip was planar or equivalently, coarse, independent of alloy composition. In this research, single crystal nickel alloys of various gamma prime volume fraction and misfit were deformed under either monotonic or cyclic loading conditions and examined for slip distribution at very high magnification. The conclusion of this research was that the degree of slip localization in superalloys is decreased moderately by misfit and significantly by larger volume fractions of the strengthening gamma prime phase. This difference in behavior is reflected in the location of initiation sites. The alloys with more localized slip showed surface initiation. Attempts to understand the origin of such pores by changes in solidification or heat treatment parameters led to the conclusions that it was possible to influence pore size or the volume fraction porosity, but that some pores were always present. As a result, no enhancement of fatigue life was obtained, consistent with theory.

DESCRIPTORS (U) SUPERALLOYS STRAIN MECHANICS PLASTIC DEFORMATION FATIGUE LIFE SINGLE CRYSTALS

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STRAIN RATE PLASMA STRUCTURES CYCLIC TESTS GROWTH
GENERAL COMPRESSION FORTS FORTS MECHANICS
CRACKING FRACTURING NICKEL ALLOYS

BATTELLE PACIFIC NORTHWEST LAB RICHLAND WA

(U) Electrical and Thermal Transport Property Studies of
High Temperature Thermoelectric Materials

IDENTIFIERS U PE511025 WUAFDSR2205A1

DESCRIPTIVE NOTE Final rept 15 May 83-14 May 86

JUN 86 54P

PERSONAL AUTHORS Weber W J , Bates J L ; Griffin, C. W.
; Olsen L C

CONTRACT NO. F49620-83-C-0109

PROJECT NO. 2308

TASK NO. K1

MONITOR AFOSR
TR 86-0822

UNCLASSIFIED REPORT

ABSTRACT: (U) High-temperature electrical conductivity, Seebeck coefficient, and thermal conductivity measurements were used to investigate the thermoelectric properties of several refractory oxide systems. Particular emphasis was placed on an investigation of lanthanum chromite and yttrium chromite at systems for testing proposed transport models. The substitution of divalent metal ions for La and Y results in the formation of small polarons as charge carriers. Experimentally, results show that the most effective divalent substitutes for La and Y are Sr and Ca, respectively, due to similar ionic size. Both electrical conductivity and Seebeck coefficient exhibit behavior consistent with thermally-activated transport by small polaron hopping. The additional substitution of Mn for Cr or S for Q decreased both electrical conductivity and Seebeck coefficient. The thermal conductivity generally decreased with temperature and dopant concentration. The dimensionless figure of merit for these oxides approached 0.2 at high temperatures.

DESCRIPTORS: (U) TRANSPORT PROPERTIES, REFRACTORY MATERIALS, THERMOELECTRICITY, CHARGE CARRIERS, COEFFICIENTS, ELECTRICAL CONDUCTIVITY, ELECTRICAL PROPERTIES, FIGURE OF MERIT, HIGH TEMPERATURE, IONS.

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MEASUREMENT METALS. MODELS. OXIDES. SEEBECK EFFECT
THERMAL CONDUCTIVITY THERMAL PROPERTIES. THERMAL
RADIATION. VALENCE

NEW MEXICO UNIV ALBUQUERQUE NM CENTER FOR ADVANCED
STUDIES

IDENTIFIERS (U) Thermoelectric Materials Lanthanum
Chromite, Yttrium Chromite, Polaron, PE61102F,
WUAFDSR2308K1

(U) The Correlated Emission Laser - Towards High
Sensitivity Ring Laser Gyroscopes and Wave Detectors.

DESCRIPTIVE NOTE: Final rept. 1 Mar 85-31 May 86.

SEP 86 114P

PERSONAL AUTHORS: Scully, M. D.; Pedrotti, L. M.;

CONTRACT NO. AFOSR-85-0109

PROJECT NO. 2301

TASK NO. A8

MONITOR: AFOSR
TR 85-0899

UNCLASSIFIED REPORT

ABSTRACT: (U) In addition to this fundamental research in the nature of the noise present in a measurement of phase, and the consequent development of the CEL concept, we have carried out research in a number of related topics. This includes acting as a theoretical support group for (now defunct) large passive, resonant ring gyroscope experimental effort which was carried out at F. Seiler Laboratories at the Air Force Academy. In addition, a preliminary experimental RLG effort has begun at the University of New Mexico under the auspices of this contract. Finally, we studied in a somewhat general manner the quantum distribution functions. Techniques involved in this latter study are very useful in calculations of quantum noise. Author.

DESCRIPTORS (U) RING LASERS; PHASE MEASUREMENT; DETECTORS; NOISE; RADIATION MEASURING INSTRUMENTS; QUANTUM THEORY; RADIATION MEASURING INSTRUMENTS; LASER CAVITIES; GRAVITATIONAL FIELDS; HETERODYNING; GRAVITY WAVES; MICROWAVES; POLARIZATION; SENSITIVITY; RADIATION PHASE SHIFT; GROUND LEVEL; SPACEBORNE; QUENCHING; SPONTANEOUS COMBUSTION; THEORY

IDENTIFIERS (U) CEL (Correlated Emission Lasers); Passive Detectors; GWD (Gravity Wave Detectors)

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13 2 14 2 13 2

Radiation Environment: Radioactive decay, cosmic rays, lightning strikes
Threatening Factors: Electromagnetic interference, magnetic fields, gel
In-Quantum Biology: HCL Home Effect, Quantum
Noise: PESTLE, weather, politics

UTAH UNIV SALT LAKE CITY DEPT OF CIVIL ENGINEERING
 Properties of Compacted Backfill Split Hopkinson
 Pressure Bar

DESCRIPTIVE NOTE: Final report 1 Nov 82-28 Feb 85.

DEC 85 267P

PERSONAL AUTHORS: Olsen, Joseph M.; Felice, Conrad W.;

CONTRACT NO AFJ5R-83-0014

PROJECT NO 2303

TASK NO. B2

MONITOR: AFOSR
TR-86 0825

UNCLASSIFIED REPORT

ABSTRACT: (U) Loading on buried structures subjected to nuclear or conventional high explosive weapons is strongly influenced by the backfill adjacent to and overlying the structure. The relative stiffness of the structure and the surrounding soil and their interactions will determine the level and extent of damage due to blast loads. While soil response may be in the laboratory this environment must be able to reflect the type of confinements, magnitude of stress change, and the time scale of loading expected in the problem. The split Hopkinson pressure bar (SHPB) technique has been adapted to measure the dynamic response of soil to impulse loads. This technique can significantly extend the range of stresses and strain rates that can be applied beyond the capabilities of conventional laboratory dynamic soil testing equipment. Various assumptions and considerations involve in designing an SHPB experiment and evaluating the data with soil as a specimen are discussed in detail. Soils have low wave speeds, nonlinear hysteretic behavior and low unconfined compressive strength which complicate SHPB testing. Insight is provided as to how these factors affect experimental accuracy and data reliability. The dynamic soil stress-strain response was found to be governed principally by the initial gas porosity of the specimen. Examples of stress-strain curves are present for specimens with applied stresses and strain rates up

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SEARCH CONTROL NO EVN54B

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AD-A173 181 20/10 7/4

to 520 MPa and 4000 s respectively

DESCRIPTORS U BACKFILLS SOIL DYNAMICS IMPULSE
LOADING DYNAMIC TESTS DYNAMIC LOADS COMPACTING
DYNAMIC RESPONSE LABORATORY TESTS SOIL TESTS STRAIN
RATE STRESSES RATES COMPRESSIVE PROPERTIES STRESS
STRAIN RELATIONS SAND POROSITY PORE PRESSURE

IDENTIFIERS U SHPB Split Hopkinson Pressure Bar
Porewater Pressure PE61102F WJAFOSR2303B2

TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY

U MNDO Calculations for Compounds Containing Mercury.

85 4P

PERSONAL AUTHORS Dewar, Michael J.; Grady, Gilbert L.;
Merz, Kenneth M., Jr.; Stewart, James J.

CONTRACT NO F49620-83-C-0024

PROJECT NO 2303

TASK NO B2

MONITOR AFOSR
TR-86-1056

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Organometallics, v4 n11 p1965-
1966 1985

ABSTRACT U The MNDO method is now established as a
practical procedure for studying chemical behavior giving
results comparable with those from quite good ab initio
models (e.g., 4-31G) while requiring only one thousandth
as much computer time. MNDO has been parametrized for
mercury. Calculations are reported for a number of
compounds of mercury. The results are comparable with
those for other metals.

DESCRIPTORS U QUANTUM CHEMISTRY, MERCURY COMPOUNDS,
HEAT OF FORMATION, IONIZATION POTENTIALS, DIPOLE MOMENTS,
MATHEMATICAL MODELS, CHEMICAL PROPERTIES, MERCURY,
COMPUTERS, TIME, METALS, REPRINTS

IDENTIFIERS U MNDO: Modified Neglect of Differential
Overlap WJAFOSR2303B2, PE61102F

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MASSACHUSETTS INST OF TECH CAMBRIDGE

(U) Studies of the Auroral Zone Ionosphere using the
Mithras Data Base. Final report 1983-1985

DESCRIPTIVE NOTE Final report Oct 82-Oct 85

JUN 86 24P

CONTRACT NO. AFOSR-83-0002

MONITOR AFOSR
TR 86 1067

UNCLASSIFIED REPORT

ABSTRACT (U) The Auroral Science group participated in the multi radar MITHRAS experimental campaign. Coordinated observations of the Earth's ionosphere, magnetosphere, and thermosphere were conducted using the Millstone Hill, Massachusetts, Chatanika, Alaska, and European EISCAT incoherent scatter radars in conjunction with a variety of ground based and satellite experiments. Chatanika and EISCAT are about 11 hours apart in magnetic local time, and Millstone Hill precedes Chatanika and follows EISCAT by more than 6 hours. Each of the three radars was able to study auroral zone latitudes, but at widely spaced longitudes. Hence the MITHRAS program was well suited to study the class of problems which involve universal time local time ambiguities, or equivalently, space time differences. Set operating modes were used at the radar sites to best match the requirements of the several campaign objectives. The overall MITHRAS program was motivated by a desire to provide a well documented set of radar observations of the mid and high latitude ionosphere during the brief interval when three incoherent scatter facilities would be available. At Millstone Hill the MITHRAS program involved the development of specific radar operating modes and analysis techniques appropriate for multi-instrument studies. An extensive data set resulted from the campaign.

DESCRIPTORS (U) AURORAE, RADAR REFLECTIONS, IONOSPHERIC DISTURBANCES, SOLAR CYCLE, MAGNETIC STORMS, REGION DATA BASES, ELECTRON DENSITY, DIURNAL VARIATIONS, CONVECTION, TRANSPORT PROPERTIES, RESEARCH MANAGEMENT

IDENTIFIERS (U) Mithras Data Base

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MINNESOTA UNIV ST PAUL INST FOR MATHEMATICS AND ITS APPLICATIONS

(U) Scientific Computation and Mathematical Modelling

DESCRIPTIVE NOTE Final technical rept 11 Jan 85-10 Jan 86

FEB 86 9P

PERSONAL AUTHORS Miller, Willard, Jr.; Sell, George; Weinberger, Hans

REPORT NO. U OF M 0634-5139

CONTRACT NO. AFOSR-85-0116

PROJECT NO. 2304

TASK NO. A1

MONITOR AFOSR
TR 86-0966

UNCLASSIFIED REPORT

ABSTRACT (U) This is the final technical report for an equipment grant which provided microcomputers to individual offices to be used as research tool, by faculty in the School of Mathematics and participants in the programs of the Institute for Mathematics and Its Applications. Many research projects are underway, also mathematical software is being developed for use in the Dynamical Systems, Stochastic Modeling and Combinatorics Laboratories. The microcomputers will soon be linked by an Ethernet and are serving as terminals for access to the University's CRAY 2 supercomputer.

DESCRIPTORS (U) COMPUTER COMMUNICATIONS, CONFIGURATIONS, MATHEMATICAL MODELS, MICROCOMPUTERS, COMPUTATIONS, MATHEMATICAL PROGRAMMING, SUPERCOMPUTERS, ACCESS

IDENTIFIERS (U) CRAY 2 supercomputers, WUAFOSR2304A1, PE61102F

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SEARCH CONTROL NO. EVN518

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AD A173 170 6/16

TENNESSEE UNIV MEMPHIS DEPT OF ANATOMY AND NEUROBIOLOGY

CITY OF HOPE RESARCH INST DURATE CA

UI Changes in Sensory Responsiveness in Behaving Primates

UI Long-Term Synaptic Plasticity and Learning in Neuronal Networks.

DESCRIPTIVE NOTE Annual technical rept Jul 85 Jul 85.

DESCRIPTIVE NOTE Final rept. 1 Jun 83-31 May 85.

JUL 85 14P

JUL 86 14P

PERSONAL AUTHORS Nelson Randall U

PERSONAL AUTHORS Brown Thomas H

CONTRACT NO AFOSR 85-0217

CONTRACT NO F49620-83-C-0121

PROJECT NO 2312

PROJECT NO 2312

TASK NO A2

TASK NO A1

MONITOR AFOSR

MONITOR AFOSR

TR 86-0835

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

ABSTRACT The three main goals of our research this year have been 1) to establish a functional behavioral and neuronal electrophysiological recording laboratory 2) to train research fellows to perform controlled wrist movement, 3) to begin recording from the sensorimotor cortex and 4) to begin recording from the changes in sensory response to sensory and motor inputs. These we have achieved in the laboratory. We have also begun recording from the sensorimotor cortex and the changes in sensory response to sensory and motor inputs. These we have achieved in the laboratory. We have also begun recording from the sensorimotor cortex and the changes in sensory response to sensory and motor inputs. These we have achieved in the laboratory.

DESCRIPTORS: NEUROPHYSIOLOGY, TECH-VIP, RECEPTIVE, RESPONDER, PRIMATES, LABORATORY, ANIMALS, SENSORY, MOTOR, REACTION TIME, VISUAL, REACTION, ES, STIMULI, MOTOR NEURONS, INFORMATION, RESPONSE, VIBRATION, SIGNAL PROCESSING

UNCLASSIFIED REPORT F49620-83-C-0121 168102F

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ENCLOSURE

ABSTRACT: UI The purpose of this project was to understand the mechanisms by which use dependent changes in synaptic transmission can encode information into neural networks. Our working hypothesis that guided this effort was that long term synaptic potentiation (LTP) is an excellent candidate mechanism for information storage in the nervous system. The project was organized around three interrelated efforts: First, new experimental and theoretical techniques for analyzing synaptic function were developed. Second, these and conventional methods were used to understand the biophysical and molecular mechanisms responsible for LTP in several different tissues. Third, the relationship between LTP and several forms of information encoding schemes was demonstrated. These included synaptic analogs to classical conditioning, Hebb's postulate, and a modified version of Kiehl's postulate. The results add confidence to our working hypothesis, they provide new insights into our understanding of synaptic plasticity, and they will enable the definitive tests of some leading theories.

DESCRIPTORS: UI, 'NEUROCHEMICAL TRANSMISSION', 'SYNAPTIC', 'HIPOCAMPUS', 'NERVE CELLS', 'POTENTIAL THEORY', 'INFORMATION SYSTEMS', 'NERVOUS SYSTEM', 'NEUROPHYSIOLOGY', 'LEARNING', 'MEMORY', 'PSYCHOLOGY', 'PLASTIC PROPERTIES

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7 4

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SYNOPSIS: VIBRATIONAL PARTICIPATION IN CHEMICAL REACTIONS
SYNOPSIS: VIBRATIONAL PARTICIPATION IN CHEMICAL REACTIONS

CALIFORNIA UNIV BERKELEY DEPT OF CHEMISTRY

U Vibrational Participation in Chemical Reactions

DESCRIPTIVE NOTE: Final rept. 1 Nov 81 31 Oct 85.

AUG 85 11P

PERSONAL AUTHORS: Pimentel, George C.

CONTRACT NO AFOSR-82-0031

PROJECT NO 2303

TASK NO B1

MONITOR AFOSR
TR 85-0824

UNCLASSIFIED REPORT

ABSTRACT: (U) Evidence for mode selective excitation of bimolecular reactions has been obtained in our laboratories under AFOSR support. Many laboratories have endeavored to demonstrate mode selective excitation of either unimolecular reactions since tunable lasers have come into the hands of chemists. Success can be attributed to use of the solid inert gas environment at cryogenic temperatures (12K) and investigation of bimolecular reactions that can be excited with photons of sufficiently low energy that the reactant energy level diagram is still sparse. A significant, perhaps crucial, part of this technique is that rotational degrees of freedom are frozen out. Our first system selected for study was the $\text{NO} + \text{O}_3$ reaction. The fluorine olefin reactions, $\text{F}_2 + \text{ethylene}$ and $\text{F}_2 + \text{allene}$, provided our real successes. These reactions showed, first, that the reactions can be stimulated with tuned laser excitation of the olefin and, second, that the quantum yield is very strongly dependent on the energy of the exciting photon. HF Rotational Lasers. One of the significant and least understood aspects of the performance of the HF chemical laser has been the role of rotational degrees of freedom in vibrational relaxation. Nanosecond Infrared Spectroscopy

DESCRIPTORS: (U) REACTION KINETICS, MOLECULE MOLECULE INTERACTIONS, MOLECULAR VIBRATION, PHOTOCHEMICAL

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REACTIONS, LASER APPLICATIONS, FLUORINE, OLEFIN POLYMERS,
COLLISIONS, CHEMICAL LASERS, CHEMICAL REACTIONS,
CRYOGENICS, DEGREES OF FREEDOM, DIAGRAMS, ENERGY, ENERGY
LEVELS, ENVIRONMENTAL, GASES, HYDROGEN FLUORIDE LASERS,
INERT MATERIALS, INFRARED SPECTROSCOPY, LOW ENERGY,
MOLECULES, PHOTONS, QUANTUM THEORY, REACTANTS, CHEMISTRY,
RELAXATION, ROTATION, SOLIDS, TEMPERATURE, TUNABLE LASERS,
VIBRATION, YIELD

IDENTIFIERS U WUAFOSR2303B1, PEG1102F

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MASSACHUSETTS UNIV AMHERST DEPT OF POLYMER SCIENCE AND
ENGINEERING

(U) Research Equipment DoD URIP.

DESCRIPTIVE NOTE Final rept. 15 Sep 84-14 Sep 85.

AUG 86 11P

PERSONAL AUTHORS Karasz Frank E ;

CONTRACT NO. AFOSR-84-0307

PROJECT NO 2917

TASK NO. A2

MONITOR AFOSR
TR-86 0922

UNCLASSIFIED REPORT

ABSTRACT (U) The grant provided substantial funding for
a state-of-the-art transmission electron microscope and
for a variety of spectrometric equipment and ancillary
facilities. Both areas of instrumentation are heavily
used by DoD related and other polymer science researchers
and both provide the most versatile and sophisticated
instrumentation available

DESCRIPTORS (U) POLYMERS, INSTRUMENTATION,
SPECTROMETERS, ELECTRON MICROSCOPES, UNIVERSITIES

IDENTIFIERS (U) Transmission electron microscopes, URIP,
PEG1102F, WUAFOSR2917A2

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AD A173 157 6/20 6/1F 6/3 6

ILLINOIS UNIVERSITY OF SCIENCE AND TECHNOLOGY ENGINEERING RESEARCH CENTER FOR COMPOUND SEMICONDUCTOR MICROELECTRONICS

U Amorphous semiconductors in Gallium Arsenide

DESCRIPTIVE NOTE Annual technical rept 1 Feb 86 31 Jan 86

JUL 86 33P

PERSONAL AUTHOR Stillman Gregory E

CONTRACT NO AFOSR 83 0030

PROJECT NO 2312

TASK NO A3

MONITOR AFOSR TR-86-0945

UNCLASSIFIED REPORT

ABSTRACT: U Low temperature photoluminescence spectroscopy has been applied to the study of high purity GaAs grown by liquid phase epitaxial technique. Vapor phase epitaxial growth techniques have been used in combination with analytical techniques to study the acceptor species present in high purity epitaxial GaAs. The incorporation of the amphoteric elements has been studied for different growth conditions in view of the epitaxial growth techniques.

DESCRIPTORS: U GALLIUM ARSENIDES, EPITAXIAL GROWTH, TEMPERATURES, SEMICONDUCTORS, AMPHOTIC, PHOTOGRAPHY, ELECTROSCOPY, LIQUID PHASES, VAPOR PHASES, GROWTH, ANALYSIS, HALL EFFECT, COPING, INDIUM PHOSPHIDES

DESCRIPTORS: U ORGANIC PHOSPHORUS COMPOUNDS, CHOLINESTERASE INHIBITORS, CHEMORECEPTORS, GENETICS, ANTIDOTES, TOXICITY, PROPYL RADICALS, FLURIGINE, NICOTINE, CONVULSIVE DISORDERS, MODELS, GENES, CONTROL, HIPPOCAMPUS, ACETYLCHOLINESTERASE, BRAIN DAMAGE, CHOLINERGIC NERVES, MICE, REPRINTS

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AD-A173 155 5/10 6/16

IDENTIFIERS U. PE61102, WJAFOSR2312ZA3

NEW YORK UNIV N Y

(U) Neuronmagnetic Investigation of Workload and Attention.

DESCRIPTIVE NOTE: Rept. no. 1 (Final) 1 Jan 82-31 Dec 84.

JUN 86 51P

PERSONAL AUTHORS: Kaufman, Lloyd ; Williamson, Samuel J. ;

CONTRACT NO. F49620-82-K-0014

PROJECT NO. 2313

TASK NO. A4

MONITOR: AFOSR
TR-86-0913

UNCLASSIFIED REPORT

ABSTRACT: (U) During the period covered by this report, we made major advances in the technology associated with neuromagnetic measurements. These included the demonstration of the effectiveness of electronic cancellations in reducing unwanted effects of ambient field noise. We also developed a high-precision sensor positioning system, designed and constructed a device for accurately positioning the subject's head under the sensors, and developed advanced software for a multi-sensor system. Experiments during this period included one in which we demonstrated modulation of the EEG coincident with the onset of the N100 component of a visual response to infrequent stimuli presented under the oddball paradigm. We collaborated on another experiment with the Cognitive Psychophysiology Laboratory of the University of Illinois in a study of P300 related to the presentation of alphanumeric stimuli. The results confirmed over earlier findings using abstract visual stimuli, i.e., the equivalent current dipole source of P300 is in or near hippocampal formation.

DESCRIPTORS: (U) *PSYCHOPHYSIOLOGY, *WORKLOAD, *ATTENTION, *PERFORMANCE (HUMAN), *MAGNETOENCEPHALGRAMS, ELECTROENCEPHALOGRAPHY, COGNITION, RESPONSE, MAPPING, MULTISENSORS, HIPPOCAMPUS, ELECTRIC CURRENT, SIGNAL TO NOISE RATIO, VISUAL CORTEX, STIMULI, BRAIN

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IDENTIFIERS U. Chemomagnetics, P. 1000 paradigms,
ERE Event Related Potentials, Event related potentials
PE 61102F WJAFOSR2312A4

AD-A173 152 7-4

OKLAHOMA STATE UNIV STILLWATER DEPT OF CHEMISTRY

U. Dynamics of Unimolecular Dissociation of Sillylene.

APR 86 9P

PERSONAL AUTHORS: NoorBatcha, I.; Raff, Lionel M.; Thompson,
Donald L.; Viswanathan, R.;

CONTRACT NO. AFOSR-82-0311

PROJECT NO. 2303

TASK NO. A2

MONITOR: AFOSR
TR-86-1043

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Chemical Physics, v84
n8 p4341-4346, 15 Apr 86.

ABSTRACT: (U) The semiempirical valence-bond surface
formulated for the unimolecular dissociation of SiH₂ has
been fitted to an analytical function of the type
suggested by Murrell and co-workers. The fitted surface
accurately represents most of the experimental and CI
results. The dynamics of the unimolecular dissociation of
SiH₂ to form Si and H₂ have been investigated by
classical trajectory methods on this fitted surface. The
effect of describing the initial state of the molecule
using normal and local mode approximations has been
studied. In spite of the presence of the heavier atom, no
bond or mode specificity is observed. The product energy
distribution is found to be statistical. Using the RRK
model, the high-pressure limiting rate coefficient is
found to be $k(T, \infty) = 3.38 \times 10^{-10}$ to the 12th power
exp -61 kJ/mol/RTs, which is less than the
dissociation rate for SiH₄. This has been attributed to
the higher activation energy for SiH₂ and to a
statistical factor.

DESCRIPTORS: (U) *SILANES, *CHEMICAL DISSOCIATION,
*MOLECULAR PROPERTIES, SURFACES, TRAJECTORIES, REACTION
KINETICS, COEFFICIENTS, ACTIVATION ENERGY, STATISTICAL
PROCESSES, ENERGY TRANSFER, POTENTIAL ENERGY, VAPOR
DEPOSITION, REPRINTS

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IDENTIFIERS: (U) Silylene, PE61102F WUAFOSR2303A2

STANFORD UNIV CA DEPT OF CHEMISTRY

(J) Vibrationally State-Selected Reactions of Ammonia Ions.
1. NH sub 3+ (v) +D sub 2,

MAY 86 12P

PERSONAL AUTHORS: Morrison, Richard J.; Conaway, William E.
; Ebata, Takayuki; Zare, Richard N.;

CONTRACT NO. F49620-85-C-0021

PROJECT NO. 2307

TASK NO. A2

MCNITOR: AFOSR
TR-86-1016

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub in Jnl. of Chemical Physics, v84
n10 p5527-5535, 15 May 86.

ABSTRACT: (U) Resonance enhanced multiphoton ionization has been applied to the production of vibrationally state-selected ion beams. Ammonia ions are selectively formed with a specific number of vibrational quanta in the v sub 2 umbrella bending mode. The effect of vibrational excitation of this mode on the reaction of NH3(+) (X, v = 0 to 9) with D2 is examined over the 0.5 to 10 eV center-of-mass kinetic energy range in a tandem quadrupole mass spectrometer. Under these conditions, (1) abstraction of a D atom to form NH3D(+) is the dominant reaction channel, (2) NH3D(+) having sufficient internal energy may decompose to yield NH2D(+) and this decomposition process is enhanced by vibrational excitation of the NH3(+) reagent, and (3) NH2D(+) is also formed by direct hydrogen-deuterium exchange of NH3(+) with D2, but this channel appears as a minor contribution which is insensitive to the vibrational excitation of the NH3(+). A spectator stripping model is able to account for the ratio of NH2D(+) to MH3D(+) as a function of the NH3(+) translational and vibrational energy.

DESCRIPTORS: (U) CATIONS, AMMONIA, PHOTOIONIZATION, ION BEAMS, VIBRATIONAL SPECTRA, EXCITATION, DEUTERIUM, KINETIC ENERGY, EXCHANGE REACTIONS, REPRINTS

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IDENTIFIERS 1 100 molecule interaction with Multiphoton Ionization PE61102F WUAFOSR2607A2

VIRGINIA INST OF MARINE SCIENCE GLOUCESTER POINT

(U) Solution of Hydrocarbons in a Hydrocarbon-Water System with Changing Phase Composition due to Evaporation.

MAR 86 4P

PERSONAL AUTHORS Burris, David R.; MacIntyre, William G.

CONTRACT NO. AFOSR-83-0036

PROJECT NO 2303

TASK NO 82

MONITOR AFOSR TF-86-0990

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE. Pub. in Environmental Science and Technology, v20 n3 p296-299 Mar 86

ABSTRACT: (U) Pure water was brought into contact with a four component liquid hydrocarbon phase comprised of methylcyclohexane, ethylbenzene, tetralin, and 1-methylnaphthalene. The headspace above the hydrocarbon phase was continually purged with N₂ to provide a controlled evaporative loss. Hydrocarbon concentrations in the water and hydrocarbon phases changed due to dissolution and evaporation and were measured as a function of time. A surface renewal mass transfer model is congruent with the observed hydrocarbon concentrations in the aqueous phase. Hydrocarbon-phase composition and component interactions are important in determining the time dependence of the aqueous phase composition. The results have implications concerning the fate of components of petroleum products discharged in the aquatic environment.

DESCRIPTORS (U) *HYDROCARBONS *WATER *PHASE STUDIES, *EVAPORATION, LIQUID PHASES, METHYL RADICALS, HEXANES, ETHYL RADICALS, BENZENE, NAPHTHALENES, NITROGEN PURGING, MASS TRANSFER, OIL SPILLS, REPRINTS

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NORTH CAROLINA STATE UNIV AT RALEIGH DEPT OF MATHEMATICS

COLUMBIA UNIV NEW YORK DEPT OF CHEMISTRY

(U) Index Two Linear Time Varying Singular Systems of Differential Equations II.

(U) Modification of Chemical Reactivity by Cyclodextrins: Observation of Moderate Effects on Norrish Type I and Type II Photobehavior.

86 12P

86 5P

PERSONAL AUTHORS: Campbell, Stephen L.

PERSONAL AUTHORS: Singh, Sharat; Usha, Govindarajan; Tung, Chen-Ho; Turro, Nicholas J.; Ramamurthy, Vaidhyanthan;

CONTRACT NO AFOSR 84-0240 NSF-DMS83 16026

PROJECT NO 2304 CONTRACT NO AFOSR-84-0040

TASK NO A1 PROJECT NO 2303

MONITOR AFOSR TR-86 1040 TASK NO 82 MONITOR AFOSR TR-86-1020

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Circuits Systems Signal Process, 15 of p97 107 1986

UNCLASSIFIED REPORT

ABSTRACT (U) Linear time varying singular systems of differential equations of the form $\dot{A}(t)x(t) + B(t)x(t) = f(t)$ where $A(t)$ is singular and the system has index at most two are considered. Recent results on their analytic solution are improved on. Examples are given that show these results are not easily extended.

SUPPLEMENTARY NOTE: Pub in Jnl. of Organic Chemistry, v51 n6 p941-944 1986.

ABSTRACT (U) The photochemistry and photophysics of organic molecules in organized assemblies are being studied with great interest in order to understand the features controlling the selectivity in the photoreactions brought about by these media. These studies have paved the way to an intriguing number of possibilities by which photoreactivity can be modified. In this connection, we have investigated the photobehavior of a number of phenyl alkyl ketones and alpha, alpha-dimethylphenyl alkyl ketones incorporated in the hydrophobic interior of cyclodextrin cavities. It was anticipated that a cyclodextrin cavity might impose certain constraints on product formation from the type I and type II processes, which these ketones undergo.

DESCRIPTORS (U) LINEAR SYSTEMS; THEOREMS; DIFFERENTIAL EQUATIONS; AIR FORCE RESEARCH; REPRINTS

IDENTIFIERS (U) Linear Time Varying Singular Systems. PE61102F WUAFOSR2301A1

DESCRIPTORS: (U) *PHOTOCHEMICAL REACTIONS, *KETONES, *PHENYL RADICALS, *ALKYL RADICALS, CYCLIC COMPOUNDS, STARCHES, CAVITIES, HYDROPHOBIC PROPERTIES, REPRINTS

IDENTIFIERS: (U) Photophysics, Cyclodextrin, PE61102F, WUAFOSR2303B2

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VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY REPORT
OF AEROSPACE AND MECHANICAL ENGINEERING

An Experimental Study of Active Vibration Control

DESCRIPTIVE NOTE Annual Technical Report 1 June 85 29 Jan
86

JUL 85 85

PERSONAL AUTHORS Hallauer William L and Purvis Anthony
Jr

CONTRACT NO F49620-85 C 0024

PROJECT NO 2002

TASK NO B1

MONITOR AFOSR
TR 85 1003

UNCLASSIFIED REPORT

ABSTRACT U Complementary experimental theoretical studies were conducted on three separate topics, all of which are related to the dynamics and control of highly flexible large space structures (LSS) in Earth orbit: (1) active damping of vibrations; (2) structural wave propagation; and (3) development of small, flexible laboratory structures having a maneuverable rigid body mode. In the active damping study on a laboratory structure of moderate modal complexity, very good agreement was achieved between experimental measurements and theoretical predictions. The type of active damping applied, output feedback with dual collocated control sensors and actuators, should be considered as a candidate for implementation on first-generation LSS because of its stability robustness. The study of wave propagation is focused primarily on transient flexural response of a two dimensional grid structure to a suddenly applied sinusoidal force at one point. The study is not completed, so results are not presented. New laboratory structures with a maneuverable rigid body mode were built and analyzed. They were relatively simple planar structures composed of thin walled beam members. They exhibited some unusual dynamic characteristics such as variable natural frequencies, snap buckling, and other

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SEARCH CONTROL NO EVN54B

AD A173 144 CONTINUED

nonlinearities. Finite element modeling generally failed to predict the measured vibration modes and the unusual characteristics.

DESCRIPTORS: (U) SPACE SYSTEMS, STRUCTURAL PROPERTIES, CONTROL SYSTEMS, DAMPING, VIBRATION, DYNAMICS, ACTUATORS, FLEXIBLE STRUCTURES, GRIDS, WAVE PROPAGATION, DYNAMIC RANGE, SPACECRAFT COMPONENTS, SATELLITE ANTENNAS

IDENTIFIERS: (U) LSS, Large Space Structures, PE61102F, WUAFOSR2302B1

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DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN54B

AD-A173 143 CONTINUED

FLOW RESEARCH CO KENT WA

(U) Direct Numerical Simulation of an Unpremixed Jet Flame.

DESCRIPTIVE NOTE Annual rept 15 Feb 85 16 Feb 86

MAR 86 55P

PERSONAL AUTHORS GIVILP Joul W H Metcalfe P W

REPORT NO FLOW TR 369

CONTRACT NO F49620 85 C 0057

PROJECT NO 23.3

TASK NO A2

MONITOR AFOSR
TR 85 1063

UNCLASSIFIED REPORT

ABSTRACT (U) Direct numerical simulations have been used to study the effects of large coherent structures in two dimensional unpremixed chemically reacting mixing layers under both temporally evolving and spatially developing conditions. In the temporally evolving mixing layer calculations, a temperature dependent chemical reaction was incorporated into a computer code that uses pseudospectral numerical methods. The nonequilibrium effects leading to the local quenching of a diffusion flame were investigated. Results indicate that the primary important parameter to be considered for flame extinction is the local instantaneous scalar dissipation rate convected at the scalar stoichiometric value. At locations where this value is increased beyond a critical value, the local temperature decreases and the instantaneous reaction rate drops to zero leading to local quenching of the flame. Purposes of simulating spatially developing flows, a two dimensional hybrid pseudospectral finite difference code was constructed. The resulting code was tested with simulations of the pretransitional region of laboratory mixing layers. Examination of some of the statistical quantities and comparison of the results of these simulations are in good agreement with recent experimental data obtained at the California Institute of Technology and

Stanford University. The asymmetric nature of the mixing processes has been numerically simulated.

DESCRIPTORS: (U) *FLAMES; *JET FLAMES; COMPUTERIZED SIMULATION; DISSIPATION; FINITE DIFFERENCE THEORY; TWO DIMENSIONAL; CHEMICAL REACTIONS; ALGORITHMS; CHEMICAL REACTIONS; COHERENCE; COMPUTATIONS; DIFFUSION; EXTINCTION; FLOW; JET FLAMES; LABORATORIES; LAYERS; MATHEMATICAL MODELS; MIXING; NUMERICAL ANALYSIS; QUANTITY; QUENCHING; RATES; REACTION TIME; SCALAR FUNCTIONS; STOICHIOMETRY; STRUCTURES; TEMPERATURE

IDENTIFIERS: (U) Diffusion flames; Flame liftoff; mixing layers; reaction rates; temperature dependence

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COLLEGE OF ENGINEERING, UNIVERSITY OF CALIFORNIA, BERKELEY, CALIF. 94720-1700

RESEARCH REPORT NO. 100, DEPARTMENT OF CIVIL ENGINEERING, UNIVERSITY OF CALIFORNIA, BERKELEY, CALIF. 94720-1700

RESEARCH REPORT NO. 100, DEPARTMENT OF CIVIL ENGINEERING, UNIVERSITY OF CALIFORNIA, BERKELEY, CALIF. 94720-1700

DOI: 10.2172/AD A173 137

PERSONAL ADDRESS: Dr. Wayne A. Gervais, George E. Dorrington Building, 1001 Stebbins Bldg.

CONTRACT NO. 100000-00-0250

PROJECT NO. 100000-00-0250

TASK NO. 01

MONITOR: AEROSPACE

TR 46 DAYS

UNCLASSIFIED REPORT

ABSTRACT: An experimental apparatus was developed to investigate transient and long-term porewater pressure responses of saturated soils. The facility is capable of generating compressive shock loadings on the order of 35000 psi with millisecond rise times to peak stress. This installation represents an effort to examine and establish an understanding of compressionally induced liquefaction. Samples of water saturated Monterey No. 0 sand were examined at various relative densities and effective stresses. Boundary conditions used for the experiments were one dimensional, confined, compressive loadings with a triaxial cell. Results indicate that it is possible to liquefy Monterey No. 0 sand under these conditions. Significant porewater pressure increases were possible even at high densities and high effective stresses. Liquefaction was generally observed at compressive strains greater than about 0.1. Threshold strain values below which substantial porewater pressure increases generally did not occur were about 0.05 to 0.2 percent. Data analysis has provided several empirical models that can be used to estimate liquefaction potential as a function of density, effective stress and applied compressive strain. One model uses an empirical scaling law for explosive

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loadings to predict the extent of porewater pressure increases in the field from buried, contained charges in saturated soils. A finite difference analysis that considers the saturated soil as a two-phase medium has been performed. The analysis accounts for the nonlinear, inelastic behavior of the soil skeleton and has shown that liquefaction is dependent upon the unloading constrained modulus of the soil.

DESCRIPTORS: (U) SAND; LIQUEFACTION; SOIL MECHANICS; BLAST LOADS; TRANSIENTS; PORE PRESSURE; SATURATION; DYNAMIC TESTS; LABORATORY TESTS; COMPRESSIVE PROPERTIES; WATER; STRESSES; ONE DIMENSIONAL; TWO PHASE FLOW; HIGH DENSITY; STRESS STRAIN RELATIONS; UNLOADING; FINITE DIFFERENCE THEORY; MODEL TESTS; SCALING FACTORS; MATHEMATICAL PREDICTION

IDENTIFIERS: (U) Porewater pressure; Saturated soils; PEG1102F; WUAFOSR2307C

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DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN548

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KMS FUSION INC ANN ARBOR MI

Jul Red SOX Singlet Oxygen Laser A Chemically Pumped, 0
76 Micrometers Singlet Oxygen Laser

DESCRIPTIVE NOTE Final rept. 1 Jul 31 Dec 85

FEB 86 37P

PERSONAL AUTHORS Busch George E Enckelbein Mark B

CONTRACT NO F49620 85 C 0104

PROJECT NO 1201

TASK NO A1

MONITOR AFOSR
TR 86 0961

UNCLASSIFIED REPORT

ABSTRACT II The feasibility of a red singlet oxygen laser based on production of (b) state singlet oxygen by the electronic energy pooling reaction of (a) state singlet oxygen was investigated. A microwave discharge-flow system for studying the quenching kinetics of (b) state oxygen was constructed with a large diameter viewing region so as to ensure that heterogeneous quenching of both (a) and (b) state oxygen was unimportant. An upper bound for quenching of (b) state oxygen by (a) state oxygen was measured and was not found to be extremely large compared to the rate constant for quenching of (b) state oxygen by ground state oxygen. The rate constants for quenching of both (b) state oxygen and (a) state oxygen by ground state oxygen was measured. Both rate constants agreed well with those measured by previous workers. The results suggest that the extent of the effective population inversion of (b) state oxygen produced energy pooling will not be suppressed by the high densities of (a) state oxygen initially present. The measurements reported here support the feasibility of the red singlet oxygen red SOX laser and further research and development toward this goal is recommended.

DTIC SUBJECTS: CHEMICAL LASERS; RED-COLOR;
QUENCHING; POPULATION ELECTRONIC STATES;
FUSION; ELECTRONIC ELECTRON ENERGY GROUND STATE.

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HETEROGENEITY, HIGH DENSITY, INVERSION, OXYGEN,
POPULATION

IDENTIFIERS: (L) *Oxygen Lasers. *Chemical Pumping.
PE61102F WUAFOSR2301A1

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AD A173 123 SEARCH BIBLIOGRAPHY

AD A173 123

RESEARCH REPORT OF THE CHICAGO DEPT OF CHEMISTRY

U. A. Design Methodology for Robust Stabilizing
Control Systems

AD A173 123

PERSONAL AUTHORS Schmitendorf William E

CONTRACT NO AFOSR 85 0051

PROJECT NO 1304

TASK NO 03

MONITOR AFOSR

TR 86 1035

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Sub in Proceedings of the ATAA
Guidance and Control Conference 0657 661 Jun 86

ABSTRACT U. This paper considers the problem of
designing control laws for linear systems with time
varying uncertainty. A method for determining a linear
feedback control which stabilizes the system for all
possible uncertainty is presented. This control is robust
in the sense that it guarantees asymptotic stability
regardless of the disturbance. The results are applied to
several aircraft examples.

DESCRIPTIONS U. STABILIZATION SYSTEMS. FEEDBACK
CONTROL SYSTEMS. LINEAR SYSTEMS. OPTIMIZATION. TIME
VARIATION. ROBUST CONTROL SYSTEMS. WILLIAMS ALGEBRA
UNIVERSITY OF MICHIGAN REPORTS

UNCLASSIFIED U. Robust control. Uncertainty systems.
PROJECT WILLIAMS 0640.

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The resulting program was subsequently executed on a real robot.

DESCRIPTORS: ROBOTICS; MANIPULATORS; ROBOTS; COMPUTER PROGRAMMING; ALGORITHMS; ASSEMBLY; DETECTORS; ERRORS; FEEDBACK; MOTION OFF LINE SYSTEMS; ROBOTS; SENSES; PHYSIOLOGY; SEQUENCES; SIMULATION; SPATIAL DISTRIBUTION TEST BLDG

IDENTIFIERS: U. LPN SRJ 7239 PEG1102F WUAF0SR2306A1

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The resulting program was subsequently executed on a real robot.

DESCRIPTORS: ROBOTICS; MANIPULATORS; ROBOTS; COMPUTER PROGRAMMING; ALGORITHMS; ASSEMBLY; DETECTORS; ERRORS; FEEDBACK; MOTION OFF LINE SYSTEMS; ROBOTS; SENSES; PHYSIOLOGY; SEQUENCES; SIMULATION; SPATIAL DISTRIBUTION TEST BLDG

IDENTIFIERS: U. LPN SRJ 7239 PEG1102F WUAF0SR2306A1

CONTRACT NO. 100-123-000000

PROJECT NO. 100-123-000000

TASK NO. 100-123-000000

MONITOR 100-123-000000

100-123-000000

UNCLASSIFIED REPORT

Abstract: This report summarizes research in some basic problems that make programming of flexible robotic assembly tasks difficult. It describes initial efforts of implementing a task using an interactive graphic offline programming system called WOPK-MATE. Results described in five technical papers include: 1. A powerful and efficient method developed for estimating compound and reduced functional uncertainties among sensors, robots, and objects based on their individual uncertain sets of relationships. This method is useful in determining spatial errors in a planned task sequence and in determining acceptable tolerances. 2. A fast algorithm using a ST clipping hardware in our silicon graphics lab for real-time workstation was developed to determine of a simulated moving manipulator will collide with obstacles in objects during its motions. The method is implemented in WOPK-MATE, which can graphically and save the pose of the manipulator penetrating any of the objects at a maximum speed of 1 to 5 pictures per second. 3. A method for detecting using different sensor modalities to estimate the grasping error when a manipulator has picked up an object. This error can be compensated by proper modification of the manipulator's motion. 4. An experiment in offline assembly programming using WOPK-MATE. 5. A description of an assembly task requiring sensory feedback was programmed entirely off-line and

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UNIVERSITY OF SOUTHERN CALIFORNIA LOS ANGELES SIGNAL AND
IMAGE PROCESSING INST

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to use the specifications of these devices and other high speed switching technologies in order to determine better designs and fundamental limits of the binary optical computing architectures under consideration.

DESCRIPTORS: *U *SIGNAL PROCESSING *OPTICAL PROCESSING *HOLOGRAMS *NONLINEAR SYSTEMS *COMPUTER ARCHITECTURE *HYBRID SYSTEMS *NOR GATES *DIGITAL SYSTEMS *ANALOG SYSTEMS *NAND GATES *REAL TIME *ARRAYS

IDENTIFIERS: *U *Multiple Quantum Wells *Optical Computing *Parallel Outputs *Xor Gates *SBWP Space Bandwidth Product *Interconnection Holograms *Binary Elements *Xnor Gates *Optical Interconnections *Arrays *Binary *Parallel Inputs *Sequential Logic *Bistability *PC61102F *WUAFQSR230581

WISCONSIN UNIV MADISON DEPT OF CHEMISTRY

d. Possible Pi-Complex Intermediates in the Reaction of Disilenes with Mercury(II)-Trifluoroacetate.

39
50

39

PERSONAL AUTHORS Zybilla, Christian ; West, Robert ;

CONTRACT NO F49520-83-C-0044

PROJECT NO 2303

MONITOR - AFOSR
TR 86-1013

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of the Chemical Society, Chemical Communications, p857-858 1986

ABSTRACT. (U.) The well-known reaction of mercury(II) compounds with alkenes is generally believed to involve formation of a π -complex mercurinium ion in the initial step. Mercurinium ions have been observed by n.m.r. spectroscopy in superacid solvents at low temperatures, and for special cases in other polar solvents. On the other hand the n.m.r. spectra of mixtures of simple alkenes with mercury(II) trifluoroacetate (1) in benzene indicate that the initial reaction product is a σ -bound species. (2) Also Fukuzumi and Kochi have shown that alkenes form weak charge-transfer complexes with mercury salts in dichloromethane. The reaction of mercury(II) trifluoroacetate with disilenes and in tetrahydrofuran at 25°C produces 1,2-bis(trifluoroacetoxy)disilanes (5) and (6a,b); below -15°C n.m.r. spectra indicate that an intermediate is formed, for which structures (7) and (8a,b) are proposed.

DESCRIPTORS: 'U', 'MERCURY COMPOUNDS', 'FLUORINE',
'ACETATES', 'SILICON COMPOUNDS', 'REACTION KINETICS',
ALKENES, CHLOROMETHANES, MERCURY, SALTS, SPECTROSCOPY,
BENZENE, IONS, POLARITY, SOLVENTS, LOW TEMPERATURE,
CHARGE TRANSFER, LOW STRENGTH, SILANES, NUCLEAR MAGNETIC
RESONANCE, REPRINTS

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DTIC REPORT BIBLIOGRAPHY

SEARCH CONTROL NO. EVN548

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AD A173 102 7/4 14 5

IDENTIFIERS: Tetrahydrofuran, Silanes, Intermediate Chemistry, WUAFOSR23382

PITTSBURGH UNIV PA SURFACE SCIENCE CENTER

(U) An Enhanced Electron Stimulated-Desorption Ion Angular Distribution Method for Imaging Molecular Orientations of Adsorbed Species.

JUN 86 6P

PERSONAL AUTHORS: Dresser, M. J.; Alvey, M. D.; Yates, J. T. Jr.

CONTRACT NO. AFOSR-82-0133

PROJECT NO. 2303

TASK NO. A2

MONITOR: AFOSR
TR-86-1027

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub in Jnl of Vacuum Science Technology, vA4 n3 p1446-1450 May Jun 86.

ABSTRACT: (U) A striking improvement has been made in the quality of positive ion angular distribution data obtained in electron-stimulated-desorption ion angular distribution (ESDIAD). The improved method has been used to study configurational changes in chemisorbed CO on Ni(110) which are induced by intermolecular interactions at high coverage. CO molecules adsorbed with normal C-O bond orientations on ridge Ni sites tilt away from the normal by 1 or 19 degs in directions perpendicular to the ridges for CO coverages above 0.75 CO/Ni. Evidence for the C-O tilting has also been studied as a function of electron energy. This has demonstrated that an 0-15 eV excitation process leads to intense and sharp O(1s) ESD-AD beams. The improved ESDIAD method involves the removal of a soft x-ray background signal which originates from electron impact on the metal surface, and is therefore present in all photographic ESDIAD measurements made to date. The angular distribution of the background effect is independent of electron energy and current density. The resultant pure ESDIAD patterns show more quantitative details in high and low signal regions than has been seen before.

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DESCRIPTION: 1. ELECTRON SPECTROSCOPY, COMPREHENSIVE
MONITORING OF THE PROPERTIES OF ELECTROLYTES, METALS
ANGLES, RADIATION DISTRIBUTION, ELECTRON ENERGY
ELECTRON IMPACT SPECTRA, IMAGES, INTERACTIONS, METALS
MOLECULE MOLECULE INTERACTIONS, MOLECULES
ORIENTATION, SPECTRUM, REGIONS, SIGNALS, SOFT X RAYS
SURFACES

IDENTIFIERS: 1. ESDIAD Electron Stimulated Desorption
Ion Angular Distribution, PE61102F, WUATQSR2303A2

AD 11 CONTROL NO. EVN54B

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SPRAYER DEVELOPMENT LABS INC COSTA MESA CA

U Droplet Sizing Research Program

DESCRIPTIVE NOTE: Final rept 15 Jan 83 15 Jan 86

MAP 86 *37P

PERSONAL AUTHOR: Hess, Cecil F

REPORT NO.: SDL-85-2286-15F

CONTRACT NO.: F49620 83-C-006C

PROJECT NO.: 2308

TASK NO.: A3

MONITOR: AFOSR
TR 86-0875

UNCLASSIFIED REPORT

ABSTRACT: (U) A three-year program in droplet sizing research has been completed. The major accomplishments include: (1) Establishing the errors and limitations associated with the Visibility technique; (2) Development of two new techniques utilizing absolute scattered light; (3) Extension of techniques to submicron particles; (4) Extension of techniques to nonspherical drops; (5) A solid spray diagnostic capability which has been synergistic with many programs from other agencies of the Air Force, AEDC, BMD, Wright-Patterson, the Government and Industry. The new techniques have been applied to the measurement of sprays and solid particles with accuracies better than 10% and dynamic ranges between 10 and 30. Complex bimodal, trimodal and quadramodal distributions have been measured with an accuracy and resolution exceeding all available techniques. Keywords: Particle velocity, Mass flux, Nonintrusive, and Advanced laser diagnostics.

DESCRIPTORS: (U) *MASS FLOW, *SPRAYS, *AEROSOLS, *OPTICAL DETECTION, *SIZES, *DIMENSIONS, *LASER APPLICATIONS, *DYNAMIC RANGE, *ACCURACY, *DIAGNOSIS, *GENERAL, *DROPS, *DYNAMIC RANGE, *FLUX, *RATE, *LASERS, *LIGHT SCATTERING, *PARTICLES, *SOLIDS, *VELOCITY, *VISIBILITY

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SEARCH CONTROL NO. EVN54B

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IDENTIFIERS (U) REF1102F, WUAFDSR230PA3

PENNSYLVANIA STATE UNIV UNIVERSITY PARK DEPT OF
MECHANICAL ENGINEERING

(U) Transient Catalytic Combustion.

DESCRIPTIVE NOTE: Annual rept. 30 Sep 84-30 Sep 85.

JAN 86 22P

PERSONAL AUTHORS: Santavicca, D. A. ;

CONTRACT NO. AFDSR-84-0224

PROJECT NO. 2308

TASK NO. A2

MONITOR AFOSR
TR-86-1004

UNCLASSIFIED REPORT

ABSTRACT: (U) Results of an experimental study of the catalytic ignition of lean propane-air mixtures on platinum in a stacked-plate catalytic combustor are presented. The effects of inlet temperature, equivalence ratio and gas velocity on the ignition transient were investigated. The ignition process was characterized in terms of the substrate axial temperature profile and the exhaust gas CO and CO₂ concentrations measured as a function of time after the fuel was turned on. Ignition was always found to occur first near the leading edge of the catalyst as indicated by the more rapid heat up of the front end of the catalyst. The downstream end of the catalyst heated up more slowly and was strongly dependant on convective heat transfer from the front of the catalyst. Increased inlet temperature, equivalence ratio and velocity were all found to shorten the ignition transient and to lead to increased steady state peak substrate temperatures. Increased velocity also caused the peak substrate temperature to move further toward the back of the catalyst. For the conditions studied, the initial ignition rate was found to be surface reaction rate controlled at higher velocities (above 2 m/s) but at lower velocities (below 2 m/s) the initial ignition rate was found to depend both on the surface reaction rate and the mass transport rate. The transient ignition measurements also clearly revealed the fact that complete

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Keywords: COMBUSTION; IGNITION; CATALYSIS; FUELS; PROPANE; FUEL-AIR RATIO; PLATINUM COMBUSTORS; TEMPERATURE RATIOS; GAS FLOW; FLOW RATE; EXHAUST GASES; CARBON MONOXIDE; CARBON DIOXIDE; CONCENTRATION; CHEMISTRY; CONVECTION; HEAT TRANSFER; TURBULENCE; FLAME PROPAGATION; PREMIUM; TURBULENCE; COMBUSTION; and

DESCRIPTORS: U; COMBUSTION; IGNITION; CATALYSIS; FUELS; PROPANE; FUEL-AIR RATIO; PLATINUM COMBUSTORS; TEMPERATURE RATIOS; GAS FLOW; FLOW RATE; EXHAUST GASES; CARBON MONOXIDE; CARBON DIOXIDE; CONCENTRATION; CHEMISTRY; CONVECTION; HEAT TRANSFER; TURBULENCE; FLAME PROPAGATION

IDENTIFIERS: U WUAFOSR2303A2 PE61102F

SEARCH CONTROL NO: EVN543

AD A173 092 7 4

CALIFORNIA UNIV SANTA BARBARA DEPT OF CHEMISTRY

U: Energy Dispos I in Ion Molecule Reactions: Experiment and Theory

DESCRIPTIVE NOTE: Final rept 15 Nov 81-14 May 86.

AUG 86 6P

PERSONAL AUTHORS: Powers, Michael T ;

CONTRACT NO AFOSR-82-0035

PROJECT NO. 2303

TASK NO B1

MONITOR AFOSR
TR-86-0936

UNCLASSIFIED REPORT

ABSTRACT: (U) During the tenure of this grant work was accomplished in 3 areas: A. Determination of Energy Disposal in Simple Unimolecular and Bimolecular Reactions B. Determination of the Effects of Internal Energy on the Rates and Branching Ratios of Bimolecular Reactions. C. Determination of the Dynamics and energy disposal in the photodissociation of Simple Cluster Ions. Kinetic energy measurements on the products of reactions of C+ Superscript 2F with O2 and N2 were also initiated.

DESCRIPTORS: (U) CHARGE TRANSFER; REACTION KINETICS; DETERMINATION; ENERGY; KINETIC ENERGY; DISPOSAL; CHEMICAL REACTIONS; PHOTODISSOCIATION; CLUSTERING; CARBON; SULFITES; OXYGEN; NITROGEN OXIDES; MOLECULES; DYNAMICS; INTERNAL MEASUREMENT; RATIOS; IONS

IDENTIFIERS: (U) Ion Molecule Interactions. Internal Energy WUAFOSR2303B1. PE61102F

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MICHIGAN STATE UNIV EAST LANSING TURBULENCE STRUCTURE LAB

STRUCTURAL PROPERTIES, REYNOLDS NUMBER, PRESSURE GRADIENTS, DRAG REDUCTION

U- Experimental Investigation of the Turbulence Production Mechanism in Boundary Layers

IDENTIFIERS: (U) WUAFOSR2307A2, PE61102F

DESCRIPTIVE NOTE Annual rept 1 Oct 84 30 Sep 85

AUG 85 41P

PERSONAL AUTHORS Falco R E

REPORT NO TSL 85 3

CONTRACT NO F19620-85 C 0002

PROJECT NO 2107

TASK NO A2

MONITOR AFOSR
FP 85 0942

UNCLASSIFIED REPORT

ABSTRACT U Over the past year we have discovered the mechanism of production of the long streaks and a mechanism for creation of corner vortices like typical eddies and have demonstrated the occurrence of both within a real turbulent boundary layer. These reports were the missing links needed to complete the conceptual structural model. This model demonstrates the importance of boundary conditions in wall layer development. However, experimental determination of the relative importance of each of the elements of the model is the Reynolds number. The Reynolds number dependence of pressure gradient dependence of the model. What we have learned so far suggests several critical parameters that can be manipulated to control the production of turbulence and hence reduce drag. In the proposed research we want to focus on acquiring additional data to support the structural theory that has been formed so as to provide the basis for determining how much turbulence we have in our flow and how it affects boundary layer turbulence.

STRUCTURAL MODEL OF TURBULENCE PRODUCTION NEAR BOUNDARY LAYER CORNERS I. TEOLES FLUID MECHANICS 1985-10-01

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YTERBIUM

WUAFOSR2302C

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IDENTIFIERS

DESCRIPTIVE NOTE Final rept Apr 82 AD A173 085

MAY 86 872

PERSONAL AUTHORS Gupta Yogendra M

CONTRACT NO AFOSR R2 0132

PROJECT NO 2302

TASK NO 01

MONITOR AFOSR
TR 86 0551

UNCLASSIFIED REPORT

ABSTRACT U Two objectives and results of a research effort undertaken to understand the response of ytterbium stress transducers under shock loading are presented. Plate impact experiments using matrix materials that covered a wide range of mechanical impedances were performed to determine the gauge response under well characterized conditions. Experiments were designed to conform closely to the requirements of the theoretical analysis. Residual resistance measurements, loading rate effects, and effect of matrix property variations were examined in detail. Quasi static experimental methods and related analysis were developed to determine the complete set of electro mechanical constants for the foils of interest. The phenomenological model developed earlier was extended to include strain hardening in a consistent manner. The model predictions, using the appropriate material constants, agreed very well with the shock wave measurements. Using the analytic model a good understanding of ytterbium stress transducers was achieved.

DESCRIPTORS U MATRIX MATERIALS RESISTANCE
TRANSDUCERS CONSTANTS ELECTROMECHANICAL DEVICES GAGES
LOADS FORCES MATERIALS MATHEMATICAL MODELS
MEASUREMENTS RATE EFFECTS RATES RESIDUALS RESPONSE
SHOCK WAVES STRESS MECHANICS STRESSES THEORY

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DESCRIPTIVE NOTE Annual rept 1 Jun 65-31 May 66

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PERSONAL AUTHOR: Foster, Robert L. / Foster, Margaret G.

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ABSTRACT The Large Space Structure (LSS) research program was originally formulated in response to increasing concern that performance robustness of Air Force LSS systems might be inadequate to meet mission objectives in the presence of uncertainties in both size and dynamics and distributed spectral characteristics. Both time-varying and stochastic uncertainties significantly limit the performance of a structure with time-invariant linear dynamic characteristics. Therefore, a need for adaptive systems with distributed and dynamic characteristics is indicated in order to be able to or during deployment of LSS systems. Designing such options for mission flexibility in dynamic and performance objectives is the area of adaptive control that is implemented in real time. The concept of the decision function is being developed off line for the systems designed to meet the controller requirements. To achieve this, an extensive study of the advantages of the adaptive capability of the systems is being conducted. It will be shown that the adaptive capability of the systems is being developed in a way that is well suited to the requirements of the systems. The adaptive capability of the systems is being developed in a way that is well suited to the requirements of the systems. The adaptive capability of the systems is being developed in a way that is well suited to the requirements of the systems.

systems. Transient analysis of adaptive control. Fixed-point theorems for stability analysis of adaptive systems, and Stability theory for adaptive systems.

DESCRIPTORS: 'UI' *ADAPTIVE CONTROL SYSTEMS. SPACE SYSTEMS. NONLINEAR SYSTEMS. DYNAMIC RESPONSE. STABILITY. CALIBRATION. TRANSIENTS. PARAMETRIC ANALYSIS. EXCITATION. STOCHASTIC PROCESSES. REAL TIME. ON LINE SYSTEMS. SYSTEMS ENGINEERING. ALGORITHMS

IDENTIFIERS: UI Large space structures, Robust control systems, Uncertainty, Nonlinear control, PE51102F, WJAFDSR33C2B1

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strengths up to twice the static values. Additional results of high strength plain concrete and on SIFCON slurry infiltrated fiber concrete are reported.

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DESCRIPTORS: CONCRETE, REINFORCED CONCRETE.

UNDERGROUND STRUCTURES, IMPULSIVE LOADING, BURIED OBJECTS, COMPRESSIVE PROPERTIES, COMPUTATIONS, COMPUTER PROGRAMS, CONCRETE, CYLINDRICAL BODIES, DYNAMIC RESPONSE, DYNAMICS, EXPLOSIONS, EXPLOSIVES, FIBERS, FUNCTIONS, HIGH STRENGTH, PRESSURE, RESPONSE, SHAPE, SHOCK WAVES, SLURRIES, STATICS, STRENGTH/MECHANICS, STRUCTURAL ANALYSIS, STRUCTURAL PROPERTIES, STRUCTURES, WALLS, STRUCTURAL RESPONSE, EXPLOSION EFFECTS, DYNAMIC LOADS, FAILURE/MECHANICS, IMPACT STRENGTH, PLASTIC PROPERTIES, ELASTIC PROPERTIES, FINITE ELEMENT ANALYSIS, STEEL, STRESS ANALYSIS, MATHEMATICAL PREDICTION, PRESSURE MEASUREMENT, MORTARS/MATERIAL.

IDENTIFIERS: (U) Split Hopkinson Pressure bars, Sifcon Slurry Infiltrated Fiber Concrete, PEG-102F, WUAFOSR2302G2

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ABSTRACT: This report describes a three year research program whose objectives were to: 1. Develop a loading function for close proximity explosions; 2. Generate dynamic strength properties for selected types of concrete; 3. Incorporate the strength properties so determined into a localized failure criterion for reinforced concrete; 4. Use a structural analysis elastic plastic finite element computer program to determine localized response for a concrete steel finite element model; and 5. Combine all of these into a simple structural analysis program to determine the response of underground structures. Localized impulsive loads. A computational method was developed for calculating the stress transient due to a buried ball by the pressure wave from a buried spherical explosive of cylindrical shape. Studies were performed on the response of a reinforced concrete structure to such a pressure wave loading using several different computer codes and incorporating some of the problems of dynamic concrete material property data. The codes have not proved to be effective in predicting the type of response observed in experiments. A code which simulated Split Hopkinson's pressure bar system did give an acceptable response for specimens up to 75 mm in diameter. In built. The system and procedures are described. Calculations are given to published results including tests on four kinds of high strength concrete and one mortar. Loading technique unconfined compressive

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(111) REPORT BIBLIOGRAPHY

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WITNESSED AND PROVED

1968, p. 123). Since by the author's opinion with R. Bury the first case was completed and successfully applied a new method, the author is seeking for the physical solution of the problem, which is the only one, and the only value of the parameter α is determined by an existing physical condition. The author has not found any other papers for the continuation of the investigation. The results for the case of the first boundary value problem are different from the results of the second boundary value problem. The author is directing his researches towards the solution of the problem, which may be solved by the method of the first boundary value problem. For the case of the second boundary value problem, the author has

1. RESEARCH
 2. TECHNOLOGY
 3. MANUFACTURING
 4. MARKETING
 5. FINANCIAL
 6. LEGAL
 7. ADMINISTRATIVE
 8. OPERATIONS
 9. SALES
 10. SUPPORT
 11. TRAINING
 12. RESEARCH AND DEVELOPMENT
 13. QUALITY CONTROL
 14. LOGISTICS
 15. ACCOUNTING
 16. PROPERTY
 17. PLANT
 18. EQUIPMENT
 19. INSTRUMENTS
 20. SOFTWARE
 21. HARDWARE
 22. PERIPHERALS
 23. ACCESSORIES
 24. REPAIRS
 25. MAINTENANCE
 26. UPDATES
 27. REPLACEMENTS
 28. INSTALLATION
 29. DECOMMISSIONING
 30. DISPOSAL
 31. RECYCLING
 32. WASTE MANAGEMENT
 33. ENVIRONMENTAL PROTECTION
 34. SAFETY
 35. SECURITY
 36. COMPLIANCE
 37. REGULATIONS
 38. STANDARDS
 39. CERTIFICATIONS
 40. ACCREDITATIONS
 41. CONTRACTS
 42. AGREEMENTS
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 44. WARRANTIES
 45. LICENSING
 46. TRADE MARKS
 47. PATENTS
 48. COPYRIGHTS
 49. TRADE SECRETS
 50. INTELLECTUAL PROPERTY
 51. CONFIDENTIALITY
 52. NON-DISCLOSURE
 53. ASSIGNMENT
 54. TRANSFER
 55. ACQUISITION
 56. MERGER
 57. REORGANIZATION
 58. RESTRUCTURING
 59. CONSOLIDATION
 60. AMALGAMATION
 61. ABSORPTION
 62. SPIN-OFF
 63. SPLIT
 64. REVERSE SPLIT
 65. STOCK SPLIT
 66. REDEMPTION
 67. RECALL
 68. RETRACTION
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SEARCH CONTROL NO EVNS48

AD-A173 076 7.4

FLORIDA UNIV GAINESVILLE DEPT OF CHEMISTRY

U. Some Observations on the Use of Photoacoustic Spectroscopy for Flame Elemental Analysis.

25 68

PERSONAL AUTHORS
Lanauze, J. A. Winefordner, J. D.

CONTRACT NO F43620-84-C-0002

PROJECT NO 2303

TASK IN 4501
A1

MONITOR: AFOSR
IR-85-1030

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE. Pub. in Spectrochimica Acta. v41B n4
p407. 112 1986

ABSTRACT: (U) Photoacoustic spectroscopy has been applied for the first time as a technique for elemental analysis in flames. The limit of detection achieved for Na was 280 ng/ml. For Mn, Sr, Ti and Ca, the sensitivity was found to be very poor as compared with Na. But no explanation is available at the moment. Photoacoustic spectroscopy is not expected to be as sensitive as any of the now existing spectroscopic techniques for elemental analysis. Keywords: Photoacoustic; Manganese; Strontium; Titanium; Flame; Calcium; Pigments; Sodium Chloride; Excitation.

DESCRIPTION OF ANALYTICAL TECHNIQUES: QUANTITATIVE ANALYSIS, EMISSION SPECTRA, FLAMES, LASER PUMPING, SODIUM MANIPULATION, TANTALUM, CALCIUM ACUSTOOPTICS, HIGH RESOLUTION FLUORESCENCE REPRINTS

INFORMERS - U. Photographic spectroscopy
 QUANTUM 2303A1 PEG1102F

AD A173 076

THE ASSOCIATION

PAGE 88

EVP 1542

AD A173 072

AD A173 072

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UNCLASSIFIED REPORT

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UNCLASSIFIED

PAGE 90

EVN51B

EYNS416

AD 3173 097

Neurological Investigations of Adaptive Networks
Neural Control of Conditioned Reflexes

PERFORMING ORGANIZATION: Final report 31 May 68 to 30 Jun 68

AD 3173 097

PERSONAL AUTHOR(S): Moore, John W.

CONTRACT NO: AFOSR 88-0215

PROJECT NO: 2312

TASK NO: A1

MONITOR: AFOSR
TR 86 092

UNCLASSIFIED REPORT

ABSTRACT: U. Neurobiological investigations of adaptive neural networks were conducted using the classically conditioned eliciting membrane response (NM CR) of rabbit, a widely used model system for studies of learning. One experimental approach involved recording from single brain neurons from awake, behaving animals for the purpose of determining the local and characteristics of neurons with activity correlated with the NM CR or its inhibition. A second approach involved the use of discrete brain lesions that selectively eliminate the NM CR while at the same time sparing the basic reflex pathway. A third approach employed fiber tracing anatomical techniques designed to clarify the interconnectivity among brain regions essential for the NM CR. These regions include discrete portions of the cerebellum and brain stem. Information from physiological studies has been incorporated into mathematical models of learning used by adaptive network researchers and anatomical findings have guided the development of related neuronal models. Keywords: Neurophysiology, Neuroanatomy.

DESCRIPTORS: U. NERVE CELLS; NEUROPHYSIOLOGY; LEARNING; CONDITIONED RESPONSE; ADAPTIVE SYSTEMS; ANATOMY; BIOLOGY; BRAIN; CEREBELLUM; CONTROL; INHIBITION; LESIONS; MATHEMATICAL MODELS; MODELS; NETWORKS; NEURAL

AD 3173 097

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PAGE 92 EVN54B

PAGE 93 LINE 10

AD A173 064 UNCLASSIFIED SEARCH CONTROL NO EVN548

AD A173 064 UNCLASSIFIED

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VELOCIMETERS, FLOW VISUALIZATION, PHOTOGRAPH

BRIGHTNESS, CURRENT, SCATTERING, COLD FLOW

DROPS, FLOPPING, INTERACTIONS, LASER BEAMS, LASERS

LIGHT SCATTERING, LIQUIDS, PAPERS, MIXING, NONLINEAR

SYSTEMS, PARTICLES, RAMAN SPECTRA, SLEDDING, SHAPE

SIZES, DIMENSIONS, STIMULATION, GENERAL, STORES, RADIATION,

STREAMS, VISIBILITY, SPECTRA, DOPPLER EFFECT

IDENTIFIERS: Super Radiance

LEHIGH UNIV BETHLEHEM PA

U Fatigue and Fracture Mechanics of Structural Metals,
Plastics, and Composites

DESCRIPTIVE NOTE: Final rept 31 Jan 85 24 Jan 86.

AUG 86 8P

PERSONAL AUTHORS: Hertzberg, Richard W.

CONTRACT NO AFOSR-85-0138

PROJECT NO 3483

TASK NO A3

MONITOR AFOSR
TR-86-0919

UNCLASSIFIED REPORT

ABSTRACT: (U) AFOSR/DOD-URIP funds were used to purchase an Instron computer-controlled mechanical test system for the purpose of evaluating the fatigue and fracture response of metals, plastics, and composites. The FCP Fun program provided with the test system has been modified to include differing testing options (constant K sub max and constant K sub mean decreasing K threshold procedure) and incorporate stress intensity factor and compliance calibrations for several additional specimen configurations. Experiments have been conducted with both plastics and metals to confirm the usefulness of the system and the modifications of the software.

DESCRIPTORS: (U) *FRACTURE (MECHANICS); *FATIGUE (MECHANICS); PLASTICS; COMPOSITE MATERIALS; TEST METHODS; TEST EQUIPMENT; COMPUTER APPLICATIONS; COMPUTER PROGRAMS; METALS; MODIFICATION; RESPONSE; STRESS CONCENTRATION; STRUCTURES

IDENTIFIERS: (U) WJAFOSR3483A3, PE61102F

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DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN548

AD A13363 179

AD A173 053 CONTINUED

MOORE SCHOOL OF ELECTRICAL ENGINEERING PHILADELPHIA PA
ELECTRO OPTICS AND MICROWAVE OPTICS LAB

PROPERTIES RESOLUTION. STATIONARY

IDENTIFIERS : U : WUAFOSP2305B1, PES1102F

University Research in Image Understanding as Applied to 3-D Microvolumetric Tomographic Imaging with Near-Optical Resolution

DESCRIPTION: 2000-2001 Annual Report

MAR 25 1968

PERSONAL ALTIMETER

REPORT NO. 7-10-5

CONFIDENTIAL - IN COMPLIANCE WITH E.O. 13526

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Abstract. The objective of research under this grant is to achieve fundamental understanding of the dynamics of a coherent and incoherent image formation and incoherent scattering of light by specular and diffuse object dependent and polarization dependent surfaces as well as polarizing cost objects. Imaging of 3-D objects with conventional optical systems is an application of Fourier imaging. This approach is a consequence of the Fourier transform property of the representation of the object under imaging. This approach is representative of the methods developed for the study of micrographs of thin sections, imaging of biological and geological structures, imaging of integrated circuits and for astronomical imaging. This approach has been extended to extensively study the dynamics of light scattering by surfaces and for the development of nondestructive testing techniques through the development of polarization technologies for coherent and incoherent light scattering that can be employed in the field of nondestructive testing. These networks employed in the field have been found to be very effective in the detection of defects in 3-D objects. A polarographic images of defects and surface roughness with high spatial resolution

THESE RESULTS, HOWEVER, DO NOT PROVIDE A CLEAR ANSWER TO THE QUESTION OF WHETHER THERE ARE ANY SIGNIFICANT DIFFERENCES IN THE EFFECTS OF THE TWO TYPES OF IMAGES. IN ORDER TO ANSWER THIS QUESTION, FURTHER RESEARCH MUST BE CONDUCTED.

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AD A173 054

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STATE UNIV OF NEW YORK AT BUFFALO DEPT OF CHEMISTRY

AD Third Order Nonlinear Optical Interaction and
Conformational Transition in Poly 4 BCMU
Polydiacetylene Studied by Picosecond and
Subpicosecond Degenerate Four Wave Mixing

JUN 86 3P

PERSONAL AUTHORS Rao D. N. Chopra, Pratibha Ghoshal,
Suniti K. Swatikewica, Jacek Prasad, Paras N.

REPORT NO SUNYAB/DC-TR 5

CONTRACT NO F49620-85-C-0052

PROJECT NO 2303

TASK NO B3

MONITOR AFOSR
TR-86-0952

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE. Pub in Jnl. of Chemical Physics, v84
n12 p7049 7050, 15 Jun 86.

ABSTRACT (U) Nonlinear optical effects are at the
forefront of research because of their importance in
optical signal processing. Organic polymeric systems
containing conjugated pi-electron structure are expected
to play an important role because of their strong optical
nonlinearity derived from pi-electrons and the nonlinear
response time believed to be in femtoseconds. We report
here the study of third-order nonlinear optical
interaction (X cube) in a polydiacetylene, poly 4 BCMU,
by degenerate four wave mixing (DFWM).

DESCRIPTORS (U) OPTICAL PROCESSING; ORGANIC MATERIALS
POLYMERS; ACETYLENES; REPRINTS; INTERACTIONS; MIXING;
NONLINEAR SYSTEMS; POLYMERS; REACTION TIME; SIGNAL
PROCESSING; WAVES

IDENTIFIERS (U) Four Wave Mixing; Nonlinear Optics;
Acetylene Poly-4-BCMU Polyd; Acetylene Polydi
Picosecond Time; Femtosecond Time

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AD Third Order Nonlinear Optical Interaction and
Conformational Transition in Poly 4 BCMU
Polydiacetylene Studied by Picosecond and
Subpicosecond Degenerate Four Wave Mixing

JAN 85 15P

PERSONAL AUTHORS Rong, Michael W.

CONTRACT NO AFOSR 85-0046

PROJECT NO 2312

TASK NO A5

MONITOR AFOSR
TR 85 0432

UNCLASSIFIED REPORT

ABSTRACT (U) The compound perfluorooctyl decanoic acid
(PFDA) was exposed to three tissue culture cell lines,
BRL kidney, BRL Buffalo rat liver, and Y9 (clone 9,
rat liver) in concentrations up to 200 micrograms/ml for
24 hr time periods. The technique of fluorescence
recovery after photobleaching (FRAP) was used to examine
cell membrane fluidity, specifically with respect to the
membrane lipids. Results demonstrated that PFDA affects
the fluidity of both liver lines but not the kidney line.
Furthermore, differential sensitivity was observed
between the responsiveness of the two liver lines. BRL
was more sensitive than Y9. The increased PFDA induced
membrane fluidity was transient; recovery occurred by 48
hr following removal of the PFDA. The FRAP technique
appears useful in screening agents for membrane effects
as well as elucidating mechanisms of agent action.

DESCRIPTORS (U) CELLS BIOLOGY; KIDNEYS; LIVER;
FATTY ACIDS; DIFFERENTIAL CROSS SECTIONS; FLUIDS;
FLUORESCENCE; FLUORINATION; LIPIDS; MEMBRANES;
MEMBRANES BIOLOGY; RATS; RECOVERY; SENSITIVITY; TIME
INTERVALS; VISCOSITY; TISSUE CULTURE CELLS

IDENTIFIERS (U) Decanoic Acid Perfluoro N

AD A173 054

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AD-A173 053 7 5 7 3 OTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN548
AD A173 053 CONTINUED

COLUMBIA UNIV NEW YORK DEPT OF CHEMISTRY

(U) Modification of Chemical Reactivity via Inclusion
Complex Formation Photochemistry of Dibenzyl Ketones
and Benzyl Phenylacetates.

IDENTIFIERS: (U) Deoxycholic acid

86 5P

PERSONAL AUTHORS Rao Bantu N (Turro Nicholas J)
Ramamurthy Vaidhyathan

CONTRACT NO AFOSR 84 0040

PROJECT NO 2203

TASK NO 82

MONITOR AFOSR
TP 86 0093

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Jnl of Organic Chemistry
v51 n1 p460-465 1985

ABSTRACT 1. In the context of employing inclusion
complexes as a medium for organic photochemical reactions,
we have investigated the photochemical behavior of
dibenzyl ketones and benzyl phenylacetates using
deoxycholic acid (DCA), Diamin's compound and
diiododiphenyl ether (DIP) as hosts in the solid state. Results on
large effect suggest that the free radical reaction of the
benzyl radical pairs is restricted in all three media and
totally inhibited in DCA compound. Products resulting from
interconversion of dibenzyl ketones were formed upon
photolysis in Diamin's compound and diiododiphenyl ether and were
absent in deoxycholic acid. The kinetics of rearrangement
in DCA and the presence of various ketones in Diamin's
compound and diiododiphenyl ether is suggested to be an
indication of the restriction imposed by the host on the
rearrangement process of geminate radical pairs.

DESCRIPTORS 1. PHOTOCHEMICAL REACTIONS. BENZYL
RADIATION. DEHYDROGENATION. PHENYL PROPIOLACTONES. ACIDS
Cyclic compounds. Carboxylic acids. Chemical kinetics. Behavior
Chemical compounds. Media. Molecular motion. Organic
materials. Spectroscopy. Diffraction. Light. 315
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DTIC REPORT BIBLIOGRAPHY

SEARCH CONTROL NO. EVN54B

AD A173 043

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AD A173 047 6/1 20/10 7/3 7/4

STATE UNIV OF NEW YORK AT BUFFALO AMHERST

VANDERBILT UNIV NASHVILLE TN DEPT OF CHEMISTRY

U: Vibrational Dephasing and Energy Relaxation of
Molecules by Phonons

U: Quantum Theoretical Studies of Enzyme Inhibitors and
Related Compounds

FEB 85 6P

DESCRIPTIVE NOTE: Fin 1 technical rept 1 Oct 82-15 May
86

PERSONAL AUTHORS Hutchinson Michael George Thomas F

JUL 86 32P

PERSONAL AUTHORS Enig Carl S (Van Wazer John R

CONTRACT NO F49620 86 C 0009 NSF (Int 0 4963)

CONTRACT NO AFOSR 82 0100

PROJECT NO 103

PROJECT NO 2303

TASK NO AC

TASK NO B2

MONITOR AFOSR

TR 86-0937

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Chemical Physics Letters,
1984, 112, 621-625, 21 Feb 85

ABSTRACT: This final technical report summarizes
research on application of ab initio quantum chemical
techniques to enzyme inhibitors such as
acetylcholinesterase. Computational techniques have been
developed, tested and applied to 1) chemically related
series of prototype and actual organophosphorus
inhibitors, 2) prototype acetylcholine hydrolysis
intermediates, 3) the prototypic or 2 PAM antitoxin, and
4) similar molecule systems as tests of the methods.
Properties obtained include detailed molecular structures
and thermodynamics of elementary reaction steps.

DESCRIPTORS: QUANTUM CHEMISTRY; ENZYME INHIBITORS;
MOLECULAR STRUCTURE; THERMOCHEMISTRY; TEST METHODS;
ORGANOPHOSPHORUS COMPOUNDS; HYDROLYSIS; CHOLINESTERASE;
INHIBITORS; ACETYLCHOLINESTERASE; COMPUTATIONS;
PROTOTYPES; ACETYLCHOLINE; ANTIDOTES

IDENTIFIERS: (U) PE61102F; WUAFOSR230282

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UNCLASSIFIED

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CONFIDENTIAL

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

AUG 85

PERSONAL AUTHOR: HANDEE LARRY A. Carter Franklin D

REPORT NO: AIRC R-5 815787 3

CONTRACT NO: F49620 81 C 0088

PROJECT NO: 2492

TASK NO: 51

MONITOR: AFMCC
AFMCC

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2 AD-A173 044

ABSTRACT: An experiment was conducted on a heavily instrumented isolated model compressor rotor to study the unsteady aerodynamic response of the blade row to a circumferentially inlet flow distortion with non oscillating blades, and to blade oscillation in an undistorted flow. To accomplish this, miniature pressure transducers were embedded in the blades and the unsteady pressure fluctuations were recorded as the blades were subjected to three conditions. Both phases of the experiment were performed over a wide range of flow conditions. Subsequent to the experiment, the data were analyzed in three steps. The first step was to determine the distribution of the unsteady pressure data. The second step was to determine the unsteady pressure data. The third step was to determine the unsteady pressure data. The results of the experiment are presented in the report. The report also includes a bibliography, a list of figures, and a list of tables. The report is classified as UNCLASSIFIED.

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AD-A173 043

UNCLASSIFIED

PAGE 100

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DESCRIPTION: U. COMPRESSOR BLADES, OSCILLATION, ROTATION, INCOMPRESSIBLE FLOW, AERODYNAMIC CHARACTERISTICS, INLETS, UNSTEADY FLOW, DISTORTION, PRESSURE DISTRIBUTION, VARIABLE PRESSURE, DYNAMIC RESPONSE, COMPRESSOR ROTORS, CASCADE STRUCTURES, MEASUREMENT, TEST FACILITIES, TEST METHODS, INSTRUMENTATION, MODEL TESTS, CONTROL SYSTEMS

IDENTIFIERS: U. Oscillating blade rows, Unsteady aerodynamics, Unsteady pressure distribution, Unsteady measurement techniques, surface flow, compressor aerodynamics, PE61102F, WUAFDSR2302B1

PAGE:

UNCLASSIFIED

SEARCH CONTROL NO EVN54B

AD A173 038 CONTINUED

IDENTIFIERS: (U) RAIS(Reflection Absorption Infrared Spectroscopy), PEG11G2F, QUAF05R2303A2

PRINCETON UNIV. N. REPP. OF CHEMICAL ENGINEERING

U The Isochronic Phase Transformation of the Ni-100-CO Surface
square root of 2 x square root of 2 R45 deg CO Surface

85 9P

PERSONAL AUTHORS Benninger Jay B Schoofs Gregory R

CONTRACT NO AFOSR 82 0302

PROJECT NO 2303

TASK NO A2

MONITOR AFOSR
TR 86 1018

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Surface Science v11 PL401-
L408 1986

ABSTRACT (U) A thermally activated isosteric phase transformation of CO on Ni-100 was identified and followed dynamically with temperature programmed reflection absorption infrared spectroscopy (TPRAIS). Carbon monoxide adsorbed to a coverage of 0.6 monolayers on Ni-100 at 190K gives rise to a c(5 sq. rt.2) x (5q. rt.2) R45 deg LEED pattern and an infrared spectrum showing 2/3 of the molecules adsorbed in bridge sites and 1/3 of the molecules adsorbed in on top sites. Heating the Ni crystal to 280 K results in little CO desorption and the same LEED pattern is observed. However, the infrared spectrum shows a reversal of the site occupancy of CO after heating to 280 K so that 2/3 of the molecules are in on top sites and 1/3 are in bridge sites. This phase transformation was followed dynamically with TPRAIS during temperature programming. The activation energy for the phase transformation is approximately 64 kJ/mol. In addition the adsorbed CO transfers from on-top sites to bridge sites at 400 K before desorbing at 415 K.

DESCRIPTORS (U) INFRARED SPECTROSCOPY PHASE TRANSFORMATIONS REFLECTION ABSORPTION SPECTRA CARBON MONOXIDE ADSORPTION NICKEL VIBRATIONAL SPECTRA THERMAL PROPERTIES REPRINTS

AD-A173 038

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PART 1 OF 1

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DTIC REPORT BIBLIOGRAPHY

SEARCH CONTROL NO EVN548

AD A173 017 20 6 9 5

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STATE UNIV OF NEW YORK AT BUFFALO DEPT OF CHEMISTRY

PRINCETON UNIV NJ DEPT OF CHEMICAL ENGINEERING

AD P165204 Instant Grating Studies of Polymeric Thin Films

AD P165204 Characterization of Platinum Electrodes by Infrared Spectroscopy.

FEB 85 4P

85 17P

PERSONAL AUTHORS Rao D N Burvenich Richard M. Ximenes
Prasad P. N.

PERSONAL AUTHORS Benziger Jay B Pascal F. A. Bernasek,
S. I. Soriaga, M. P. Hubbard, A. T. J.

REPORT NO 60NY AB 1P 2

CONTRACT NO F19620-85-1-0002 GEOS-1-0004

PROJECT NO 2303

PROJECT NO 2303

TASK NO 2303

TASK NO A2

MONITOR 2303

MONITOR AFOSR

TR 86-1018

UNCLASSIFIED

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in J Appl Phys 65 1986 Letters 440

SUPPLEMENTARY NOTE Pub in Jnl of Electroanalytical Chemistry 2198 p65 80 1986

ABSTRACT: The surface of a Pt electrode has been examined as a function of applied potential with reflection adsorption infrared spectroscopy and linear sweep voltammetry in a 1 M H₂SO₄ solution. Adsorbed hydrogen was present on the surface at potentials less than 0.1 V vs Ag/AgCl. Adsorbed hydrogen was reduced to dissolved H₂ and caused an up and shift in the potential frequency. At potentials greater than 0.1 V, adsorption on the surface of a hydrogen species blocked the electrode surface. Adsorption of hydrogen on the electrode surface was observed at potentials less than 0.1 V in 1 M H₂SO₄ with the electrode potential held constant at 0.1 V. The electrode was partially covered by adsorbed hydrogen at potentials less than 0.1 V. The thickness of the surface layer was estimated to be increasing applied potential. Adsorption of hydrogen on the electrode surface was observed at potentials less than 0.1 V in 1 M H₂SO₄ with the electrode potential held constant at 0.1 V. The electrode was partially covered by adsorbed hydrogen at potentials less than 0.1 V. The thickness of the surface layer was estimated to be increasing applied potential.

ABSTRACT: The surface of a Pt electrode has been examined as a function of applied potential with reflection adsorption infrared spectroscopy and linear sweep voltammetry in a 1 M H₂SO₄ solution. Adsorbed hydrogen was present on the surface at potentials less than 0.1 V vs Ag/AgCl. Adsorbed hydrogen was reduced to dissolved H₂ and caused an up and shift in the potential frequency. At potentials greater than 0.1 V, adsorption on the surface of a hydrogen species blocked the electrode surface. Adsorption of hydrogen on the electrode surface was observed at potentials less than 0.1 V in 1 M H₂SO₄ with the electrode potential held constant at 0.1 V. The electrode was partially covered by adsorbed hydrogen at potentials less than 0.1 V. The thickness of the surface layer was estimated to be increasing applied potential.

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ABSTRACT: The surface of a Pt electrode has been examined as a function of applied potential with reflection adsorption infrared spectroscopy and linear sweep voltammetry in a 1 M H₂SO₄ solution. Adsorbed hydrogen was present on the surface at potentials less than 0.1 V vs Ag/AgCl. Adsorbed hydrogen was reduced to dissolved H₂ and caused an up and shift in the potential frequency. At potentials greater than 0.1 V, adsorption on the surface of a hydrogen species blocked the electrode surface. Adsorption of hydrogen on the electrode surface was observed at potentials less than 0.1 V in 1 M H₂SO₄ with the electrode potential held constant at 0.1 V. The electrode was partially covered by adsorbed hydrogen at potentials less than 0.1 V. The thickness of the surface layer was estimated to be increasing applied potential.

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STATE UNIV OF NEW YORK AT BUFFALO DEPT OF CHEMISTRY
(U) Degenerate Four Wave Mixing Study of Conformational
Transition of a Polydiacetylene, Poly-4 BCMU, in
Solution.

JUL 86 5P

PERSONAL AUTHORS: Cong, Peijun; Pang, Yang; Prasad, Paras N.

REPORT NO. SUNY AB TR-7

CONTRACT NO. F49620-85-C-0052

PROJECT NO. 2303

TASK NO. B3

MONITOR: AFOSR
TR-86-0948

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub. in Jnl. of Chemical Physics, v85
n2 p1077-1080, 15 Jul 86

ABSTRACT (U) A great deal of interest is currently centered on polydiacetylenes because of their unique electronic and nonlinear optical properties. One of the polydiacetylenes, 5,7 dodecadiyn 1,12-bis (4-butoxycarbonylmethylurethane) commonly abbreviated as poly-4-BCMU, has been extensively studied because of its visible color change from red to yellow under certain conditions, e.g., in chloroform/hexane solution when the molar fraction of CHCl₃ varies from 0 to 1, or in toluene solution when the temperature changes from 40 to 70C. The pronounced color change has been attributed to a conformational change from a rod (red) form to a coil (yellow) form. The conformational change in the poly-4 BCMU polydiacetylene was investigated by using nanosecond time-resolution degenerate four wave mixing. Polarization data along with the time response of the signal to be from a thermal grating. The degenerate four wave mixing signal changes dramatically during the rod to coil transition and fits a theoretical model of single chain conformational transition.

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DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN548

AD-A173 033 CONTINUED

DESCRIPTORS (U) POLYMERS, ACETYLENES, CHEMICAL REACTIONS, MOLECULAR STRUCTURE, BUTYL RADICALS, CARBONYL COMPOUNDS, URETHANES, CHLOROFORM, COLORS, GRATINGS (SPECTRA), HEXANES, MIXING, MODELS, NONLINEAR SYSTEMS, OPTICAL PROPERTIES, POLARIZATION, REACTION TIME, RED COLOR, SOLUTIONS (GENERAL), THEORY, THERMAL PROPERTIES, TOLUENES, VISIBLE SPECTRA, WAVES, YELLOW COLOR

IDENTIFIERS (U) Polyacetylenes, Urethane 4-Butoxy Carbonyl Methyl, PE61102F, WUAF0SR230383

AD-A173 023 11/2

PENNSYLVANIA STATE UNIV UNIVERSITY PARK DEPT OF MATERIALS SCIENCE AND ENGINEERING

(U) Surface Chemistry in Relation to the Strength and Fracture of Silicate Glasses.

85 31P

PERSONAL AUTHORS: Pantano, C. G.

PROJECT NO. 2303

TASK NO. A3

MONITOR: AFOSR
TR-85-0596

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Strength of Inorganic Glass and Fracture of Silicate Glasses, p37-66 1985.

ABSTRACT: (U) The chemical characteristics of silica and multicomponent silicate glass surfaces are summarized with an emphasis on those features which are expected to influence strength behavior and fracture. The surface composition, and any in-depth modification or surface layer formation, are examined with modern surface analysis techniques such as ion-scattering spectroscopy. Secondary ion mass spectroscopy and electron spectroscopy. The effects of hydration reactions under ambient conditions, and high temperature reactions under ambient conditions, and high temperature reactions or surface treatments during manufacture and processing are specifically addressed. In addition, fundamental studies of "clean" or "ideal" glass surfaces are used to describe the intrinsic structure and chemical reactivity of the surface species. Finally, an attempt is made to identify any direct and fundamental relationships between these surface chemical characteristics and the micromechanisms of fracture.

DESCRIPTORS: (U) FRACTURE MECHANICS, SILICATES, GLASS, SILICA GLASS, CHEMICAL PROPERTIES, SILICON DIOXIDE, HYDRATION, SURFACES, MODIFICATION, IONS, MASS SPECTROSCOPY, SURFACE CHEMISTRY, CHEMICAL REACTIONS, REACTIVITIES, ELECTRON SPECTROSCOPY, HIGH TEMPERATURE, STRENGTH MECHANICS, SCATTERING, SPECTROSCOPY, SURFACE

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AD-A173 023 CONTINUED

ANALYSIS: LAYERS, SURFACE FINISHING, MASS SPECTROSCOPY

IDENTIFIERS: (U) Silicate glass, Secondary Ion Mass Spectroscopy, PE61102F WUAFDSR2303A3

DTIC REPORT BIBLIOGRAPHY

SEARCH CONTROL NO. EVNS4B

AD-A173 012 7/4

ORIGIN: UNIV. EUGENE DEPT OF CHEMISTRY

(U) Rotational and Vibrational Spectra of Molecular Clusters

DESCRIPTIVE NOTE: Final rept. 1 Nov 82-31 Mar 86

JUN 86 29P

PERSONAL AUTHORS: Dyke, Thomas R.

CONTRACT NO. F49620-83-C-0007

PROJECT NO. 2303

TASK NO. B1

MONITOR: AFOSR
TR-86-0925

UNCLASSIFIED REPORT

ABSTRACT: (U) This research project studies the rotational and vibrational spectroscopy of hydrogen bonded complexes and van der Waals molecules and develops new techniques for gathering this information. The purpose is to provide basic information for modelling the effects of these molecules in atmospheric phenomena and to achieve insights concerning the intermolecular forces manifested in the weak bonds holding cluster molecules together. Rotational spectra were investigated the molecular beam electric resonance method. High resolution radiofrequency and microwave spectra of complexes observed by this technique give accurate rotational constants, electric dipole moments, and nuclear hyperfine interaction data which was used to provide structural data. Methods were developed for observing vibrational spectra of complexes in molecular beams using CARS. Raman spectra were obtained for molecular beams of HCN and DCN polymers in the CN and CH stretching regions. A force field model for the axial modes of these molecules was constructed by combining infrared and Raman data. Infrared absorption spectra for molecular beams of rare gas-OCS complexes on the ν_3 monomer mode region were obtained using tunable diode lasers. The spectra are rotationally resolved and the Doppler limited linewidths (0.004 cm) show no evidence of vibrational predissociation broadening.

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AD-A173 012

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DTIC REPORT BIBLIOGRAPHY

SEARCH CONTRO. NO. EVN543

AD-A173 012 CONTINUED

AD-A173 011 20/3 7/3 11/9

DESCRIPTORS (U) MOLECULAR COMPLEXES, HYDROGEN BONDS, INFRARED SPECTROSCOPY, RAMAN SPECTRA, MOLECULAR ROTATION, MOLECULAR VIBRATION, MOLECULAR BEAMS, RESONANT FREQUENCY, HYPERFINE STRUCTURE, ABSORPTION SPECTRA, HYDROGEN PEROXIDE, HYDROGEN SULFIDE, AMMONIA, CARBON DIOXIDE, MICROWAVE SPECTROSCOPY

IDENTIFIERS (U) CARS, Coherent Antistokes Raman Spectroscopy, van der Waals Forces, PES1102F, WUAFQSR2303B1

STATE UNIV OF NEW YORK AT BUFFALO DEPT OF CHEMISTRY

(U) Third Order Nonlinear Optical Interactions in Thin Films of Poly-p-phenylenebisthiazole Polymer Investigated by Picosecond and Subpicosecond Degenerate Four Wave Mixing.

MAY 86 4P

PERSONAL AUTHOR: Rao, D. N.; Swiatkiewicz, Jacek; Chopra, Pratibha; Ghoshal, Suniti K.; Prasad, Paras N.;

REPORT NO. SUNY-AB/TR-4

CONTRACT NO. F49620-85-C-0052, AFOSR-84-0281

PROJECT NO. 2303

TASK NO. B3

MONITOR: AFOSR TR-86-0951

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub in Applied Physics Letters, v48 n18 p1187-1189, 5 May 86.

ABSTRACT (U) The third order nonlinear optical susceptibility has been measured by degenerate four wave mixing in a 33-micrometer-thick biaxial film of a conjugated aromatic heterocyclic polymer, poly p-phenylenebisthiazole, commonly known as PBT, which has a very high mechanical strength due to its rigid rod conformation as well as environmental stability and a high laser damage threshold. For the first time, the response of the optical nonlinearity in the piezoelectric conjugated system has been experimentally verified to be in subpicoseconds. The value of χ superscript 3 is found to be about an order of magnitude larger than that of CS2. The measurement at two different wavelengths suggests that they are nonresonant χ -subscript 3 values. The measured anisotropy of χ -subscript 3 as a function of angular orientation at two different sets of laser polarization is explained by using the tensor properties of χ subscripts 3 in an anisotropic medium.

DESCRIPTORS (U) POLYMERIC FILMS, OPTICAL PROPERTIES

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AD-A173 010 11/9

POLYPHENYLENE, THIAZOLES, MOLECULAR STRUCTURE, ELECTRONIC STATES, ANGLES, ANISOTROPY, AROMATIC COMPOUNDS, CONFORMITY, ENVIRONMENTS, HETEROCYCLIC COMPOUNDS, HIGH STRENGTH, LASER DAMAGE, LASERS, MIXING, NONLINEAR SYSTEMS, ORIENTATION/DIRECTION, POLARIZATION, POLYMERS, RIGIDITY, RODS, STABILITY, STRENGTH/MECHANICS, THIN FILMS, WAVES, REPRINTS

WISCONSIN UNIV-MADISON DEPT OF CHEMISTRY

(U) Polysilanes as Photoinitiators for Vinyl Polymerization.

86 7P

PERSONAL AUTHORS: West, Robert ; Wolff, Andrew R. ; Peterson, Donald J. ;

CONTRACT NO. F49620-83-C-0044

PROJECT NO. 2310

TASK NO. A2

MONITOR: AFOSR
TR-86-0964

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Radiation of Curing, v13 p35-40 Jan 86.

ABSTRACT: (U) The polysilane high polymers, more correctly called polydiorganosilylenes, are made by condensing diorganodichlorosilanes with sodium metal. They are linear polymer in which all of the atoms in the polymer backbone are silicon atoms. Single dichlorosilanes produce homopolymers, and mixtures of two or more dichlorosilanes yield copolymers.

DESCRIPTORS: (U) *POLYSILANES, *POLYMERIZATION, *VINYL PLASTICS, ATOMS, COPOLYMERS, LINEAR SYSTEMS, METALS, POLYMERS, SILICON, SODIUM, PHOTOLYSIS, SOLUBILITY, ABSORPTION SPECTRA, OLEFIN POLYMERS

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SEARCH CONTROL NO. EVN54B

AD A173 009

7/4

FLORIDA UNIV GAINESVILLE DEPT OF CHEMISTRY

(U) Glow Discharge Source Atomization for the Laser
Excited Atomic Fluorescence Spectrometric Studies of
Indium.

86

7P

PERSONAL AUTHORS Patel, B. M., Winefordner, D. B.

CONTRACT NO. F49620-84-C-0002

PROJECT NO. 2303

TASK NO. A1

MONITOR AFOSR

TR 85 1010

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Spectrochimica Acta v41B n5
3469-474 1985

ABSTRACT: (U) A demountable glow discharge source has been used for the atomization of the analyte solutions deposited on graphite and copper rod cathodes. Indium atoms are sputtered atomized from the cathode surface and are excited by a pulsed, frequency doubled dye laser pumped by the nitrogen laser. Atomic fluorescence measurements were performed using the resonance fluorescence transitions. The detection limits of indium in aqueous solutions (10 ug) deposited on graphite and copper electrodes were 0.00000008 and 0.00000004 g, respectively at 2 ng and 11 ng.

DESCRIPTORS: (U) GLOW DISCHARGE, INDIUM, LASER INDUCED FLUORESCENCE, ATOMIZATION, COPPER, ELECTRODES, DEPOSITION, GRAPHITE, SOLUTIONS, MIXTURES, WATER, GRAPHITE, CATHODES, SURFACES, RODS, DYE LASERS, FREQUENCY MULTIPLIERS, LASER PUMPING, GLOW DISCHARGES, SOURCES, ATOMS, NITROGEN LASERS, SPUTTERING, REPRINTS, REPRINTS

IDENTIFIERS (U) PE61102F WUAFOSR2303A1

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AD A173 007

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AD-A173 007

7/3

SAN DIEGO STATE UNIV CA DEPT OF CHEMISTRY

(U) Comparative Trapping Kinetics of SILYLENE, 1, Silylene
Reactions with 1,3-Butadiene and Acetylene and with
and with 1,3-butadiene and Methanol

86

9P

PERSONAL AUTHORS Rogers, D. S., O'Neal, H. E., Ring, M. A.

CONTRACT NO. AFOSR-83-0209

PROJECT NO. 2303

TASK NO. B2

MONITOR AFOSR

TR-86-0997

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Organometallics, v5 n7 p1467-
1473 1986

ABSTRACT: (U) Relative rate studies of silylene trapping by butadiene, methanol, and acetylene are reported. For the reactions: $\text{SiH}_2 + \text{H}_2\text{C}=\text{CHCH}=\text{CH}_2$ yields CH_2CH_2 ; $\text{CHCH}_2\text{SiH}_2$ vs. $\text{SiH}_2 + \text{CH}_2\text{OH}$ yields CH_3OSiH_3 , in (k sub 3) k sub 717 $\pm$ 15.91 + or - 0.91, 5846 + or - 15401 cal/RT (1696-1016 K), and reaction 3 vs. $\text{SiH}_2 + \text{HC}$ triple bond CH yields $\text{HC}=\text{OSiH}_3$, in (k sub 3) k sub 6) $\pm$ 1.51 + or - 0.32 (1712 + or - 520) cal/RT (503-102 K). Relative rates, extrapolated to room temperature, are favorably compared to existing absolute rate constant measurements. On the basis of estimated Arrhenius parameters for the reaction 7, tentative absolute Arrhenius parameters with temperature dependencies for a number of silylene substrate reactions are calculated. Keywords: Methoxysilane, ethynylsilane, silacyclopentene

DESCRIPTORS: (U) ACETYLENE, CARBINOLS, SILICON COMPOUNDS, BUTADIENES, ARRHENIUS EQUATION, CONSTANTS, PARAMETERS, RATES, REACTANTS, CHEMISTRY, SILANES, MEASUREMENT, REPRINTS

IDENTIFIERS (U) Silylenes, PE61102F WUAFOSR2303B2

SEARCH: CONTROL NO EVNS:4R
AD-A173 006 CONTINUED

AD-A117 295

ILLINOIS INST. OF TECH. CHICAGO DEPT. OF CHEMISTRY

Unimolecular Rate Constants for Collisional Deactivation of Br₂ B³ and B¹ by Br₂, X₂, and He

85 119

PERSONAL AUTHOR'S VAN DE BURGT, L. J., Heaven, M. C.,

MONITOR: AFOSR
TR-86-0995

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Chemical Physics, v103 p407-416 1986.

ABSTRACT: The electronic self-quenching of Br₂ (B) was investigated in the gas phase. The molecules were excited to individual rovibrational levels by a pulsed dye laser, and the fluorescence decay monitored in real time. Negativity curved Stern-Volmer plots were obtained for low J levels (J=7, 11, and 14), and these were interpreted in terms of a deactivation mechanism involving collisional energy transfer to predissociated levels. The Stern-Volmer plots and resolved fluorescence data have been analyzed using detailed kinetic model of the quenching, energy transfer, and predissociation occurring within a collisionally coupled set of rovibrational levels. The model provided rate constants for quenching 4.2×10^{-10} or 5.1×10^{-10} to the power CC molecule's rotational energy transfer 6 + or - 2×10^{-10} to the power CC molecules s, and indirect evidence for efficient near resonant vibrational energy transfer (V-R-T). Electronic quenching of Br₂(B) by He was also investigated. Previous studies gave rate constants of approx 1×10^{-10} to the power CC molecule s, but in the present work it was found that the deactivation is entirely a consequence of energy transfer to predissociated levels. An upper limit of $k \leq 2 \times 10^{-10}$ to the power CC molecule s was determined. **Keywords:** Lasing Kinetics

DESCRIPTORS: ION COLLISIONS, CONSTANTS, COUPLING-INTERACTION, DEACTIVATION, DECAY DYE LASERS, ENERGY TRANSFER GASES, KINETICS, MODELS, POWER, PULSED LASERS, RATES, REAL TIME, RESONANCE, LASER INDUCED FLUORESCENCE, ELECTRONIC STATES, QUENCHING, INHIBITION.

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SEARCH CONTROL NO. EVN54B

AD-A172 996 20 5

AD-A172 995 6/3 5/10

BERKELEY RESEARCH ASSOCIATES INC CA

SRI INTERNATIONAL MENLO PARK CA LIFE SCIENCES DIV

(U) Free Electron Laser Theory

(U) Neurophysiological Bases of Event-Related Potentials

DESCRIPTIVE NOTE: Final rept. no. 4. 1 May 85 30 Apr 86

DESCRIPTIVE NOTE: Annual rept. no. 4. 1 May 85-30 Apr 86.

JUL 86 98P

AUG 86 66P

PERSONAL AUTHORS: Colson W B

PERSONAL AUTHORS: Rebert, Charles S.

REPORT NO BRA-86-313R

CONTRACT NO. F49620-82-K-0016

CONTRACT NO F49620-85 C-0087

PROJECT NO. 2313

PROJECT NO. 2 31

TASK NO. A4

TASK NO. A1

MONITOR AFOSR
TR-86-0910

MONITOR AFOSR
TR 85 0912

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

ABSTRACT (U) Free electron laser (FEL) theory is extended to explain several effects associated with high gain operation. The trapped particle instability is removed for short pulses FELs. FEL oscillators, and FEL amplifiers. A new FEL theory exact includes the effect of an arbitrary electron distribution function and an excitation is given for optical free running. Keywords: Free electron laser; trapped particle instability; Laser oscillators; Laser amplifiers; and free particle

DESCRIPTORS: 1. FREE ELECTRON LASER; LASER; AMPLIFIERS; OSCILLATORS; TRAPPED PARTICLES; STABILITY; PULSED LASERS; SHORT PULSE BEAM CURMING; LASER BEAMS; GAIN

IDENTIFIERS: (U) Laser oscillators; Wiggler magnets; WJAFOSR2301A4; PE61102F

ABSTRACT: (U) In order to more fully understand the physiological and psychological significance of event-related brain potentials, cortical and subcortical recordings were obtained from monkeys performing an operant conditioning task (cued reaction time). During the past year three cynomolgus monkeys were studied following the administration of MPTP, a drug that selectively destroys nigra-striatal dopaminergic neurons in the pars compacta of the substantia nigra. This manipulation indicated the critical role of the nigra-striatal dopamine for task performance enhancement would be to determine if increasing nigra-striatal dopaminergic activity would enhance performance and electrophysiological response. Keywords: Subcortical Nuclei; Biocybernetics; Cognition; Reaction time

DESCRIPTORS: (U) NEUROPHYSIOLOGY; ELECTROENCEPHALOGRAPHY; ELECTROPHYSIOLOGY; CEREBRAL CORTEX; CONDITIONED RESPONSE; PHARMACOLOGICAL ANTAGONISTS; DOPAMINE; NUCLEI; BRAIN; COGNITION; CYBERNETICS; JOBS; MONKEYS; OPTIMIZATION; PERFORMANCE (HUMAN); POTENTIAL THEORY; REACTION TIME

IDENTIFIERS: (U) Event Related Potentials; LPH SRU 4373; WJAFOSR213A4; PE61102F

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SEARCH CONTROL NO EVN54B
AD A172 980 CONTINUED

AERODYNE RESEARCH INC BILLERICA MA

U- Study of Submicron Particle Size Distributions by
Laser Doppler Measurement of Brownian Motion

DESCRIPTIVE NOTE Annual technical report 1 Sep 84-30 Sep
85

FEB 86 36P

PERSONAL AUTHORS: McCurdy, Keith E.; Stanton, Alan C.;
Cheng, Wei K.

REPORT NO ARI-PR-504

CONTRACT NO F49620-83-C-0154

PROJECT NO 2208

T SK NO A3

MONITOR AFOSR
TR-86 0873

UNCLASSIFIED REPORT

ABSTRACT (U) Few nonintrusive techniques are available for particle measurement in the submicron size range (0.1 micron diameter). Yet measurement of these particles is basic to an understanding of important processes in combustion, such as soot formation and oxidation. The objective of the present research is the development and application of a technique for measurement of individual submicron particles in a gas stream. The approach is to measure the inertial relaxation time of individual particles of Brownian motion, by statistical analysis of the time resolved 100 MHz heterodyne signal obtained in an interferometer system resembling a more conventional laser Doppler velocimeter. Progress to date has included the development and refinement of an optical system for conducting the experimental studies. This optical system and experimental method are described in detail in conjunction with preliminary measurement of H₂O particles which confirm the laser Doppler velocimeter mode of operation of the apparatus. A theory describing the statistical behavior of the signal from such a measurement signal has been developed from theory the probability distribution for the time intervals between

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the zeros of the Brownian motion velocity may be obtained. This program will later focus on measurements of particles of known size suspended in liquids in order to maximize the signal to noise of the optical measuring system, to refine the data acquisition methods, and to verify the theoretical understanding of the acquired signal. Followup the demonstration of the experimental approach, the technique will be applied to measurements of submicron particles suspended in gas flows.

DESCRIPTORS: (U) BROWNIAN MOTION, LIGHT SCATTERING, LASER BEAMS, COMBUSTION, PARTICLE SIZE, SOOT, LASER VELOCIMETERS, DOPPLER EFFECT, PAYLEIGH SCATTERING, REFRACTIVE INDEX, MONTE CARLO METHOD, SIMULATION

IDENTIFIERS: (U) Submicron size, WUAFOSR2308A2, PE61102F

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DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN54B

AD-A172 973 21-2 21/5 AD-A172 973 CONTINUED

CALIFORNIA UNIV IRVINE COMBUSTION LAB

(U) Mechanisms of Exhaust Pollutants and Plume Formation in Continuous Combustion.

DESCRIPTIVE NOTE Final rept. May 83 Jul 84.

NOV 84 58P

PERSONAL AUTHORS Samuelson, G. S.

REPORT NO UCI ATR 84-18

CONTRACT NO AFOSR-84-0202

PROJECT NO 2303

TASK NO A2

MONITOR AFOSR
IR 85 0883

interests in complex flows.

DESCRIPTORS (U) *COMBUSTORS, *FUEL SPRAYS, GAS TURBINES, RAMJET ENGINES, JET ENGINE FUELS, FUEL NOZZLES, DROPS, SIZES(DIMENSIONS), STABILIZATION, FLOW, MEASUREMENT, LASER BEAMS

IDENTIFIERS (U) *Swirl stabilized combustors.
WUAFOSR2308A2, PE61102F

UNCLASSIFIED REPORT

ABSTRACT U The goal of the present grant was to develop laboratory model combustors and experimental methodology suitable for the acquisition of the desired information. In a previous grant, FA 55851, a premixed laboratory combustor, the opposed jet combustor, was developed and a data base was established in both a gas and non reacting and reacting system as well as a hydrodynamic reactor system. In addition, a non premixed model swirl stabilized laboratory combustor, the Dilute Swirl Combustor (DSC), was developed, tested, and a data base was established for non reacting as well as reacting gas-phase-fueled conditions. The present grant was directed to operating the DSC on a variety of atomized liquid fuels to establish a droplet sizing capability that would lead over the five year duration of the grant to in situ measurements of drop size and drop velocity as well as gas velocity within the DSC and to the study of turbulent transport in swirl stabilized liquid fuel spray atomized reacting flows. In particular, the objectives of the program were: 1. To develop and verify a capability to conduct in situ measurements of droplet size and velocity. 2. To operate the DSC with a liquid, gas, atomized and liquid nozzle and 3. To conduct drop velocity studies in support of jet force laboratory

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AD A172 967 CONTINUED

ARIZONA UNIV TUCSON OPTICAL SCIENCES CENTER

(U) Optical Processing in Radon Space

processing 3D data in Radon space concentrated primarily on analysis of prospective materials for wavelength-multiplexed mass-data storage

DESCRIPTIVE NOTE Final rept Jul 84 Jan 86

DESCRIPTORS: (U) OPTICAL PROCESSING, SIGNAL PROCESSING, SPECTRUM ANALYSIS, IMAGE PROCESSING, MATHEMATICAL FILTERS, TWO DIMENSIONAL, THREE DIMENSIONAL, FOURIER TRANSFORMATION, SURFACE ACOUSTIC WAVE DEVICES, REGRESSION ANALYSIS

JUN 86 113P

PERSONAL AUTHORS Barrett, Harrison H

CONTRACT NO AFOSR-84-0188

IDENTIFIERS: (U) Radon transformation, Radon space, Wigner distribution functions, Hartley transformation, Yule Walker model, WUAFOSR230581, PEG1102F

PROJECT NO 2305

TASK NO B1

MONITOR: AFOSR
TR 86-0916

UNCLASSIFIED REPORT

ABSTRACT: (U) The stated goals of the program were: Theoretical investigation of the role of the Radon transform in signal processing, including enumeration of the operations achievable in Radon space. Construction of a practical system for 2D spectral analysis and image filtering. Proof of principle experiments for other processing operations, such as bandwidth compression and calculation of the Wigner distribution function; and Determination of the feasibility of Radon-space processing 3D data, emphasizing not only system architecture but also storage media capable of saving and rapidly retrieving the requisite data arrays. Several 2D signal-processing operations susceptible to solution in radon space. These include the Hartley transform, certain joint coordinate-frequency representations (e.g., the Wigner distribution function and Woodward ambiguity function), certain algorithms for spectrum estimation (e.g., the periodogram and the Yule Walker autoregressive model), and the cepstrum. Most of these Radon space operations have been demonstrated in computer simulations and some have been performed by means of analog hardware in the hybrid Radon space signal processing system. This system can perform a family of processing operations at about five frames per second, limited by the image rotation rate. Processing is performed by surface acoustic wave (SAW) filters, and the 2D processed signal is displayed on a CRT. Studies of the feasibility of

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TEXAS A AND M UNIV COLLEGE STATION TX MECHANICS AND MATERIALS CENTER

AD A172 966 CONTINUED

DESCRIPTORS (U) STRUCTURAL RESPONSE, THERMOMECHANICS, SPACE SYSTEMS, STRUCTURES

(U) A Model for Predicting Thermomechanical Response of Large Space Structures

IDENTIFIERS (U) Large space structures, WUAFOSR2303KI, PE61102F

DESCRIPTIVE NOTE Final technical rept Apr 83 May 86

JUL 86 286F

PERSONAL AUTHORS Allen, D. H. Haysler, W. E.

REPORT NO WM 4375 85 16

CONTRACT NO 13620 89-C-0067

PROJECT NO 2403

TASK NO 41

MONITOR AFJSP

TR 86 0834

UNCLASSIFIED REPORT

ABSTRACT (U) Contents: Research Completed. Summary of Completed Research. Literature Survey. Selection of Constitutive Equations. Coupled Energy Balance Law. Space Structural Response Algorithms. Model Results for Large Space Structures. Publications List. Appendix. Interim Technical Reports. A Prediction of Heat Generation in a Thermally Constrained Uniaxial Bar. The Gradient and Accurate Alternative to Subincrementation for Elastic-Plastic Analysis by the Finite Element Method. Predicted Axial Temperature Gradient in A Thermoplastic Uniaxial Bar Due to Thermomechanical Coupling. Evolved Temperature Field in a Thermomechanically Heated Viscoelastic Space Truss. Study of Effect of Degradation of Material Properties on the Dynamic Response of Large Space Structures. A Fractographic Study of Damage Mechanisms in Short Fiber Metal Matrix Composites. Analytical and Numerical Solution of a Time Dependent Thermoelastic Problem in Mechanics. A Finite Element Model for the Thermomechanical Analysis of Large Composite Space Structures. Predicted Dynamic Response of a Composite Beam with Temperature Dependent and Spatially Variable Properties.

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AD A172 945 SEARCH CONTROL NO EVN54B

AD A172 945 CONTINUED

AD A172 945 TORONTO UNIT, ONTARIO INSTITUTE FOR AEROSPACE STUDIES

U The Application of Laser Saturation to the Efficient Generation of Short Wavelength Radiation from Plasmas

DESCRIPTIVE NOTE Final Report 1 Nov 84 31 Oct 85

MAY 86 135P

PERSONAL AUTHORS Measures, R. M.

CONTRACT NO AFOSR 85-0020

PROJECT NO 2201

TASK NO AP

MONITOR AFOSR TR 85-0906

UNCLASSIFIED REPORT

ABSTRACT U. Resonant laser pumping of transitions within atoms or ions represents a powerful mode of coupling laser energy into a gas or plasma. In the case of laser saturation of a resonance transition rapid heating of the free electrons by superelastic collision quenching of the laser pumped state has been shown to play the central role in this process. We have developed a computer code that models this laser ionization based on resonance saturation (LIBORS) and permits us to map the three dimensional nature of this complex interaction. We have been able to show by comparison with experiment that this LIBORS computer code can predict the radial and axial electron density and temperature profiles of the plasma formed along the path of the laser pulse. These experimental results in themselves represent the first detailed measurements of a sodium plasma created by laser resonance saturation and reveal the importance of laser attenuation in the formation of the plasma. We have also shown that both one and two photon resonant laser pumping of a cold, unexcited plasma created by two photon ionization of strontium vapor can lead to rapid excitation of high lying states of the strontium ion. Lastly we have demonstrated parametric generation within this same strontium plasma when the laser is tuned close to a two photon transition of the ion.

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DESCRIPTORS U. LASER PUMPING, COMPUTER PROGRAMS, PLASMAS-PHYSICS, SODIUM, ELECTRON DENSITY, TEMPERATURE, SATURATION, FREE ELECTRONS, THREE DIMENSIONAL EXPERIMENTAL DATA, PHOTONS, STRONTIUM

IDENTIFIERS U. LIBORS computer program, LIBORS-Laser Ionization Based on Resonance Saturation, PE61102F, WUAFDSR2301AR

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AD A172 944 7 1 20 12 20 5 DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO EVN54B AD A172 944 CONTINUED

MATERIALS RESEARCH SOCIETY UNIVERSITY PARK PA

(U) Laser-Controlled Chemical Processing of Surfaces Symposium Held on November 1983 in Boston Massachusetts, U S A

analysis of deposition and etching processes. In the sixth section, we include processes that are not easily classified within the preceding sections. A final section covers papers that are mainly analytic.

DESCRIPTIVE NOTE Final rept 1 Nov 83 31 Jul 84

DESCRIPTORS: (U) SURFACE FINISHING, CHEMICAL ENGINEERING, LASER APPLICATIONS, FILMS, VAPOR DEPOSITION, ETCHING, DOPING, SOLIDS, PYROLYSIS, PHOTOCHEMICAL REACTIONS, ELECTROCHEMISTRY, METHODOLOGY

JUL 84 423P

PERSONAL AUTHORS Johnson A W (Erich Rich Daniel J Schlossberg Howard R

IDENTIFIERS (U) PE61102F, WUAFOSR2301A1

CONFRACT NO AFOSR-84 0046

PROJECT NO 2301

TASK NO A1

MONITOR AFOSR TR 85 1064

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Proceedings of the Materials Research Society Symposia Volume 29.

ABSTRACT (U) On the dates of the 14th to the 16th of November 1983 as part of its annual meeting in Boston, MA, the Materials Research Society sponsored a symposium. Laser Controlled Chemical Processing of Surfaces. The symposium was the Second Annual 1985 event organized around the evolving field of materials processing by chemistry induced with laser radiation. This a field which is rapidly expanding to include a diverse variety of methods of activating or confining reaction for film deposition, etching, or doping of solid surfaces. The volume is organized according to the main topic areas of the symposium. The first section is devoted to laser chemical vapor deposition reactions, driven thermally by pyrolysis or by dominantly thermal surface treatment. This includes reactions, variously termed L-CVD and laser pyrolytic. A second section is structured around primarily photochemical or non thermal photo deposition reactions. Electrochemistry driven by lasers is covered in the third section. The fourth section covers dry etching processes only. A fifth section includes papers from the expanding applications of laser methods for

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AD-A172 937 SEARCH CONTROL NO EVN548

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AD A172 937 CONTINUED

TUFTS UNIV MEDFORD MA DEPT OF PHYSICS AND ASTRONOMY

DESCRIPTORS (U) DWARF STARS, STELLAR ATMOSPHERES, COHERENT ELECTROMAGNETIC RADIATION, FLARES, MICROWAVES, CORONAS, EXTRATERRESTRIAL RADIATION, NARROWBAND ULTRAHIGH FREQUENCY, REPRINTS

(U) Narrow Band Slowly Varying Decimetric Radiation from the Dwarf M Flare Star YZ Canis Minoris

MAR 86 8P

IDENTIFIERS: (U) Stellar eruptions, Stellar flares, Decimetric waves, PE61102F, WUAFOSR2311A1

PERSONAL AUTHORS Lang Kenneth R ; Willson, Robert F. ;

CONTRACT NO AFOSR 33-0019

PROJECT NO 2311

TASK NO A1

MONITOR: AFOSR
TR 85 0985

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Astrophysical Jnl., v302 n1
pt2 PL17-L21 1 Mar 86

ABSTRACT: (U) Narrow-band slowly varying microwave radiation has been detected from the dwarf M star YZ Canis Minoris at frequencies near 1465 MHz. This quiescent, or nonflaring, emission cannot be attributed to gyroresonant radiation from coronal loops; the loops would have to be more than 200 times the stellar radius in size with magnetic field strengths of $H > \text{or} = 100 \text{ G}$ at this distance. The narrow-band structure ($\Delta\nu/\nu > \text{or} = 0.1$) of the slowly varying radiation cannot be explained by continuum emission processes. Our observations may be explained by coherent wurt mechanisms like electron-cyclotron masers or coherent plasma radiation. Maser action at the second harmonic of the gyrofrequency implies a longitudinal magnetic field strength of 250 G and an electron density of $N_{\text{sub } e} = \text{approx } 6 \times 10^9$ to the ninth power/cc. Coherent plasma radiation at the second harmonic of the plasma frequency similarly requires $N_{\text{sub } e} = \text{approx } 6 \times 10^9$ to the ninth power/cc but a longitudinal magnetic field strength of $H_{\text{sub } L} < 250 \text{ G}$. The slow variation of the narrow-band emission might be explained by the stochastic nature of continued low-level, coherent burst activity. There are possible analogies with narrow-band decimetric bursts observed on the Sun.

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SEARCH CONTROL NO. EVN548

AD-A172 936 7.3 7/4

AD-A172 935 7/4 14/5

ARIZONA UNIV TUCSON CARL S MARVEL LABS OF CHEMISTRY

PITTSBURGH UNIV PA SURFACE SCIENCE CENTER

(U) Polymerization of 1-Bromo-2-Phenylacetylene.

(U) An Enhanced Electron-Stimulated-Desorption Ion Angular Distribution Method for Imaging Molecular Orientations of Adsorbed Species.

86 9P

PERSONAL AUTHORS Trumbo, D. L.; Marvel, C. S.

JUN 86 6P

CONTRACT NO AFOSR-82-0007

PERSONAL AUTHORS Dresser, M. J.; Alvey, M. D.; Yates, J. T., Jr.

PROJECT NO 2304

CONTRACT NO. AFOSR-82-013

TASK NO. A6

PROJECT NO. 2301

MONITOR AFOSR

TP 85-1022

TASK NO. A7

UNCLASSIFIED REPORT

MONITOR AFOSR

TR-86-1023

SUPPLEMENTARY NOTE: Pub. in Jnl. of Polymer Science: Part A Polymer Chemistry, v24 p759-766 1986.

UNCLASSIFIED REPORT

ABSTRACT: (U) The title monomer was polymerized by thermal initiation and the polymers were analyzed by IR, NMR, and GPC. The polymers were found to be low molecular weight species that had eliminated bromine as the polymerization progressed. In addition, initiation with AIBN was attempted, however, no difference in rate of polymerization, percent conversion, or molecular weight was noted between these polymers and those synthesized by thermal initiation. Also, no initiator fragments were found in the polymers.

DESCRIPTORS (U) POLYMERIZATION; ACETYLENE; PHENYL RADICALS; BROMINE; POLYMERS; INFRARED SPECTROSCOPY; NUCLEAR MAGNETIC RESONANCE; GAS CHROMATOGRAPHY; MOLECULAR WEIGHT; REPRINTS

IDENTIFIERS (U) PE61102F; WUAFUSR2304A6

SUPPLEMENTARY NOTE: Pub. in Jnl. of Vacuum Science and Technology A, v4 n3 p1446-1450 May/Jun 86.

ABSTRACT: (U) A striking improvement has been made in quality of positive ion angular distribution data obtained in electron-stimulated desorption ion angular distribution (ESDIAD). The improved method has been used to study configurational changes in chemisorbed CO on Ni(110) which are induced by intermolecular interactions at high coverage. CO molecules adsorbed with normal C-O bond orientations on ridge Ni sites tilt away from the normal by +19 in directions perpendicular to the ridges for CO coverages above 0.75 CO/Ni. Evidence for the C-O tilting has also been studied as a function of electron energy. This has demonstrated that an O(1s) excitation process leads to intense and sharp O⁺ ESDIAD beams. The improved ESDIAD method involves the removal of a soft x-ray background signal which originates from electron impact on the metal surface, and is therefore present in all photographic ESDIAD measurements made to date. The angular distribution of the background effect is independent of electron energy and current density. The resultant pure ESDIAD patterns show more quantitative details in high and low signal regions than has been seen before.

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AD A172 934 21/2

DESCRIPTORS U SURFACE CHEMISTRY, MOLECULAR
PROPERTIES, ADSORPTION, PHOTOGRAPHY, ELECTRONS,
STIMULATION, GENERAL, CATIONS, DISTRIBUTION
CHEMISORPTION, CARBON MONOXIDE, ORIENTATION, DIRECTION,
MOLECULE MOLECULE INTERACTIONS, NICKEL, REPRINTS

CALIFORNIA UNIV BERKELEY DEPT OF MECHANICAL ENGINEERING

(U) Application of Rayleigh Scattering to Turbulent Flow
with Heat Transfer and Combustion.

DESCRIPTIVE NOTE: Final rept. 1 May 85-30 Apr 86.

IDENTIFIERS (U) ESDIAD: Electron Stimulation Desorption
Ion Angular Distribution, PE61102F, WUAFOSR2301A7

JUN 86 10P

PERSONAL AUTHORS: Talbot, L.

CONTRACT NO. AFOSR-84-0124

PROJECT NO. 2308

TASK NO. A2

MONITOR: AFOSR
TR-86-0881

UNCLASSIFIED REPORT

ABSTRACT: (U) Studies of premixed turbulent v-shaped flames have been carried out using two-point Rayleigh scattering. Density fluctuation intensities, two-point density covariances, and mean density profiles were found to be in good agreement with a wrinkled laminar flame model which is an extension of the Bray-Moss-Libby model. The probability density function for the location of the flame brush was measured and found to have a self-similar behavior when scaled with the maximum slope thickness. A new optical technique was developed to make time-resolved Rayleigh scattering measurements along a length of a laser beam, thus extending the two-point technique to a multipoint one. The technique has been applied to the investigation of the dynamics of v-shaped premixed turbulent flames. Some of the findings are that incident turbulence controls flame motion in the frequency range 100-100 Hz, and that an increase in heat release for a given incident turbulence intensity increases the amplitude of the flame fluctuations without modifying their spectral characteristics.

DESCRIPTORS: (U) FLAMES, TURBULENCE, SHEETS, RAYLEIGH
SCATTERING, LASER BEAMS, MIXING, DENSITY, COVARIANCE,
PROBABILITY DENSITY FUNCTIONS

IDENTIFIERS (U) Premixed turbulent flame structure, Ivc

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SEARCH CONTROL NO. EVN54B

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AD-A172 923 20/12

point Rayleigh scattering. Laminar flame model. Turbulent
flame brush. PE61102F. WUAFOSR2303A2

IOWA STATE UNIV AMES

(U) Synthesis and Characterization of Thin Films.

DESCRIPTIVE NOTE: Annual rept. 1 Sep 84-30 Nov 85.

JUL 86 26P

PERSONAL AUTHORS: Lakin, K. M. ;

CONTRACT NO. AFOSR-84-0388

PROJECT NO. 2306

TASK NO. B2

MONITOR: AFOSR
TR-86-0859

UNCLASSIFIED REPORT

ABSTRACT: (U) During this one year period the installation of a single source ionized cluster beam (ICB) deposition system was completed. a three source ICB system was designed and purchased, the LiNbO3 thin film and ellipsometry projects neared completion

DESCRIPTORS: (U) THIN FILMS, LITHIUM NIOBATES, VACUUM DEPOSITION, SPUTTERING, ION BEAMS, CLUSTERING, ULTRAHIGH VACUUM, ELLIPSOMETERS, MONITORING

IDENTIFIERS: (U) ICB Ionized Cluster Beams
WUAFOSR2306B2, PE61102F

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AD-A172 922 1 3
 MASSACHUSETTS INST OF TECH CAMBRIDGE TECHNOLOGY LAB FOR
 ADVANCED COMPOSITES
 (U) Dynamics and Aeroelasticity of Composite Structures
 (U) Basic Instability Mechanisms in Chemically Reacting
 Subsonic and Supersonic Flows.

DESCRIPTIVE NOTE Final rept. 1 May 84-30 Jun 85. Annual rept. 30 Sep 84-29 Sep 85.

MAR 85 30P
 PERSONAL AUTHORS Dugundji, John ; Chen, Gun-Shing ;
 REPORT NO. TELAC-85-25
 CONTRACT NO. AFOSR-84-0142
 PROJECT NO. 2302
 TASK NO. B1
 MONITOR AFOSR
 TR-86-0892

UNCLASSIFIED REPORT

ABSTRACT: (U) An analytical and experimental investigation was made of the aeroelastic flutter and divergence behavior of graphite/epoxy forward swept wings with rigid body pitch and plunge freedoms present. A complete, two-sided 30-degree forward swept wing aircraft model was constructed and mounted with low friction bearing in a low speed wind tunnel. Four different ply layup wings could be interchanged on the model. Wind tunnel tests on the free flying models revealed body freedom flutter, bending torsion flutter, and a support dynamic instability which could be eliminated by proper adjustment of the support stiffness. Good agreement with linear theory was found for the observed instabilities.

DESCRIPTORS (U) SWEPTFORWARD WINGS, EPOXY COMPOSITES, GRAPHITED MATERIALS, AERELASTICITY, FLUTTER, MODEL TESTS
 IDENTIFIERS (U) Divergence, WUAFOSR2302B1, PEG1102F

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AD-A172 904 21/2 20/4 21/1

MASSACHUSETTS INST OF TECH CAMBRIDGE

(U) Basic Instability Mechanisms in Chemically Reacting
 Subsonic and Supersonic Flows.

DESCRIPTIVE NOTE: Annual rept. 30 Sep 84-29 Sep 85.

OCT 85 28P
 PERSONAL AUTHORS: Toong, Tau-Yi ;
 CONTRACT NO. AFOSR-83-0373
 PROJECT NO. 2308
 TASK NO. A2
 MONITOR AFOSR
 TR-86-0887

UNCLASSIFIED REPORT

ABSTRACT: (U) Both theoretical and experimental studies were conducted to determine and elucidate major mechanisms governing turbulence-combustion interactions. The theoretical study showed the importance of wrinkling-like effects as well as the effects of the chemical reaction rate on the evolution of fluctuations in streamwise- and transverse-velocity, temperature, concentration, and vorticity in a shear layer. The wrinkling-like effects were induced by the transverse-velocity fluctuations in nonuniform mean flows. The direct rate-augmentation effects due to reaction led to changes in phase relationships between the various fluctuations, resulting in turbulent energy and mass transport in a direction opposite to that suggested by the gradient model in that part of the shear layer nearer the unreacted region. The experimental study showed the effects of adding ethane at the same overall equivalence ratio on the thermal structure of methane/air flames. Temperature fluctuations were augmented by ethane addition, the highest augmentation being observed at 10% ethane addition. A one-component Laser-Doppler velocimetry system was installed and tested.

DESCRIPTORS (U) COMBUSTION, TURBULENCE, FLAME, PROPAGATION, SUBSONIC FLOW, SUPERSONIC FLOW, COMBUSTION, STABILITY, INTERACTIONS, REACTION KINETICS, CHEMICAL

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REACTIONS, SHEAR PROPERTIES, TEMPERATURE,
CONCENTRATION (CHEMISTRY), VORTICES, MASS TRANSFER,
ETHANES, FLAMES, VELOCIMETERS

TORONTO UNIV DOWNSVIEW (ONTARIO) INST FOR AEROSPACE
STUDIES

(U) Random-Choice-Method Solutions for Two-Dimensional
Planar and Axisymmetric Steady Supersonic Flows.

DESCRIPTIVE NOTE: Interim rept..

JAN 86 102P

PERSONAL AUTHORS: Shi, Z. C.; Gottlieb, J. J. ;

REPORT NO. UTIAS-297

CONTRACT NO. AFOSR-82-0096

PROJECT NO. 2307

TASK NO. A1

MONITOR: AFOSR
TR-86-0902

UNCLASSIFIED REPORT

ABSTRACT: (U) A random choice method (RCM) is developed for obtaining fairly practical and efficient numerical solutions for two dimensional planar and axisymmetric steady supersonic flows, such as those for sharp edged planar airfoils, supersonic inlets of aircraft engines, pointed bodies of revolution, supersonic nozzles, and free jets. This method is based on the solution of a Riemann problem, which is the elemental solution of the hyperbolic equations of two dimensional steady supersonic flows. The Riemann problem consists of two waves separated by a slip stream, and each wave can be either an oblique shock wave or a Prandtl Meyer expansion wave. Advanced techniques are given for solving the Riemann problem iteratively, handling the boundary conditions along body and free jet surfaces, and computing only certain parts of flow fields of interest. Many interesting and practical numerical solutions are presented for different types of planar and axisymmetric flows, to demonstrate the applicability, capability, and limitations of the RCM. Numerical results are shown to be in excellent agreement with both known analytical solutions and results from the method of characteristics.

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OTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN54B

AD-A172 903 CONTINUED

AD-A172 899 12/1

DESCRIPTORS: (U) SUPERSONIC INLETS, STEADY FLOW,
SUPERSONIC FLOW, NUMERICAL ANALYSIS, BOUNDARY VALUE
PROBLEMS, TWO DIMENSIONAL, AXIALLY SYMMETRIC FLOW, DATA
REDUCTION, GRAPHS, CANADA

CALIFORNIA UNIV SAN DIEGO LA JOLLA INST FOR PURE AND
APPLIED PHYSICAL SCIENCES

(U) The Analytic Structures of Dynamical Systems.

IDENTIFIERS: (U) Random choice method, Free jet flow,
Riemann problem, Prandtl Meyer flow

DESCRIPTIVE NOTE: Final rept. 1 Oct 85-31 Mar 86.

86 13p

PERSONAL AUTHORS: Weiss, John ;

CONTRACT NO. AFOSR-84-0128

PROJECT NO. 2304

TASK NO. A4

MONITOR: AFOSR
TR-86-0915

UNCLASSIFIED REPORT

ABSTRACT: (U) A backlund transformation and linearization
for an instance of the henon heiles system is examined.
This provides a special form of solution depending on the
three parameters. In addition, a direct formulation in
terms of the schwarzian derivative is defined for the
henon heiles system and second Painleve transcendent.
This provides (1) a classification of the Henon Heiles
system as equations of Novikov type and; (2) a simple
method for deriving the Backlund transformations and
special solutions of the second Painleve transcendent. As
equations of Novikov type the integrable occurrences of
the Henon Heiles system can be completely integrated by
known methods.

DESCRIPTORS: (U) TRANSFORMATIONS, MATHEMATICS,
SOLUTIONS, GENERAL, PARTIAL DIFFERENTIAL EQUATIONS,
RICCATI EQUATION

IDENTIFIERS: (U) Backlund transformation, Henon Heiles
system, Painleve transcendent, Lax pairs, Miura
transformations, PEG1102F, WUAFOSR2304A4

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TEXAS A AND M UNIV COLLEGE STATION DEPT OF AEROSPACE
ENGINEERING

AD-A172 895 20 6 9/2

STANFORD UNIV CA

(U) Development of Constitutive Equations in Nonlinear
Aerospace Materials and Structures.

(U) Optical Computing Research.

DESCRIPTIVE NOTE: Final rept. Jun 84-Apr 85.

DESCRIPTIVE NOTE: Final rept. 18 May 85-30 Jun 86.

APR 85 11P

JUN 86 83P

PERSONAL AUTHORS: Allen, David H.

PERSONAL AUTHORS: Goodman, Joseph W.

CONTRACT NO AFOSR 84-0257

CONTRACT NO AFOSR-83-0166

TASK NO 2 02

PROJECT NO 2305

MONITOR AFOSR

MONITOR AFOSR
TR-86-0911

TR 86-0857

UNCLASSIFIED REPORT

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ABSTRACT: (U) The instrumentation purchased under this contract is a Materials Testing System (MTS) Model 880 uniaxial testing machine. In general, the system is used to perform mechanical tests on aerospace structural materials under prescribed thermal conditions. Typical aerospace materials being tested include polymeric composites, metal-matrix composites, and nickel-based metals. These materials are utilized both in space structures and advanced military aircraft. The primary objective of the equipment is to provide experimental data necessary to characterize the thermomechanical material properties of the structural materials mentioned above.

DESCRIPTORS: (U) TEST EQUIPMENT; THERMOMECHANICS; STRUCTURAL MEMBERS; EXPERIMENTAL DESIGN; VISCOELASTICITY; COMPOSITE MATERIALS; AEROSPACE SYSTEMS; NICKEL ALLOYS; CREEP; RESEARCH MANAGEMENT

IDENTIFIERS: (U) Metal matrix materials. PE81102F.
WUAFOSR230281

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ABSTRACT: (U) This report summarizes the work accomplished since May 18, 1985, on Air Force Office of Scientific Research Grant No. 83-0166. Work has been in progress in four different areas: (1) Optical interconnections; (2) Real-time defect enhancement in periodic structures using four-wave mixing; (3) Computation using neural networks; and (4) Optimal imaging concentrators. Various administrative matters pertinent to the grant are also discussed.

DESCRIPTORS: (U) OPTICS; COMPUTERS; BEAMS; ELECTROMAGNETIC; HOLOGRAPHY; SIGNAL PROCESSING; DIFFRACTION ANALYSIS; DEFECTS; MATERIALS; OPTIMIZATION; REAL TIME

IDENTIFIERS: (U) Interconnections (optics); Optical computing; Mixing (Four Wave); Clutter (Administrative); Neural networks; Efficiency (Diffraction); Concentrators (Imaging); Periodic structures

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OTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO EVN54B

AD-A172 894

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STANFORD UNIV CA DEPT OF CHEMISTRY

(U) Information on the Impact Parameter Dependence of the
BaI Yields BaI v=8 + H Reaction.

JUL 86 12P

PERSONAL AUTHORS Noda, Chifuru; McKillop, John S.; Johnson,
Mark A.; Waldeck, Janet R.; Zare, Richard N.

CONTRACT NO. F49620-85-C-0021 NSF CHE85-05926

PROJECT NO 2303

TASK NO B1

MONITOR AFOSR
TR-86-1026

DESCRIPTORS: (U) REACTION KINETICS, BARIUM COMPOUNDS,
IODIDES, MOLECULAR ROTATION, LASER INDUCED
FLUORESCENCE, HYDROGEN, KINEMATICS, IMPACT, PARAMETERS,
PROBABILITY, COLLISIONS, VELOCITY, OPACITY, MOLECULAR
VIBRATION, MOLECULAR STATES, REPRINTS

IDENTIFIERS: (U) PE61102F, WUAFOSR2303B1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl of Chemical Physics, v85
n2 p856-864, 15 Jul 86.

ABSTRACT: (U) Using selectively detected laser-induced
fluorescence, the rotational state distribution of the
BaI product has been measured for the beam-gas reaction
Ba + HI yield BaI (v = 8) + H. Owing to the highly
constrained kinematics for this system, these
measurements can be used to derive the reaction
probability as a function of the impact parameter for
this channel, called the specific opacity function. Once
the reaction probability as a function of velocity has
been determined. Unfortunately, lack of knowledge of the
exoergicity and the height of any energy barrier prevents
a conclusive determination of the specific opacity
function for this reaction. Instead, various approximate
opacity functions are estimated based on different models
of the velocity dependence of the reaction channel
studied. If the reaction probability is the same for all
relative collision velocities, then the BaI(v = 8)
specific opacity function peaks strongly near 2.6 Å with
a full width at half-maximum of 1.0 Å. However, the
possible presence of a small energy barrier in the
entrance channel causes a cutoff in the relative
collision velocity distribution, and this type of
velocity dependence would significantly affect the shape
of the specific opacity function.

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 DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN548
 CALIFORNIA UNIV IRVINE DEPT OF ELECTRICAL ENGINEERING
 AD-A172 893 CONTINUED

(U) Guided Wave Acoustooptic and Magneto-optic Devices for
 Integrated Optic Information Processing

DESCRIPTIVE NOTE Annual rept. 1 Jan 84-30 Aug 85
 AUG 86 35P

PERSONAL AUTHORS Tsai, Chen S.

CONTRACT NO AFOSR 80 0288

PROJECT NO 2205

TASK NO 81

MONITOR AFOSR
 TR 56 0879

taken into account.

DESCRIPTORS: (U) OPTICAL WAVEGUIDES, ACOUSTOOPTICS,
 SURFACE ACOUSTIC WAVE DEVICES, BRAGG SCATTERING, ZINC
 OXIDES, GALLIUM ARSENIDES, YTTRIUM IRON GARNET, ALUMINUM
 GALLIUM ARSENIDE, MAGNETOOPTICS, FARADAY EFFECT, OPTICAL
 CIRCUITS, EPITAXIAL GROWTH, SINGLE CRYSTALS, LIQUID
 PHASES

IDENTIFIERS: (U) Cotton Mouton Effect, Gadolinium
 Gallium Garnet, PE51102F, WUAFOSP230581

UNCLASSIFIED REPORT

ABSTRACT (U) The research objectives of the current program year are focused on the basic interactions and physical mechanisms for guided wave acoustooptic Bragg diffraction from surface acoustic waves in GaAs optical waveguides and guided wave magneto-optic diffraction from magnetostatic surface waves in YIG GGG optical waveguides. To a large degree the objectives have been accomplished. For the first project, very significant progress has been made in the experimental phase. First, a complete liquid phase epitaxy (LPE) system for growth of large size single mode GaAs optical waveguides has been established in house. Second, the etching system was further improved to deposit good quality zinc oxide (ZnO) films on the top of the GaAs optical waveguides, and a novel electrode arrangement was facilitated to provide efficient transduction of the SAW. For the first time a complete facility has been established to fabricate miniaturized acoustooptic Bragg cells in ZnO-GaAs composite waveguides with the device dimensions as small as $0.2 \times 0.5 \times 1.0$ cm. For the second project, much progress has been made. The theoretical study, firmly identified and established the physical mechanisms for the non-collinear coplanar interaction configuration both Faraday and Cotton-Mouton effects are involved in a rather complex manner. In contrast to the collinear interaction in which only the Faraday effect has to be

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AD-A172 892 21 2 21 4 21 1 DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO EVN548 AD A172 892 CONTINUED

ATLANTIC RESEARCH CORP ALEXANDRIA VA

U-1 Fuel-Solid Propellant Boron Combustion

DESCRIPTIVE NOTE Final rept. 15 Nov 84 28 Feb 86

AUG 86 32P

PERSONAL AUTHORS King, Merrill K.; Komar, J.

REPORT NO. 41-5160F

CONTRACT NO F49620 85 C 0020

PROJECT NO 2308

TASK NO A1

MONITOR: AFOSP
TR 86-0882

UNCLASSIFIED REPORT

ABSTRACT (U) An apparatus for measurement of the permeability of oxygen gas through liquid boric oxide as a function to temperature was designed and built. Numerous difficulties were encountered in the course of this study, the most intractable being the uptake of oxygen by vessel wall materials at rates which swamped the rate of transport across the liquid boric oxide film separating vessels with differing initial oxygen levels, resulting in data with an unusably low signal-to-noise ratio. A burner and two-dimensional nozzle device were designed and the burner constructed for study of condensation of boron oxides and hydroxides (all to boric oxide) with elimination of hydrogen and excess oxygen as required by stoichiometry consideration in the latter case, from dry and wet combustion atmospheres, with and without seeding with submicron refractory solid particles as heterogeneous nuclei. In addition, diagnostic procedures for uses in this condensation study (to be actually performed under a subsequent AFWAL-MORT contract) were selected from a wide array of potential candidates. A condensation model treating the flow of boron loaded combustion product streams through a 1/2 inch nozzle with a multijet nozzle arrangement of variable rate suitable for gas phase experiments and a rate of rate of injection of particles at which particles would be deposited on a wall was developed.

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modeling options as regards nucleation and particle growth processes were included in this analysis. Equation development, computer coding, and model check out were completed, and parametric studies with the model were initiated during the course of this program.

DESCRIPTORS: (U) *COMBUSTION, *OXYGEN, *PERMEABILITY, *JET ENGINE FUELS, *SOLID PROPELLANTS, BORON, HYDROXIDES, CONDENSATION, IGNITION, LIQUIDS, MODELS, REACTION KINETICS, VAPOR PHASES, NUCLEATION, PARTICLES, GROWTH(GENERAL), FILMS, NOZZLES, FLOW

IDENTIFIERS: (U) PE61102F, WUAFOSR2308A1

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NTIC REPORT BIBLIOGRAPHY

AD A172 890 20 12 - 4 1.1

UNIVERSITY OF SOUTHERN CALIFORNIA LOS ANGELES

U. Apparatus for Analysis of Epithelial Crystal Growth
 DESCRIPTIVE NOTE Final rept 1 Aug 69, Oct 69

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PERSONAL AUTHOR'S Duplicates p. 0

CONTRACT NO AFOSR 83 0200

PROJECT NO. 1037008

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UNCLASSIFIED REPORT

ABSTRACT. In the past few years, the growth of the semiconductor industry has been phenomenal. This growth has been fueled by a number of factors, including the increasing demand for semiconductors in a wide range of applications, the development of new semiconductor technologies, and the increasing competition among semiconductor manufacturers. This paper discusses the factors that have contributed to the growth of the semiconductor industry and the challenges that it faces in the future.

[illegible]

DESCRIPTORS: CHEMICAL ANALYSIS; OPERATORY
TECHNIQUE; LASER DEPOSITION; THERMAL; SUBSTANTIAL GROWTH
ORGANOMETALLIC COMPOUNDS; LASER INDUCED FLUORESCENCE
MASS SPECTROMETERS

[illegible]

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SEARCH CONTROL NO EVN548

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FLORIDA UNIV GAINESVILLE DEPT OF CHEMISTRY

U Spatial Distribution Profiles of Ca, Cu, and Mn Atoms and Ions in an Inductively Coupled Plasma by Means of Laser Excited Fluorescence

DESCRIPTIVE NOTE: Interim report

58 109

PERSONAL AUTHORS Huang X, Yeah K, S Winefordner J, D.

CONTRACT NO F49620-84 C 0001

PROJECT NO 2303

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MONITOR AFOSR
TE 86-1024

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE
12 01379 1385
Pub in Spectrochimica Acta. v40B n10-

ABSTRACT. The radial distribution profiles of ground state atoms and of ions for calcium, manganese, and copper in an inductively coupled plasma have been measured using an excimer laser pumped dye laser as an excitation source of fluorescence. As a comparison radial emission profiles also have been measured with an Abel inversion procedure. In our low-flow nebulizer plasma system at low observation heights, the profiles of excited state atoms and ions resemble each other with a minimum in the center of the plasma. The profiles of ground state atoms and ions, however, possesses a bell shape except for calcium ground state ions which have double peaked distribution.

DESCRIPTORS: U.S. *PLASMAS; PHYSICS; *CALCIUM; *COPPER; *MANGANESE; *SPATIAL DISTRIBUTION; *LASER INDUCED FLUORESCENCE; ATOMS; IONS; GROUND STATE; DYE LASERS; EXCITATION; EMISSION; PROFILES; ATOMIC SPECTROSCOPY; REPRINTS

| IDENTIFIERS | (U) | Inductively Coupled Plasmas | PEG1102F |
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STANFORD UNIV CA DEPT OF MECHANICAL ENGINEERING

Annual Report for Contract F49620 84-K-0004

DESCRIPTIVE NOTE Rept for 1 Jan 31 Dec 84.

MAR 85 21P

PERSONAL AUTHORS Kline, S J ; Ferziger, J H ; Johnston, J P ; Moffat, R J

CONTRACT NO F49620 84-K-0004

PROJECT NO 2307

TASK NO A4

MONITOR AFOSR
TR 086 0869

UNCLASSIFIED REPORT

ABSTRACT: (U) This is the annual report covering Theoretical and Empirical Studies of the Basic Structure of Turbulent Shear Flows, Including Separated Flows and Effects of Wall Curvature. This contract includes work on two distinct projects. Task A. Construction of zonal models for computation of complex turbulent flows. Task B. Study of turbulence structure and heat convection in turbulent boundary layers on concave surfaces.

DESCRIPTORS: (U) TURBULENT BOUNDARY LAYER, SHEAR PROPERTIES, CONVECTION/HEAT TRANSFER, WALLS, CURVATURE, MATHEMATICAL MODELS, TURBULENT FLOW, NAVIER STOKES EQUATIONS, HEAT TRANSFER

IDENTIFIERS: (U) PEG1102F, WUAFOSR2307A4

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DTIC REPORT BIBLIOGRAPHY

SEARCH CONTROL NO. EVN548

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NORTH CAROLINA STATE UNIV AT RALEIGH DEPT OF MATHEMATICS

MASSACHUSETTS UNIV AMHERST DEPT OF CIVIL ENGINEERING

U Progress Report Number 2 on Contract AFOSR 84 0240

U Parametric Investigation of Factors Influencing the Mechanical Behavior of Large Space Structures.

DESCRIPTIVE NOTE Rept for 16 Jul 81 16 Dec 85

DESCRIPTIVE NOTE Final technical rept 1 Nov 82 30 Jun 85

JAN 86 13P

PERSONAL AUTHORS Campbell, Stephen

MAY 86 451P

CONTRACT NO AFOSR 84 0240

PERSONAL AUTHORS Nash, William A Lardner, Thomas J

PROJECT NO 2904

CONTRACT NO AFOSR-83-0025

TASK NO 41

PROJECT NO 2302

MONITOR AFOSR

TASK NO B1

TR 85 0897

MONITOR AFOSR
TR 85 0858

UNCLASSIFIED REPORT

ABSTRACT: Implicit systems of differential equations of the form $F(Y, Y', t) = 0$ naturally arise in many circuit and control problems, economic models, and the solution of partial differential equations by the method of lines. Implicit systems are also called singular, differential algebraic, and state constrained and descriptor. The theory of implicit systems and numerical codes exist for linear, quasi-linear, and linear algebraic coefficient problems. Higher order systems of differential equations and systems of index one and linear algebraic coefficient problems are also treated. The numerical solution of implicit systems is not well understood and is the subject of this report. It is shown that traditional methods for solving differential equations do not work on implicit systems. Good examples of the theory of implicit systems and numerical codes exist. This report is intended to study the theoretical and analytic properties of higher order implicit systems. The application of higher order implicit systems to control theory and the analysis of numerically ill conditioned index one systems.

DESCRIPTORS: DIFFERENTIAL EQUATIONS RESEARCH MANAGEMENT NUMERICAL ANALYSIS SOLUTIONS GENERAL LINEAR SYSTEMS

AD A172 881 12 1 WJF 139210401

AD A172 881

UNCLASSIFIED REPORT

ABSTRACT: I. The investigation has two objectives. I. To investigate the relative importance of factors such as thermal gradients, differential gravitational effects, solar radiation pressure, albedo effects, and spatial pressure gradients on structural behavior of large space structures, and II. To investigate structural behavior of a very thin membrane subject to combined internal pressure as well as mechanical and thermal loadings.

DESCRIPTORS: SPACECRAFT STRUCTURAL PROPERTIES, FLEXIBLE STRUCTURES, TRUSSES, VIBRATION, GRAVITATIONAL FIELDS, GRADIENTS, RADIATION PRESSURE, ALBEDO, THERMAL STRESSES, THIN FILMS, MEMBRANES, COMPUTER PROGRAMS, EQUATIONS OF MOTION, STRESS STRAIN RELATIONS

IDENTIFIER: U Space structures, Very large structures ECHO 1 satellite, ECHO 2 satellite, P6B1102F WUAFOSR2302B1

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SEARCH CONTROL NO EVN54B

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MISSISSIPPI STATE UNIV MISSISSIPPI STATE DEPT OF
AEROPHYSICS AND AEROSPACE ENGINEERING

NIELSEN ENGINEERING AND RESEARCH INC MOUNTAIN VIEW CA

(U) A Fundamental Study of Jet Flows.

(U) Generation of Surface Grids through Elliptic Partial
Differential Equations for Aircraft and Missile
Configurations

DESCRIPTIVE NOTE: Final rept. 1 Mar 82-28 Feb 85.

APR 85 25P

DESCRIPTIVE NOTE Interim rept. Apr 85-Mar 86.

PERSONAL AUTHORS: Nixon, David

MAY 86 20P

REPORT NO. NEAR-TR-345

PERSONAL AUTHORS Warsi, Z U.

CONTRACT NO. F49620-82-C-0031

REPORT NO. AASE-86 293

PROJECT NO. 2307

CONTRACT NO. AFOSR-85-0143

TASK NO. A1

PROJECT NO. 2304

MONITOR: AFOSR

TR-86-0896

TASK NO. A3

MONITOR: AFOSR

TR-86 1063

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

ABSTRACT: (U) This report is devoted to a computational method of mesh generation in arbitrary surfaces by utilizing a set of elliptic partial differential equations. These equations depend explicitly on the mean curvature and the unit normal vector of the surface in which the coordinates are to be generated. To determine the mean curvature for a given surface in global coordinates, first a piecewise least squares method is used to fit a surface through the given data points. Next, mesh generation results for various geometrically complicated shapes have been obtained to demonstrate the versatility of the proposed equations. An example of a monoclinic coordinate system with contraction in the coordinate leaving the surface has also been presented.

DESCRIPTORS: (U) 'GRIDS/COORDINATES', MESH, NUMERICAL METHODS AND PROCEDURES, PARTIAL DIFFERENTIAL EQUATIONS, LEAST SQUARES METHOD, ELLIPSES, ALGORITHMS

IDENTIFIERS (U) WUAFOSR2304A3 PE61102F

AD A172 86

AD A172 861

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ABSTRACT: (U) This work investigated the fluid mechanics of impinging jet flows and to this end a combined theoretical, computational and experimental study was initiated. A very detailed set of experimental results for multiple impinging jets in a crossflow is available. The theoretical and computational study is concerned partly with modeling of the turbulence. An important result is that it appears that even the most sophisticated turbulence model available will not reproduce the experimental results adequately.

DESCRIPTORS: (U) 'JET FLOW', 'TURBULENCE', 'CROSS FLOW', FLUID MECHANICS, COLLISIONS, COMPUTATIONS, FLUID DYNAMICS, TIME DEPENDENCE

IDENTIFIERS: (U) Computational fluid dynamics, Impinging jets, WUAFOSR2307A1, PE61102F

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FLOW INDUSTRIES INC KENT WA RESEARCH AND TECHNOLOGY DIV

FILTERS, NUMERICAL ANALYSIS, CONVERGENCE, INVISCID FLOW, COMPRESSIBLE FLOW

(U) Pseudospectral Method for Transonic Flows Around an Airfoil

IDENTIFIERS: (U) Pseudospectral methods, Spectral methods, Spectral decomposition, WUAFOSR2307A1, PE61102F

DESCRIPTIVE NOTE Annual rept. 1 Feb 84:31 Jan 85.

MAR 85 53P

PERSONAL AUTHORS Jou W H, Mueller, A C

CONTRACT NO F49620-84-C-0027

PROJECT NO 2307

TASK NO A1

MONITOR AFOSR TR 25 0365

UNCLASSIFIED REPORT

ABSTRACT (U) This investigation attempted to construct a pseudospectral scheme that is highly accurate and competitive in computational efficiency with existing finite difference or finite volume methods. A hybrid scheme using spectral decomposition in the direction along the airfoil surface and a finite difference scheme in the other direction was found to be capable of resolving shock waves in one grid. Several filters have been studied. A low pass filter in the spectral space was not able to stabilize the computation without seriously affecting the shock resolution. An algebraic filter that averages the flow variables around a grid point was capable of stabilizing the computations and maintaining the sharpness of the shock wave. The residue of the scheme did not decrease with time. The number of supersonic points in the flow field was taken as an indicator of convergence. Attempts to find another form of error norm were not successful. An explicit full spectral scheme studied with a Chebyshev polynomial expansion required excessive computing time and would not be competitive with a finite volume calculation using a dense grid.

DESCRIPTORS (U) TRANSONIC FLOW, AIRFOILS, SPECTRUM ANALYSIS, COMPUTATIONS, HYBRID SIMULATION, SHOCK WAVES, DECOMPOSITION, FINITE DIFFERENCE THEORY, MATHEMATICAL

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SEARCH CONTROL NO EVN548

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FLORIDA UNIV GAINESVILLE DEPT OF CHEMISTRY

TORONTO UNIV DOWNSVIEW (ONTARIO) INST FOR AEROSPACE STUDIES

(U) An ICP-Excited ICP Resonance Monochromator and Fluorescence Spectrometer for the Analysis of Trace to Major Sample Constituents.

(U) Some Aspects of Shock-Wave Research.

DESCRIPTIVE NOTE: Interim rept..

DESCRIPTIVE NOTE: Interim rept..

85 10P

JAN 86 116P

PERSONAL AUTHORS: Krupa, R J ; Long, G. L ; Winefordner, J. D.

PERSONAL AUTHORS: Glass, I. I. ;

REPORT NO. UTIAS-REVIEW-48

CONTRACT NO. F49620-84-C-0002

CONTRACT NO. AFOSR-82-0096, DNA001-85-C-0368

MONITOR: AFOSR
TR-86-1025

PROJECT NO. 2307

TASK NO. A1

MONITOR: AFOSR
TR-86-0894

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE

12 p1485-1494 1985 Pub in Spectrochimica Acta, v40B n10-

UNCLASSIFIED REPORT

ABSTRACT: (U) A 20 g/l solution of the element of interest is aspirated into a 1500 W Ar ICP and the resulting emission used to excite atomic and ionic fluorescence of a sample aspirated into a second ICP. Detection limits are comparable to ICP-AES. By aspirating the sample into the source ICP and measuring its emission using the second plasma as a resonance monochromator, linear dynamic ranges up to 50 million can be achieved. Plasma emission background and spectral interferences are minimal compared to ICP-AES because of the selectivity of the selectivity of the fluorescence technique. The present system should be considered as a viable alternative to emission spectrometry in order to alleviate spectral interferences which may occur in complex sample matrices, without the need for an expensive, high resolution monochromator.

DESCRIPTORS: (U) QUANTITATIVE ANALYSIS, FLUORESCENCE, ATOMIC SPECTROSCOPY, PLASMA DEVICES, EXCITATION, DYNAMIC RANGE, REPRINTS, ATOMIZATION

IDENTIFIERS: (U) ICP-Inductively Coupled Plasmas), AFS-Atomic Fluorescence Spectroscopy), Resonance monochromators, Atomic fluorescence Spectroscopy, PE61102F

AD A172 847

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SUPPLEMENTARY NOTE: Presented at the AIAA Aerospace Sciences Meeting (24th) Reno, Nv 7 Jan 86.

ABSTRACT: (U) A few examples are given of shock wave phenomena on earth and in space to provide some useful background material. The major portion of the paper is devoted to a specific shock wave research problem, namely, pseudostationary oblique shock wave reflections in perfect and imperfect gases. Consideration is given to what has been achieved to date by using two and three shock theory to predict what type of reflection results when a planar shock wave M sub s, in a shock tube, collides with a sharp compressive wedge of angle, Theta sub w. Experimental (interferometric and other optical) data are presented in M sub s, Theta sub w-plots for argon, nitrogen, oxygen, air, carbon-dioxide, Freon 12 and sulfurhexafluoride, in order to check the validity of the analytically predicted regions and transition lines of the four types of reflection. Some disagreements are noted and discussed. Our interferometric isopycnic data are also compared with state of the art computational results from a solution of the inviscid Euler equations using a CRAY 1 computer. Good agreement was obtained, yet, it would be important to obtain new data by solving the

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SEARCH CONTROL NO. EVN548

AD-A172 829 CONTINUED

Navier Stokes equations, as well as the rate equations for imperfect gas excitations, in order to judge the improvement obtained with real flow interferograms.

DESCRIPTORS: (U) SHOCK WAVES, FLUID DYNAMICS, MONTE CARLO METHOD, HEIGHT OF BURST, FLOW FIELDS, INTERFEROMETRY, REFLECTION, SHOCK TUBES, INVISCID FLOW, NAVIER STOKES EQUATIONS, ARGON, NITROGEN, OXYGEN, AIR, CARBON DIOXIDE, FLUORINATED HYDROCARBONS, SULFUR COMPOUNDS, CANADA

IDENTIFIERS: (U) Pseudo stationary Sulfur hexafluorides, Euler equations, PE61102F, WUAFOSR2307A1

AD-A172 827 21/2 21/1 20/4

PURDUE UNIV LAFAYETTE IND THERMAL SCIENCES AND PROPULSION CENTER

(U) Fuel Spray Ignition by Hot Surfaces and Aircraft Fire Stabilization.

DESCRIPTIVE NOTE: Final rept. 15 Nov 81-31 Mar 86.

JUN 86 33P

PERSONAL AUTHORS: Skiftstad, J. G.; Lefebvre, A. H.; Murthy, S. N.

REPORT NO. LMS/AFOSR-COMB/83

CONTRACT NO. AFOSR-82-0107

PROJECT NO. 2308

TASK NO. A2

MONITOR: AFOSR
TR-86-0856

UNCLASSIFIED REPORT

ABSTRACT: (U) In Task I an experimental study of the ignition of Jet-A fuel sprays by an isothermal hot surface was conducted in a vertical axisymmetric duct. In addition to measurements of the wall temperature necessary for ignition, local measurements of velocity, turbulence intensity, fuel concentration, and the fraction of fuel vaporized were measured in the boundary layer at surface temperatures just below that required for ignition. In Task II two combustion tunnel facilities were used to investigate the stabilization of aircraft fires. Results showed that the shape of a bluff-body flameholder affects its stability characteristics through its influence on the size and shape of the wake region. Another significant finding was that the flameholding properties of the single-vortex flow pattern are markedly superior to those of the double-vortex pattern. In Task III experimental studies were conducted on: (1) Entrainment of an external flow into a cavity with a small opening or vent in a side wall, when there is a small flow through the cavity; and (2) Fluid dynamics and ignition and flame stability characteristics of a jet of gaseous fuel through a protrusion of different shapes and

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heights in the wall of a cavity with a small flow of air through the cavity

DESCRIPTORS: (U) FUEL SPRAYS, IGNITION, FLAMES, AIRCRAFT PIPES, ENTRAINMENT, VOIDS, FLAME HOLDERS, BLUNT BODIES, STABILIZATION, WAKE, VORTICES, CAVITIES, JET ENGINE FUELS, VAPORS, DROPS, BOUNDARY LAYER, SURFACE TEMPERATURE, MODEL TESTS, FLOW FIELDS, BLOWOFF, FLUID DYNAMICS, AIR FLOW, FLOW VISUALIZATION, THREE DIMENSIONAL FLOW, GAS TURBINES, RAMJET ENGINES

IDENTIFIERS: (U) Jet A fuel, Flame stability, Reactive flow, Blowoff velocity

AD A172 826 20/4

RUTGERS - THE STATE UNIV NEW BRUNSWICK N J DEPT OF MECHANICAL INDUSTRIAL AND AEROSPACE ENGINEERING

(U) Theoretical Investigation of Three-Dimensional Shock Wave-Turbulent Boundary Layer Interactions. Part 4.

DESCRIPTIVE NOTE: Interim rept. 1 Oct 84-30 Sep 85.

JAN 86 74P

PERSONAL AUTHORS: Knight, Doyle D. ;

REPORT NO. RU-TR-163-MAE-F

CONTRACT NO. AFOSR-82-0040

PROJECT NO. 2307

TASK NO. A1

MONITOR: AFOSR
TR-86-0893

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Part 1, AD A172 118.

ABSTRACT: (U) A theoretical model consists of the Reynolds-averaged 3-D compressible Navier-Stokes equations, with turbulence incorporated using the algebraic turbulent eddy viscosity model of Baldwin and Lomax. This year research efforts focused on both 2-D and 3-D turbulent interactions. A theoretical model was examined for a series of separated 2-D compression corner flows at Mach 2 and 3. Calculations were performed for four separate compression corners using 2-D compressible Navier-Stokes code with McCormack's hybrid algorithm. Results were compared to earlier computations using the Beam-Warming algorithm, and recent experiment data for turbulent Reynolds stresses. Calculated Reynolds stresses were observed to differ significantly from experimental measurements due to the inability of the turbulence model to incorporate the multiple scale effects of the turbulence structure downstream of reattachment. Computed results using the McCormack hybrid algorithm were observed to be insensitive to the Courant number. The 3-D turbulence interactions research concentrated on the 3-D sharp fin and on the 3-D swept compression corner. In the

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former case, the computed flowfield for the 20 deg sharp fin at Mach 3 and a Reynolds number of 930,000 was compared with the calculated results of Horstman (who used the Jones-Lauder turbulence model) and experimental data of the Princeton Gas Dynamics Lab. Overall comparison with experiment was very good.

DESCRIPTORS: (U) *TURBULENT BOUNDARY LAYER, *SHOCK WAVES, MATHEMATICAL MODELS, COMPRESSIBLE FLOW, INTERACTIONS, THREE DIMENSIONAL FLOW, NAVIER STOKES EQUATIONS, EDDIES, FLUID MECHANICS, FLOW SEPARATION, SUPERSONIC FLOW, FLOW SEPARATION, STRESSES, TWO DIMENSIONAL FLOW, SUPERSONIC FLOW, VISCOUS FLOW, INVISCID FLOW, FLUID DYNAMICS, COMPUTATIONS, ALGORITHMS, HYBRID SYSTEMS

IDENTIFIERS: (U) Corner flow, Reynolds stresses, High speed flows, Viscous inviscid interactions, Shock boundary layer interactions, Computational fluid dynamics, PE61102F, WUAFOSR2307A1

FLORIDA STATE UNIV TALLAHASSEE DEPT OF STATISTICS

(U) Optimal Assembly of Systems Using Schur-Functions and Majorization.

DESCRIPTIVE NOTE: Technical rept..

JUL 86 17P

PERSONAL AUTHORS: El-Newehi, Emad ; Proschian, Frank ; Sethuraman, Jayaram ;

REPORT NO. TR-M735

CONTRACT NO. DAAL03-86-K-0094, AFOSR-85-0320

MONITOR: AFOSR,ARO
TR-86-193,23699,6-MA.

UNCLASSIFIED REPORT

ABSTRACT: (U) This paper considers the optimal assembly of n systems from components of k types. Special cases of such a problem have been studied earlier in the literature. E Newehi, Proschian and Sethuraman (1986) studied the case of a single type of components. Derman, Leiberhan and Ross (1972) considered the case where each system consisted of one component of each of k types. We generalize the ideas of both of these papers to the case where the systems may consist of varying numbers of components from more than one type. An assembly of the n systems corresponds to a partitioning A of the components to the different systems. When the components act independently, we show in sections 2 and 3 that an intuitively motivated partitioning A^* provides the optimal assembly under many different criteria. In section 3, we allow each system to have dependent components, and under some general conditions on the reliability function we show that the same partitioning A^* provides an optimal assembly. The results of this paper are based on the well known techniques of Schur-functions and majorization. This makes them clear and simple and at the same time more general than in the papers cited. (Author)

DESCRIPTORS: (U) *FUNCTIONS, MATHEMATICS, METHODOLOGY, PARTS, ASSEMBLY, OPTIMIZATION, RELIABILITY

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AD A172 813 13/13 22/2

IDENTIFIERS U Schur functions LPN AFOSR 82 0007

FLORIDA UNIV GAINESVILLE DEPT OF MATHEMATICS

U Increasing the Margin of Stability of Arbitrarily
Finite Modes of Flexible Large Space Structures with
Damping.

DESCRIPTIVE NOTE Annual technical rept. 1 Sep 85-3 Aug
86.

AUG 86 6P

PERSONAL AUTHORS: Lasiecka, I.; Triggiani, R. ;

CONTRACT NO. AFOSR-84-0365

PROJECT NO. 2304

TASK NO. A1

MONITOR: AFOSR
TR-86-0878

UNCLASSIFIED REPORT

ABSTRACT: (U) This research project focuses on a canonical component of flexible large space structures, which is modeled by a hyperbolic second order equation (wave equation) with damping, in an arbitrary number of dimensions. The object is to provide a simple, implementable boundary feedback of a specific class which will (1) increase the margin of stability of finitely many modes while (2) at least preserving the margin of stability of the remaining modes and, moreover, (3) guarantee the exponential uniform decay of all feedback solutions with the same upper bound enjoyed by the free solutions (homogeneous boundary conditions). An analysis of the distributed parameter model is given by the co-principal investigators, which provides a theoretical solution of the above problem in an essentially constructive way. Numerical implementations of the theoretical proof show a behavior of the eigenvalues distribution of the feedback system as predicted by, and in agreement with, the theoretical results.

DESCRIPTORS: (U) *STRUCTURES, *STABILITY, SPACE SYSTEMS, FLEXIBLE STRUCTURES, DAMPING

IDENTIFIERS (U) *Large space structures. WUAF05R2304A1.

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AD-A172 812 20/4

NOTRE DAME UNIV IN DEPT OF AEROSPACE AND MECHANICAL
ENGINEERING

(U) Vortex Loop Dynamics - A Phenomenological Model for
Turbulent Boundary Layer Structure.

DESCRIPTIVE NOTE: Annual rept. 1 Jan-31 Dec 83.

APR 84 28P

PERSONAL AUTHORS: Doligalski, Thomas L. ;

CONTRACT NO. AFOSR-82-0115

PROJECT NO 2307

TASK NO. A2

MONITOR: AFOSR
TR-86-0867

UNCLASSIFIED REPORT

ABSTRACT: (U) Unsteady development of three-dimensional vortex loops in the vicinity of solid surfaces and under the influence of a crossflow is detailed. These results are important if the dynamics of the coherent structures present within the turbulent boundary layer are to be understood--it has long been recognized that the 3-D convecting stretching vortex loop is a major component of these flows. A new piston-orifice vortex generator and test section was designed to provide reliable and repeatable vortex rings in air, which are allowed to propagate across the test section and interact with a large plexiglass plate. The rings are marked with smoke tracers. The subsequent interaction is recorded using high-speed motion picture photography. Results are given for normal and oblique impacts in still air and for oblique impacts in uniform flow. The analytic effort was devoted to improving the efficiency of the 3-D inviscid vortex trajectory program. This program uses a modified Biot-Savart integration technique to consider the unsteady inviscid development of vortex structures in vicinity of solid surfaces. Studies of normal and oblique impacts with solid surfaces under conditions of no imposed flow are detailed, as well as oblique impacts in uniform and linear shear flows. The experimental and analytic results were compared and excellent

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AD-A172 812

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correspondence between the two techniques was found. These studies indicate that substantial loop growth occurs due to the presence of an imposed shear and it is this interaction between the loop and the imposed crossflow that plays a dominant role in the loop deformation process.

DESCRIPTORS: (U) TURBULENT BOUNDARY LAYER, BOUNDARY LAYER FLOW, VORTICES, LOOPS, STRUCTURAL PROPERTIES, THREE DIMENSIONAL FLOW, CROSS FLOW, SOLIDS, PLATES, IMPACT, RINGS, FLOW VISUALIZATION, HIGH SPEED PHOTOGRAPHY, INTERACTIONS, DEFORMATION, SHEAR PROPERTIES, COMPUTER PROGRAMS, NUMERICAL INTEGRATION

IDENTIFIERS: (U) Vortex loops, Oblique impact, Shear flow, WUAFOSR2307A2, PE61102F

AD A172 811 2272

MCINTOSH STRUCTURES DYNAMICS INC PALO ALTO CA

(U) Investigation of Interactive Structural and Controller Synthesis for Large Spacecraft

DESCRIPTIVE NOTE: Final rept 1 Mar 84-30 Oct 85.

JAN 86 45P

PERSONAL AUTHORS: McIntosh, Samuel C., Jr.; Floyd, Michel A.

REPORT NO: TR-86-1

CONTRACT NO: F49620-84-C-0025

PROJECT NO: 2302

TASK NO: B1

MONITOR: AFOSR
TR-86-0900

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with Integrated Systems, Inc.

ABSTRACT: (U) A technique is developed for least-weight optimal design of a tubular-truss space structure, subject to constraints on its natural frequencies and its open-loop disturbance-rejection properties. The disturbance-rejection properties of the structure are measured by disturbance-to-regulated-variable grammians. It is shown how this technique can be embedded in a model-reduction scheme based on internal balancing. Examples treated include a simple dumbbell model and csdl model no. 1. (Author)

DESCRIPTORS: (U) STRUCTURAL ENGINEERING, SPACECRAFT, CONTROL SYSTEMS, FLEXIBLE STRUCTURES, TUBULAR STRUCTURES, OPTIMIZATION, MANEUVERABILITY, VIBRATION, TABLES (DATA)

IDENTIFIERS: (U) WUAFOSR2302B1, PE61102F

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SRI INTERNATIONAL MENLO PARK CA

DESCRIPTORS: (U) *CONCRETE, *TENSION, *MICROCRACKING,
TENSILE PROPERTIES, TEST METHODS, TENSILE TESTERS, CRACK
PROPAGATION

(U) Observations and Analysis of Microcracks Produced in
Dynamic Tension Tests of Concrete

IDENTIFIERS: (U) LPN-PYU-4451, WUAFOSR2307C2, PE61102F

DESCRIPTIVE NOTE Final rept. 1 May 82-31 May 86.

JUL 86 99P

PERSONAL AUTHORS Gran, James K., Seaman, Lynn J.

CONTRACT NO. 149520 82 K-0021

PROJECT NO. 2307

TASK NO. C2

MONITOR AFOSR
TP 86 0866

UNCLASSIFIED REPORT

ABSTRACT (U) An important need in the study of dynamic tensile failure in concrete and brittle geologic materials is to characterize the failure process for a wide range of strain rates. The objective of this four-year research program was to develop and demonstrate experimental and analytical techniques to study the dynamic tensile failure of concrete at strain rates between 10/s and 100/s. The primary accomplishments of this program were: (1) A new experimental method was developed to produce tensile failure in concrete in the presence of confining pressure at a strain rate of about 20/s; (2) A preliminary set of experiments was conducted to study the unconfined and confined tensile failure of concrete at a strain rate of about 20/s; (3) These experiments were interpreted with numerical calculations to estimate the dynamic strength enhancement, the apparent strain-softening behavior of the concrete, and the extent of damage in the specimens; (4) A technique was developed to observe the microcrack damage in the tensile specimens; microcracks were charted for a concrete specimen after a dynamic tension experiment; (5) Analyses of microcrack growth showed that crack propagation velocity may be the source of the tensile strength enhancement observed in the dynamic tension experiment.

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CARNEGIE MELLON UNIV. PITTSBURGH PA DEPT OF MECHANICAL ENGINEERING

(U) The Influence of Electric Current on Crack Propagation in Thermal Fatigue Tests

The validity and consequence of some of these assumptions are discussed.

DESCRIPTORS: (U) THERMAL FATIGUE, CRACK PROPAGATION, ELECTRIC CURRENT HEATING, CRACKS, STRESSES, TEMPERATURE, DISTRIBUTION, TEST METHODS, FATIGUE TESTS (MECHANICS)

DESCRIPTIVE NOTE Final rept 1 Aug 84-31 Jul 85

IDENTIFIERS: (U) Crack tips, PEB1102F, WUAFOSR2302B2

FEB 86 44P

PERSONAL AUTHORS: Griffin, Jerry H.

REPORT NO. 1-52113

CONTRACT NO. AFOSR 84-0203

PROJECT NO. 2302

TASK NO. B2

MONITOR AFOSR

TR 86-0856

UNCLASSIFIED REPORT

ABSTRACT (U) The use of a benchmark or model problem to estimate errors in stress intensity factors and local temperatures in thermal mechanical fatigue testing which uses large electric currents for heating has shown that this mode of testing results in a more severe stress state than if conventional heating methods are used. The reason for the more severe stress state is that the application of a constant voltage across a cracked specimen results in a singular current and, consequently, a singular heat source. The singular heat source does not result in a temperature singularity, however, so the temperature remains bounded at the crack tip. The relative discrepancy between conventional heating fatigue testing and resistance heating fatigue is quite dependent on crack size and materials properties. Primarily thermal and electrical conductivity and linear thermal expansion. Materials exhibiting low electrical resistance and high thermal expansion are, in general, more susceptible to this mode of thermal loading. Simple expressions for estimating the contribution of electric current to the stress intensity factor and local temperature field were developed. These expressions are estimated in light of some basic assumptions made during problem formulation.

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AD A172 736 CONTINUED

CLEMSON UNIV SC DEPT OF MATHEMATICAL SCIENCES

IDENTIFIERS: (U) PE61102F WUAFOSR2304A1

(U) Control Coordination of Large Scale Hereditary Systems

DESCRIPTIVE NOTE Annual rept 1 Jul 84-1 Jul 85.

JUL 85 57P

PERSONAL AUTHORS Fennell Robert (Rendle J. A.)

CONTRACT NO AFOSR 84-0236

PROJECT NO 0304

TASK NO A1

MONITOR AFOSR
TP 85 0895

UNCLASSIFIED REPORT

ABSTRACT (U) A decentralized control strategy, which allows some level of autonomous component control for large scale hereditary systems, has been developed. The basic problem considered is how to add constraints of the component objectives and to arrange exchanges of information which enable all components to achieve their objectives. The approach requires that component interactions be suitably limited so that variational methods can be used to determine component controls independently. A reproducing kernel Hilbert space of Hellinger integrable functions provides the setting for the description of system operation and the analysis of optimization problems. This work has been reported in papers entitled "Decentralized Control for Large Scale Hereditary Systems and Control Coordination for Large Scale System. In other related work, geometric, algebraic and graph theoretic properties of system matrices have been characterized which allow some autonomy in the choice of component control laws. This is reported in a paper entitled "Canonical forms for decentralized control

DESCRIPTORS (U) CONTROL THEORY; SYSTEMS APPROACH;
DECENTRALIZATION; ITERATIONS; VARIATIONAL METHODS;
HILBERT SPACE; OPTIMIZATION; TRANSFORMATION; MATHEMATICS;
STOCHASTIC PROCESSES; KERNEL FUNCTIONS; LAPLACE
TRANSFORM; MATHEMATICAL INFORMATION SCIENCE

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AD-A172 734 CALIFORNIA AD-A172 734

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AD-A172 734 Preparation, Properties and Characterization of
Ultrathin Glasses and Ceramics

DESCRIPTIVE NOTE Final (technical) report 1 Jan 85 31 Jan 86

AUG 86 6P

PERSONAL AUTHOR: Mackenzie John D

CONTRACT NO AFOSR 85 0121

PROJECT NO 2917

TASK NO A2

MONITOR AFOSR
TR-86-0927

UNCLASSIFIED REPORT

ABSTRACT (U) A unique glove box system has been built which permits the melting and fabrication of halide and chalcogenide glasses under controlled atmospheres. Glass fibers have been prepared inside this system and their tensile strengths and viscoelastic properties measured in situ. Further the microstructures of glasses and ceramics prepared as well as their infrared transmission were investigated without the need to expose the samples to the external atmosphere. The system has been used to perform research for the Air Force Office of Scientific Research and to train students in the preparation of ultrathin glasses and ceramics.

DESCRIPTORS (U) GLASS, CERAMIC MATERIALS, INDUSTRIAL PRODUCTION, MELTING, FABRICATION, CHALCOGENS, HALIDES, CONTROLLED ATMOSPHERES, FIBERS, TENSILE STRENGTH, VISCOELASTICITY, MICROSTRUCTURE, INFRARED RADIATION, TRANSMITTANCE, PURITY

IDENTIFIERS (U) PEG1102F, WUAFOSR2917A2

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FLORIDA UNIV GAINESVILLE DEPT OF ENGINEERING SCIENCES

U. Automated Mechanical Test and Environmental Control Equipment and Data Acquisition and Analysis Equipment

DESCRIPTIVE NOTE Final report 1 Aug 83-31 Mar 85

MAY 86 6P

PERSONAL AUTHOR: Malvern, Lawrence E.; Ross, C.; Sun, C.

CONTRACT NO AFOSR-83 0293

PROJECT NO 2917

TASK NO A1

MONITOR AFOSR
TR-86-0889

UNCLASSIFIED REPORT

ABSTRACT (U) This report identifies equipment actually acquired under a Dep of Defense University Research Instrumentation Program (FY 1983) grant to the University of Florida. It also includes a summary of the research projects on which the equipment has been or will be used.

DESCRIPTORS (U) DATA PROCESSING EQUIPMENT, TEST EQUIPMENT, CHAMBERS, INSTRUMENTATION, TRANSIENTS, UNIVERSITIES, PROCUREMENT, COMPOSITE MATERIALS, METALS, BALLISTICS, CEMENTS, CONCRETE, DATA ACQUISITION, DIGITAL RECORDING SYSTEMS

IDENTIFIERS (U) University research, PEG1102F, WUAFOSR2917A1

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NEW MEXICO UNIV ALBUQUERQUE DEPT OF MECHANICAL
ENGINEERING

MASSACHUSETTS INST OF TECH CAMBRIDGE DEPT OF AERONAUTICS
AND ASTRONAUTICS

(U) Structure Dynamic Theories of Fracture Diagnosis

(U) Computational Methods for Complex Flow Fields

DESCRIPTIVE NOTE Technical rept Jun Dec 85.

DESCRIPTIVE NOTE Annual rept.

MAR 86 137P

JUN 86 47P

PERSONAL AUTHORS Ju Frederick D

PERSONAL AUTHORS Murman, Earl M ; Baron, Judson R ;

REPORT NO MF 134-85 AFOSR-993-2

CONTRACT NO AFOSR-82 0136

PROJECT NO AFOSR 85 0085

PROJECT NO 2307

TASK NO 2302

TASK NO A1

MONITOR AFOSR

MONITOR AFOSR
TR-86-0868

TR 86 0860

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

Availability Document partially available

ABSTRACT (U) Two modal theories of damage diagnosis are presented. The modal frequency theory is based on the changes in modal frequencies of a structure due to damage. It identifies both the location and the intensity of a crack for simple fracture geometries. The transmissibility theory, which deals with changes in transmissibilities across a structure, is proposed as a feasible method for large structures. The report reveals the important features of the modal frequency theory. The transmissibility theory is illustrated with a frame structure in localizing a fracture damage.

DESCRIPTORS (U) CRACKS; BEAMS; STRUCTURAL; DAMAGE; FRACTURE MECHANICS; DIAGNOSIS; GENERAL THEORY; STRUCTURAL MECHANICS; ANALOGIES; CIRCUITS; FREQUENCY; STRUCTURAL RESPONSE; EXCITATION; INTENSITY; POSITION-LOCATION; CANTILEVER BEAMS; DAMPING

IDENTIFIERS (U) Modal frequency theory; Transmission theory; Fracture damage; Analog circuit; Biology; Modeling cracks; Damage diagnosis; PEG1102F; WJAFOSR2 32 2

AD A172 712

UNCLASSIFIED

ABSTRACT (U) Development of solution algorithms for complex flowfields is the continuing objective of the research. The physical events are used to determine appropriate subdomains for both preselected and adaptive divisions of the field. Adapted embedding procedures have been completed for two-dimensional Euler flow with considerations of most suitable decision parameters. Development of an algorithm which combines cell and nodal centered features continues for applications to less restrictive embedded topologies. A mixed implicit-explicit approach for different coordinate directions is under study for Navier-Stokes flow. The Dec 1984 Jerusalem Workshop is summarized briefly. Keywords: Euler equations; Embedded grids; Adaptive grids; Airfoils and Computational Fluid Dynamics

DESCRIPTORS (U) FLOW FIELDS; AIRFOILS; ALGORITHMS; FLUID DYNAMICS; COMPUTATIONS; TWO DIMENSIONAL FLOW; NAVIER STOKES EQUATIONS; EMBEDDING; GRIDS; ADAPTIVE SYSTEMS

IDENTIFIERS (U) Complex flow fields; Computational fluid dynamics; Euler equations; Embedded grids; Adaptive grids; PEG1102F; WJAFOSR2307A1

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ORIG REF ID: BIBLIOGRAPHY

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20-12

VIRGINIA POLYTECHNIC INST AND STATE UNIV, BLACKSBURG
DEPT OF ENGINEERING SCIENCE AND MECHANICS

IOWA STATE UNIV AMES

U Optimization of Closed Loop Eigenvalues, Maneuvering,
Vibration Control, and Structure Control Design
Iteration for Flexible Spacecraft

U Microwave Acoustics Device Study

DESCRIPTIVE NOTE Final rept 1 Sep 84-31 Aug 85.

JUL 86 49P

DESCRIPTIVE NOTE Final rept Jun 85-May 86.

MAY 86 151P

PERSONAL AUTHORS Lakin, K. M.

PERSONAL AUTHORS Junkins, John L.

CONTRACT NO AFOSR-84-0386

CONTRACT NO F49620-83 K-0032

PROJECT NO 2306

PROJECT NO 2302

TASK NO 82

TASK NO 81

MONITOR AFOSR
TR-86-0860

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Prepared in cooperation with Texas A
and M Univ, College Station

ABSTRACT: U This report summarizes new results on
spacecraft dynamics and control. Perturbation methods are
presented for computing nonlinear open and closed loop
optimal maneuver control. Homotopy optimization
algorithms are presented for tuning linear regulators vis-
a-vis eigenvalue placement and robustness. A simultaneous
structure-controller design optimization algorithm is
developed. Keywords: active control; structural analysis;
optimization integrated design; spacecraft dynamics.

DESCRIPTORS: U CONTROL SYSTEMS, SPACECRAFT, SPACE
SYSTEMS, FLEXIBLE STRUCTURES, FLIGHT MANEUVERS, CLOSED
LOOP SYSTEMS, OPEN LOOP SYSTEMS, NONLINEAR SYSTEMS,
OPTIMIZATION ALGORITHMS, VIBRATION, CONTROL, EIGENVALUES

IDENTIFIERS: U Large space structures. WUAFOSR2302B1,
PE61102F

ABSTRACT: U This final report summarizes the results
of a single one year study of the device physics aspects
of the thin film bulk acoustic wave resonator. The study
involved high Q trapped energy resonators, zinc
diffusions in GaAs as a precursor to temperature
coefficient studies, and refinements to the two
dimensional numerical analysis modeling of microwave
acoustic boundary value problems by the finite difference
method. Keywords: Microwave acoustics, Thin film
resonators, Bulk acoustic waves, Diffusion of Zn, and
GaAs.

DESCRIPTORS: U RESONATORS, THIN FILM, GALLIUM
ARSENIDES, ZINC, FINITE DIFFERENCE THEORY, DIFFUSION

IDENTIFIERS: U BAW Bulk Acoustic Waves,
Acoustics (Microwave), High Q resonators, Thermal
coefficients, Mode trapping. WUAFOSR2306B2, PE61102F

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SCIENCE APPLICATIONS INTERNATIONAL CORP CHATSWORTH CA
COMBUSTION SCIENCE AND ADVANCED TECHNOLOGY DEPT

combustors. Flame stabilization. Pressure interactions.
Turbulent reacting flow. WUAFOSR2308A2. PE61102F

(U) Pressure Interactions in Supersonic Combustion.

DESCRIPTIVE NOTE Final rept 1 Jun 84-28 Feb 86.

JUN 86 58P

PERSONAL AUTHORS: Edelman, K. B.; Bragg, W. N.

CONTRACT NO F49620 84-C-0064

PROJECT NO 2308

TASK NO A2

MONITOR AFOSR
TR 86 0876

UNCLASSIFIED REPORT

ABSTRACT (U) A detailed assessment of supersonic combustion was carried out to identify specific research requirements in modeling turbulent reacting supersonic flows. The direct effects of pressure gradients and pressure fluctuations on turbulence were found to be potentially responsible for certain of the trends in turbulent transport and mixing rates that are observed in supersonic flows. An approach to the modeling of these phenomena is delineated. A modular model computer code for the analysis of sudden expansion dump combustors was prepared. This modular model is designed to be used parametrically in evaluating effects such as chemical kinetics limitation on flame stabilization and combustion efficiency in integral rocket nozzles and ducted rocket combustors. Keywords: Pressure interactions. Turbulence modeling. Sudden expansion combustors. Dump combustors.

DESCRIPTORS (U) SUPersonic COMBUSTION; COMBUSTORS;
TURBULENT FLOW; SUPersonic FLOW; REACTION KINETICS;
TRANSPORT PROPERTIES; PRESSURE GRADIENTS; FLAME
PROPAGATION; MIXING RATES; EFFICIENCY; FUEL INJECTION;
DUCTED ROCKET; INTEGRAL ROCKET NOZZLES; FLAMES;
STABILIZATION; PRESSURE VARIATIONS; INTERACTIONS;
MODULAR COMBUSTION; COMPUTER PROGRAMS

DESCRIPTORS (U) Dump combustors; Sudden expansion

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CALIFORNIA UNIVERSITY LOS ANGELES DEPARTMENT OF PSYCHOLOGY

U. Characterization of Infrared Properties of Layer Semiconductors

DESCRIPTIVE NOTE Annual scientific rept 1 May 84 31 Aug 85 IDENTIFIERS (U) Photo Induced Transient Spectroscopy PEG1102F WUAFOSR2305B1

AUG 85 123F

PERSONAL AUTHORS Braunstein, Rubin :

CONTRACT NO AFOSR-83-0159

PROJECT NO 2705

TASK NO B1

MONITOR AFOSP
TR 85-0251

UNCLASSIFIED REPORT

ABSTRACT. (U) Infrared wavelength modulation absorption spectroscopy was employed in the spectral range of 0.3-1.45 eV to study deep level impurities in undoped semi-insulating GaAs grown by the liquid encapsulated Czochralski technique. The sensitivity of the measurements allow us to give credence to changes in absorption at levels of 0.01/cm. The measurements reveal two resonant type peaks with fine structures near 0.39 and 0.40 eV as well as plateaus and thresholds at higher energy. The absorption band at 0.37 eV is interpreted as due to the intra-center transition between levels of accidental iron impurity. The absorption band near 0.40 eV can be annealed out by heat treatment and is characterized as belonging to a structural multi-level defect complex. Photo induced transient spectroscopy technique also reveal out annealable level at 0.42 eV. Raman backscattering was employed to measure the shift in the frequency of unscreened and screened phonon plasma mode in GaAs in a study of the change in the surface depletion layer widths due to various surface treatments. A technique of photo-mixing was employed to measure the drift velocities in the hot carrier small distance regimes in Gallium Arsenide.

DESCRIPTORS U. ABSORPTION SPECTRA. GALLIUM ARSENIDES

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KENTUCKY UNIV LEXINGTON WENNER-GREN RESEARCH LAB

Filters, Coherent noise, Flaw sizes, Autoregressive Models, Impulses, Homomorphic filters, Deconvolutions, Spline Functions, PEG1102F, WUAF05R2306A2

(U) Signal Processing in Ultrasonic NDE (Nondestructive Evaluation)

DESCRIPTIVE NOTE: Final technical rept. 15 Aug 84-14 Nov 85.

JUL 86 47P

PERSONAL AUTHORS: Bhagat, Pramode K.; Leon, Benjamin J.

CONTRACT NO AFOSR-84-0223

PROJECT NO 2106

TASK NO A2

MONITOR: AFOSR
TR 86-0904

UNCLASSIFIED REPORT

ABSTRACT: (U) The desirable performance goal of an ultrasonic nondestructive evaluation (NDE) methodology is to reliable and rapidly obtain information regarding flaws in the material being tested. Decisions concerning acceptance/rejection of material for further usage can then be made on the basis of the nature and severity of flaws within it. Flaw size estimates are currently made on the basis of an idealized physical model, describing the flaw which uses the computed impulse response as an input. The research reported in this study seeks to define the limits and sensitivities of currently available deconvolution algorithms. In particular, the interrelationship among parameters of deconvolution procedures, noise, transducer bandwidth and instrumentation related errors were studied. Simulation experiments dealing with the impulse train recovery from material samples are illustrated in an algorithmic manner with the aid of a laboratory minicomputer system. (Author)

DESCRIPTORS: U NONDESTRUCTIVE TESTING, ULTRASONICS, SIGNAL PROCESSING, PROCESSING EQUIPMENT, DIGITAL COMPUTERS, COMPUTER PROGRAMS, NOISE, SIMULATION, MOMENTUM, SUPPRESSORS, TRANSDUCERS, BANDWIDTH, ALGORITHMS

IDENTIFIERS: U NDE/NonDestructive Evaluation, Wiener

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AD-A172 675 SEARCH CONTROL NO EVN54B

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MARYLAND UNIV COLLEGE PARK DEPT OF PHYSICS AND ASTRONOMY

U- Coherent Scattering of Light by Nuclear Spins

DESCRIPTIVE NOTE Final rept

JUN 85 44P

PERSONAL AUTHORS: Weber, J

CONTRACT NO F49620-81-C-0024 AFOSR-82-0164

PROJECT NO 2201

TASK NO A8

MONITOR AFOSR
TR 85 0908

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Prepared in cooperation with
California Univ, Irvine

ABSTRACT: (U) A new kind of coherent interaction is possible for strongly coupled scatterers. The general theory is presented and applied to the coherent absorption of light by an ensemble of coupled nuclei, with polarized spins. Three kinds of experiments have been carried out, in which the coupling of scatterers with each other is important. These are: a) Low energy antineutrinos interacting with nuclei of a solid; b) Raman scattering of light by electrons in a thin conducting film on the surface of polarized dielectric; and c) Interaction of light with polarized nuclei of a crystal. For a, the theory is the interaction of two current densities and the lowest order process is antineutrino scattering. b) is a scattering process described by the interaction of light with electrons, and c) is an absorption process described by the interaction of light with magnetic moments. All of these processes may have total cross sections orders greater than the corresponding ones for scatterers which are not tightly bound. This appears true for all tightly bound scatterer interactions.

DESCRIPTORS (U) LIGHT SCATTERING, COHERENT SCATTERING.

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*NUCLEAR SPINS, POLARIZATION, COUPLING, INTERACTION, LOW ENERGY, CURRENT DENSITY, ELEMENTARY PARTICLES, ELECTRONS, THIN FILMS, DIELECTRICS, CRYSTALS, SAPPHIRE, RESONANCE ABSORPTION, ABSORPTION CROSS SECTIONS, NUCLEAR MAGNETIC RESONANCE, MOMENTUM TRANSFER, LASER BEAMS, NUMERICAL METHODS AND PROCEDURES

IDENTIFIERS: (U) Raman scattering, Antineutrino scattering, PE61102F, WUAFOSR2301A8

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MICHIGAN UNIV ANN ARBOR DEPT OF CHEMISTRY

DUKE UNIV DURHAM NC

(U) The Exchange Reaction of Tetramethyldipnictogens with Dimethylchalcogenides.

86

9P

(U) Numerical Evaluation of Performability and Job Completion Time in Repairable Fault-Tolerant Systems.

86

8P

PERSONAL AUTHORS Ashe, Arthur J. III; Ludwig, Edward G. Jr.

PERSONAL AUTHORS: Kulkarni, V. G.; Nicola, V. F.; Smith, R. M.; Trivedi, K. S.

CONTRACT NO. AFOSR-81-0099

CONTRACT NO. DAAG29-84-K-0045, AFOSR-84-0140

PROJECT NO. 2303

MONITOR: ARO, AFOSR

TASK NO. 82

21055 19-EL, TR-86-2202

MONITOR: AFOSR
TR-86 0909

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in IEEE Computer Society, p252-257 1986.

SUPPLEMENTARY NOTE: Pub. in Jnl of Organometallic Chemistry, 308 p289-296 1986.

ABSTRACT (U) Tetramethyldipnictogens Me₄E₂ (E = P, As, Sb, Bi) undergo exchange reactions with dimethylchalcogenides Me₂EA (A = S, Se, Te) to produce the corresponding dimethylpnictomethylchalcogenides Me₂EAME. These compounds have been characterized by NMR, Raman and mass spectroscopy.

DESCRIPTORS (U) ORGANOMETALLIC COMPOUNDS; METHYL RADICALS; CHALCOGENS; EXCHANGE REACTIONS; PHOSPHORUS; ARSENIC; ANTIMONY; BISMUTH; SULFUR; SELENIUM; TELLURIUM; NUCLEAR MAGNETIC RESONANCE; MASS SPECTROSCOPY; REPRINTS

IDENTIFIERS (U) Interelement compounds. WUAFOSR2303B2.
PE61102F

ABSTRACT: (U) Fault-tolerant computer systems change their level of performance (e.g., mode of operation or service rate) in response to different events such as failure, degradation or repair. The author presents a unified model for the analysis of job (task) completion time and the accumulated service (reward) until a given time (also known as performability). In prior work, the evaluation of the distribution of performability was restricted to nonrepairable systems (represented by acyclic Markov chains). This paper describes an algorithm for the numerical evaluation of the distributions of performability or job completion time, in repairable fault-tolerant systems (represented by cyclic Markov chains). This reprint demonstrates the feasibility of these techniques by means of numerical examples.

DESCRIPTORS: (U) FAULT TOLERANT COMPUTING; NUMERICAL ANALYSIS; PERFORMANCE (ENGINEERING); ALGORITHMS; MARKOV PROCESSES; RELIABILITY; REPAIR; MATHEMATICAL MODELS; MULTIPROCESSORS; REPRINTS

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RESEARCH INST OF COLOPADO FORT COLLINS

KOZIN BOGDANOFF AND ASSOCIATES INC WEST LAFAYETTE IN

(U) Mesoscale Severe Weather Development under Orographic Influences

(U) A Survey of Probabilistic Methods for Dynamical Systems with Uncertain Parameters.

DESCRIPTIVE NOTE Final rept 1 May 85 30 Apr 86

DESCRIPTIVE NOTE Final rept

JUL 86 15P

MAY 86 170P

PERSONAL AUTHORS Reiter, Elmar R.; Bresch, James F.; Klitch, Marjorie A.; MacDonald, Bruce C.; Sheaffer, John D.

PERSONAL AUTHORS: Bogdanoff, J. L.; Kozin, F.

CONTRACT NO F49620-85-C-0077

CONTRACT NO F49620-85-C-0139

PROJECT NO 2310

PROJECT NO 2302

TASK NO A1

TASK NO B1

MONITOR AFOSR TR-86-0980

MONITOR AFOSR TR-86-0830

UNCLASSIFIED REPORT

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ABSTRACT: (U) Overall goals of this 3-year study are to: 1) examine the role of topography in the development of convective systems and 2) assess the orographic influences on cold season severe weather, such as blizzards, lee cyclogenesis, etc. Four approaches were taken to attain these goals: 1) implementation of a field measurement program, 2) diagnostic studies of energy fluxes during various seasons, 3) numerical simulation of severe weather development, and 4) evaluation of model sensitivity of various physical processes. Progress has been made on all four of these fronts in the first year. Keywords: Mountains; Atmosphere models; Surface energy fluxes; Mesoscale numerical modeling; Atmospheric convection; Seasonal variations.

DESCRIPTORS: (U) *CONVECTION (ATMOSPHERIC); *MOUNTAINS; *STORMS; TOPOGRAPHY; COLD WEATHER; ATMOSPHERE MODELS; MATHEMATICAL MODELS; ENERGY TRANSFER; METEOROLOGICAL DATA; FIELD TESTS; SEASONAL VARIATIONS

IDENTIFIERS: (U) Blizzards, Lee cyclogenesis, Tibet, Mesoscale numerical modeling, Surface energy fluxes, Rocky Mountains, Tibetan Plateau, Severe weather, WUAFOSR2310A1, PE61102F

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ABSTRACT: (U) The purpose of this report is to present a survey of techniques that are available for studying the effect of random parameters on the response characteristics of linear dynamical parameters on the response characteristics of linear dynamical systems. The report is directed towards the properties of the solutions of ordinary linear differential equations with random parameters. Both time independent (constant) random parameters, and time varying parameter systems are discussed. The motivation is the study of structures with random parameters. Keywords: Stochastic process; Random vibrations; Structural response; Random parameters; Uncertain systems; Perturbation; and White noise coefficients. (Author)

DESCRIPTORS: (U) *PROBABILITY; *PARAMETRIC ANALYSIS; DYNAMICS; LINEAR SYSTEMS; LINEARITY; PARAMETERS; STRUCTURAL RESPONSE; SURVEYS; LINEAR DIFFERENTIAL EQUATIONS; LINEAR SYSTEMS; SOLUTIONS (GENERAL); VIBRATION; STOCHASTIC PROCESSES; METHODOLOGY; TIME

IDENTIFIERS: (U) WUAFOSR2302B1, PE61102F

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DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN548

AD-A172 561 5/10 6/16

AD-A172 561 CONTINUED

EYE RESEARCH INST OF RETINA FOUNDATION BOSTON MA

(U) Final Technical Report on Contract F08671-83-0517 for
1 February 1983 - 31 January 1986.

MAR 86 29P

EFFECTS, GRADIENTS, SPATIAL DISTRIBUTION, GRADIENTS,
SPATIAL DISTRIBUTION, SUBSURFACE, COLORS, CONTRAST,
NONUNIFORM REGIONS, STIMULI, REGIONS, PATTERNS, LINE OF
SIGHT, RETINA, IMAGES

IDENTIFIERS: (U) PE61102F, WUAFOSR2313A5

PERSONAL AUTHORS: Arend, Lawrence E.

CONTRACT NO F08671-83-0517

PROJECT NO. 2313

TASK NO A5

MONITOR AFOSR
TR 86 0845

UNCLASSIFIED REPORT

Availability Document partially illegible

ABSTRACT: (U) Low contrast, low spatial frequency
luminance sawtooth patterns look like luminance
staircases, with no brightness changes over the shallower
luminance slope. Brightness measurements at corresponding
points in different cycles of these patterns showed
substantial illusory brightness differences. Other
measurements showed that the illusion is not confined to
strictly subthreshold luminance gradients, but occur with
slightly suprathreshold gradients as well. In models
which attempt to explain these visual illusions the
visual system integrates over the thresholded gradient of
the stimulus distribution. The integration encounters
problems due to curl introduced by the nonlinear
threshold operator. Lightness measurements indicated that
these problems have a visual counterpart, further support
for the models. Several new illusion were found to result
from this nonlinear threshold for spatial gradient,
including patterns where gradients were perceived in
uniform regions and nonuniform stimulus regions were
perceived as uniform. Color constancy was measured for
multiple regions of the visual field under different
illuminants

DESCRIPTORS: (U) EYE MOVEMENTS, VISION, ILLUSIONS,
BRIDGES, MEASUREMENT, ILLUMINANTS, LUMINANCE, SLOPE,
NONLINEAR SYSTEMS, OPERATORS/PERSONNEL, THRESHOLD

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AD A172 558 11 2 13 8
 ROCKWELL INTERNATIONAL THOUSAND OAKS CA SCIENCE CENTER
 DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO EVN54B
 AD-A172 558 CONTINUED

(U) Low Density Ceramics Based on Open Cell
 Macrostructures Fabricated from Reticulated Polymer
 Substrates

DESCRIPTIVE NOTE Final rept. 1 May 83-30 Apr 85

JUN 86 27P

PERSONAL AUTHORS Lange F F Miller K T

REPORT NO. SC5364 2FP

CONTRACT NO F49620-83-C 0078

PROJECT NO 2303

TASK NO. A3

MONITOR: AFOSR
 TR-85 0844

UNCLASSIFIED REPORT

ABSTRACT: (U) Processing procedures, and resulting mechanical properties, of open cell low density (relative density less than 0.1) ceramic macrostructures were investigated. These macrostructures were fabricated by slurry coating reticulated polymer substrates. Cracks in the powder coating, which were produced during the pyrolysis of the substrate, remained after powder densification at high temperatures and were the major cause of suboptimum properties. Additionally, lack of slurry drainage during the coating process could fill cells with powder which would differentially shrink during densification, leaving large regions within the macrostructure void of cell struts. This problem became increasingly pronounced with decreasing cell size. Mechanical properties were measured for a commercial transformation toughened AL2O3/ZrO2 doped cell material fabricated using reticulated polymer substrates with cell sizes of 30, 65, and 100 pores per inch. Approximately half of the specimens were treated by the manufacturer in an attempt to heal the partially cracked struts. The relative density of all commercial materials ranged between 7 and 12% of theoretical. Mechanical properties appeared to be independent of cell size. The elastic

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modulus, which ranged between 1 and 5 GPa, increased with density and was higher for the healed materials. The critical stress intensity factor ranged between 10 and 80 kPam^{1/2}, increasing with elastic modulus. Tensile strength ranged from 0.1 to 0.8 MPa and appeared to be related to processing variations and defects, which included specimen to specimen density variations, cracks within the cell struts and large regions of missing cells in the material with the smallest cell size

DESCRIPTORS: (U) CERAMIC MATERIALS, POROUS MATERIALS, FABRICATION, MECHANICAL PROPERTIES, LOW DENSITY, CELLS, SIZES(DIMENSIONS), ALUMINUM OXIDES, ZIRCONIUM OXIDES, SLURRIES, CERAMIC COATINGS, POWDERS, STRUTS, CRACKS, EXPANDED PLASTICS, POLYURETHANE RESINS, SUBSTRATES, PYROLYSIS, MODULUS OF ELASTICITY, TENSILE STRENGTH, TOUGHNESS

IDENTIFIERS: (U) Reticulated polymer substrates, Fracture toughness, PE61102F, WUAFOSR2303A3

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DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO EVN54B

AD-A172 549 11 2 20/11

AD-A172 549 CONTINUED

NORTHWESTERN UNIV EVANSTON IL DEPT OF CIVIL ENGINEERING

(U) Fracture Toughness of Fiber Reinforced Concrete. IDENTIFIERS: (U) PE61102F. WUAFOSR2307C2

DESCRIPTIVE NOTE: Final rept. Jun 82-Aug 85.

NOV 85 38P

PERSONAL AUTHORS: Shah, Surendra P

CONTRACT NO AFOSR-82-0243

PROJECT NO 2307

TASK NO C2

MONITOR: AFOSR
TR 86-0898

UNCLASSIFIED REPORT

ABSTRACT: (U) A fracture mechanics based theoretical model is presented to predict the crack propagation resistance of fiber reinforced cement based composites. Mode I crack propagation and steel fibers are treated in the proposed model. The mechanism of fracture resistance for FRC can be separated as: subcritical crack growth in matrix and beginning of fiber bridging effect; post critical crack growth in matrix such that the net stress intensity factor due to the applied load and the fiber bridging closing stresses remain constant; and a final stage where the resistance to crack separation is provided exclusively by fibers. The response of FRC during all these stages was successfully predicted from the knowledge of matrix fracture properties and the pull-out load vs slip relationship of single fiber. The model was verified with the results of experiments conducted on notched beams reported here as well as by other researchers. Beams were loaded in a closed-loop testing machine so as to maintain a constant rate of crack mouth opening displacement.

DESCRIPTORS: (U) FIBER REINFORCEMENT, REINFORCED CONCRETE, CONSTANTS, RATES, CRACK PROPAGATION, CRACKING-FRACTURING, RESISTANCE, BRIDGES, FIBERS, TOUGHNESS, DISPLACEMENT, MOUTH, OPENING-PROCESS, CRACKS, STRESS, STRESS CONCENTRATION, SEPARATION, FIBERS, SUBCRITICAL ASSEMBLIES, METAL FIBERS, STEEL

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AD A172 546 212

CALIFORNIA INST OF TECH PASADENA

U Mechanisms of Exciting Pressure Oscillations in Ramjet Engines

AD A172 546 CONTINUED

DESCRIPTIONS (U) RAMJET ENGINES, SHOCK WAVES, FLAME
HOLDERS, COMPUTATIONS, FLOW VISUALIZATION, OSCILLATION,
GLOBAL, ACOUSTIC FIELDS, UNSTEADY FLOW

IDENTIFIERS (U) PE61102F, WUAFO5R2308A2

DESCRIPTIVE NOTE Final rept Aug 80 Sep 84

JUN 85 21P

PERSONAL AUTHORS Culick F E, Marble F E, Zukoski E

CONTRACT NO AFOSR 80-0265

PROJECT NO 2308

TASK NO A2

MONITOR AFOSR
TR 86-0840

UNCLASSIFIED REPORT

ABSTRACT (U) Analytical work devoted to the global acoustics has been concerned with both linear and nonlinear behavior. Good agreement has been found between calculations of the mode shapes and data taken at the Naval Weapons Center. Numerical calculations are in progress to provide representation of the nonlinear unsteady behavior of a normal shock wave in an inlet diffuser, including viscous effects. Experimental investigations of combustion have been carried out with pressure, spectral line intensity and flow visualization techniques in a burner equipped with a bluff body flameholder. When the combustion is stable, the flow in the flameholder shear layers has many of the characteristics of isothermal shear layers. When unstable combustion occurs, the shear layers are characterized by large vortices which are shed from the flame holder lip. The self-excited oscillations appear to result from a coupling between the vortex production mechanism and nonsteady heat addition in the vortex. Both steady and nonsteady processes are being studied. Analytical studies have been carried out to determine the combustion augmentation for a flame distorted by a plane vortex, a flame distorted by a vortex being stretched along its axis and a burning vortex interacting with wall.

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AD-A172 543 CONTINUED

HAWAII INST OF GEOPHYSICS HONOLULU

(U) Hydrophone Investigations of Earthquake and Explosion
Generated High Frequency Seismic Phases

DESCRIPTIVE NOTE Final rept. Oct 83 Sep 85.

APR 86 320P

PERSONAL AUTHORS Walker Daniel A

CONTRACT NO F49620 84-C 0003

PROJECT NO 2309

TASK NO A2

MONITOR AFOSR
TR 85 0638

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE. Original contains color plates. All
DTIC and NTIS reproductions will be in black and white.

ABSTRACT U Data from the Wake Island Hydrophone Array
has been used in studies related to the detection and
discrimination of underground nuclear explosions. These
include 1) comparative studies of explosion phases from
sites at comparable epicentral distances in the highly
efficient propagation distance range of 60 deg to 90
deg. 2) some preliminary estimates of detection level
thresholds. 3) estimates of deep ocean noise levels and
comparisons to quiet continental sites. 4)

5) the location of significant earthquakes unreported by
both the NEIS and ISC, but well recorded at great
distances by elements of the Wake array in the interior
and along the subducting margins of the Western Pacific
Basin. The unreported earthquakes in the southwest
Pacific have led, in part, to the discovery of a new
subduction zone, the Micronesian Trench. Unreported
earthquakes in the interior of the basin and along its
subducting margins may also have associated gravitational
effects of Air Force relevance. Finally, data from the
Wake array has been used in a partial resolution of the
disputed location of the 9 April 1984 and in the
analysis of 3 plates from underground explosions in the

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Tuamotus Keywords: Body waves, Spectral analysis,
Hydrophone recordings, Nuclear explosion detection,
Marine seismology, Guided phases.
DESCRIPTORS: (U) *SEISMIC WAVES, *NUCLEAR EXPLOSION
DETECTION, *DISCRIMINATION, SPECTRUM ANALYSIS,
EARTHQUAKES, EPICENTERS, MARINE GEOPHYSICS, UNDERGROUND
EXPLOSIONS, HYDROPHONES, DEEP OCEANS, PACIFIC OCEAN,
PRIMARY WAVES/SEISMIC WAVES, HIGH FREQUENCY, PHASE,
GRAVITATIONAL FIELDS, OCEANIC CRUST, EARTH MANTLE,
SEISMIC DATA, PACIFIC OCEAN ISLANDS, SUBMARINE TRENCHES,
MICRONESIA, AMBIENT NOISE

IDENTIFIERS: (U) Marine seismology, Subduction zones,
Body waves/Seismology, Wake Island hydrophone Array,
Ocean basins, Western Pacific Ocean, PE51102F,
WUAFOSR2309A2

AD A172 522

1 JUL 86

AD A172 522 CONTINUED

UNITED TECHNOLOGIES RESEARCH CENTER EAST HARTFORD CT

U Investigation of Fuel Additive Effects on Sooting
Flames

DESCRIPTIVE NOTE Final rept 1 May 86 (31 May 86)

JUL 86 1260

PERSONAL AUTHORS Bonczyk Paul A

REPORT NO UTRC R36 956545-F

CONTRACT NO F49620 83 C 0113

PROJECT NO 2708

TASK NO A2

MONITOR AFOSR
TR 83 0251

UNCLASSIFIED REPORT

ABSTRACT U Measurements were limited to well-defined hydrocarbon air gaseous and prevaporized liquid-fueled diffusion flames. Emphasis was given to alkaline-earth salt additives in an ethylene-air flame, as well as to ferrocene in a flame fueled by a prevaporized toluene/iso-octane mixture. Nonperturbing laser/optical diagnostic techniques were used to measure flame temperature, as well as to relate changes in soot particulate size, number density and volume fraction to additive type and concentration. For the ethylene flame, additive effectiveness was shown to vary from point-to-point in the flame and to maximize in the direction of increasing flame temperature. From the latter, and measured concentrations of metal combustion species, MOH+ (M = Ba, Sr, etc.) were concluded to be the particular species critical to soot suppression. The data indicate additive intervention at both early and late stages of soot formation, but it was not possible to conclude early intervention firmly for the alkaline-earths, an experiment complementary to the foregoing was conducted to test an often quoted hypothesis of soot suppression in which metal induced increases in OH concentration are presumed to enhance soot oxidation and removal. This was found, however, not to be valid. The effect of the

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alkaline earths on OH was to decrease the concentration of the latter radical at all points in the ethylene air flame, which fundamentally is not supportive of the preceding hypothesis for the toluene flame. Ferrocene was observed to suppress a visible soot plume completely. Mie scattering measurements at a late combustion stage demonstrated that suppression results almost entirely from particular number density reduction.

DESCRIPTORS: (U) *FLAMES, *FUEL ADDITIVES, *COMBUSTION, *SOOT, ADDITIVES, INTERVENTION, ETHYLENE, TEMPERATURE, ALKALINE EARTH METALS, SALTS, AIR, FERROCENES, CONCENTRATION(CHEMISTRY), TEMPERATURE MEASURING INSTRUMENTS, HYDROXYL RADICALS, HYPOTHESES, LIQUIDS, DENSITY, PARTICLE SIZE, TOLUENES, METHODOLOGY, OPTICS, LASERS, MIE SCATTERING, MEASUREMENT, REDUCTION, VISIBLE SPECTRA, SUPPRESSION, DIFFUSION, FUELS, METALS, HYDROCARBONS, DIAGNOSIS(GENERAL), TEMPERATURE, OXIDATION PLUMES

IDENTIFIERS: (U) Liquid fuels, Soot suppression.
WUAFOSR2308A2, PE61102F

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WASHINGTON UNIV ST LOUIS MO BEHAVIOR RESEARCH LAB

(U) A Psychophysiological Mapping of Cognitive Processes

DESCRIPTIVE NOTES Final rept 1 Mar 83 25 Feb 86

JUN 85 157P

PERSONAL AUTHOR Stern John A Goldstein Robert

CONTRACT NO F49620 83 C 0054

PROJECT NO 2113

TASK NO A1

MONITOR AFAPSP
TR OR 0852

UNCLASSIFIED REPORT

amplitudes reflects not only the number, but also the type of information processing resources demanded by a primary task.

DESCRIPTORS: (U) *PSYCHOPHYSIOLOGY, *COGNITION, BRAIN, ENGLISH LANGUAGE, INFORMATION PROCESSING, RESOURCES, MEMORY DEVICES, AMPLITUDE, MAPPING, HEART RATE, JAPAN, PHYSIOLOGICAL EFFECTS, RESPONSE (BIOLOGY), PROBES, STIMULI, HEMISPHERES, SIZES (DIMENSIONS), MEMORY (PSYCHOLOGY), CUES (STIMULI), PERCEPTION (PSYCHOLOGY), REACTION TIME, ATTENTION, PATTERN RECOGNITION, PERFORMANCE (HUMAN), ELECTROENCEPHALOGRAPHY

IDENTIFIERS: (U) ERPs (Event Related Potentials), Evoked potentials, Eye blinks, Short term memory, WUAF0SR2313A4, PEG1102F

ABSTRACT: (U) The purpose of these studies was to map the psychophysiological concomitants of cognitive processes. In this end, a modified Sternberg paradigm was used in which the trials were divided into three parts each beginning with a stimulus. The first or cue stimulus informed the subject as to the character of the following memory set. In studies 1 and 2, the cue simply specified the number of letters in the memory set (1, 3, or 5 in study 1, 2 or 6 in study 2). In study 3, the cue also indicated the character type of the letters, either English or Japanese, the latter essentially nonsense patterns for these subjects. The third or test letter called for a response as to whether it was a member of the memory set. Physiological responses recorded were leads to the above stimuli and to task irrelevant probe stimuli appearing in the interstimulus intervals, and in studies 1 and 2 heart rate and blink parameters. In study 1, an two interval preceding the memory set, where attentional demands varied with set size, probe ERP P1-N1 amplitude increased with set size. In study 2, probe stimuli were both visual and auditory so as to assess the specificity of the study 1 ERP effect. The third study examined the differences between left and right hemispheres of the brain in the anticipation of verbal (English characters) and nonverbal (Japanese characters) sets. Electrode arrays coupled with those of study 1, designed to study the location in probe evoked potential

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TESTS: ORDNANCE ROCKET ENGINES, SHORT RANGE TIME-
TRAVELING MECHANISMS MEASUREMENT MIXING MOTIVATION,
PARTICULATES, COMBUSTION SPATIAL DISTRIBUTION, VELOCITY,
DIAMETERS

IDENTIFIERS: (U) WUAFOSR2308A3 PE51102F

AD A172 517 CONTINUED

SUBJECT: ENGINE, FLAMING, CRYSTAL, CHEMICAL, ENGINEERING,
AND FUEL SYSTEMS

RE: Velocity Measurement by Pulsed Doppler

DESCRIPTIVE NAME: Final rept Sep 64 Sep 65

NOV 85 2:18

PERSONAL AUTHOR: Ewan, Bruce C Swithenbank, J

REPORT NO: WIC 416

CONTRACT NO: AFOSR 84 0374

PROJECT NO: 2108

TASK NO: A3

MONITOR: AFOSR
TP 85-0839

UNCLASSIFIED REPORT

ABSTRACT U The optical monitoring of fluid flows and
particulates has in the past generally divided between
those methods which provides a single snapshot over a
wide field diameter and those which provide a continuous
record at a single point. Laser Doppler anemometry comes
into the latter category and it is clear that in order to
accumulate the same information on the spatial
distribution of velocity as wide field methods a
traversing of the field must be carried out. While this
is commonplace among users of LDA, it requires that the
velocity field be steady or at least reproducible in
short between tests, single firings or periodic systems.
The motivation behind the present program has stemmed
from the perceived need to overcome the single point
capability of LDA in certain cases of interest to USAR.
These were originally seen to be short rocket motor
firings, which typically last for only a few seconds, but
are now considered to include the growing area of time
dependent 3-D flow measurement. This letter is now known
to be at the heart of many simple combustion systems
involving large scale mixing.

DESCRIPTORS: (U) FLUID FLOW, LASER ANEMOMETERS,
DOPPLER SYSTEMS, MONITORING, OPTICS, FIRING

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COLORADO UNIV AT BOULDER DEPT OF CIVIL ENVIRONMENTAL AND
ARCHITECTURAL ENGINEERING

COLORADO UNIV AT BOULDER DEPT OF CIVIL ENVIRONMENTAL AND
ARCHITECTURAL ENGINEERING

(U) Finite Elements and Localized Failure.

(U) Centrifugal and Analytical Modeling of a Buried
Flexible Culvert.

DESCRIPTIVE NOTE Final technical report 1 Aug 82-31 Oct
85

DESCRIPTIVE NOTE Technical rept. 1 Sep 84-31 Aug 85.

DEC 85 141P

OCT 85 244P

PERSONAL AUTHORS William Kaspar J Stern Stern

PERSONAL AUTHORS Ni Jim C

CONTRACT NO AFOSR 82 0273

CONTRACT NO AFOSR 84 0300

PROJECT NO 2 02

PROJECT NO 2302

TASK NO 02

TASK NO C2

MONITOR AFOSR
TR 86 0348

MONITOR AFOSR
TR 86-0850

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

ABSTRACT (U) This project was comprised of research on three different levels: 1) Experimental work. Stroke controlled post peak experiments on plain concrete specimens which were subjected to direct tension. 2) Homogenization of localized failure due to tensile cracking and frictional slip in the form of the Composite Fracture Model which describes the degradation of strength within an elementary volume of a fracture energy equivalent continuum. and 3) Computational work. Stabilization of strain softening computations of localized failure within solids subjected to tensile cracking and or shear faulting. keywords: strain softening, concrete components, anisotropy, experimental data

DESCRIPTORS (U) SHEAR PROPERTIES, CONCRETE, TENSILE PROPERTIES, COMPRESSIVE PROPERTIES, ANISOTROPY, COMPUTATIONS, DEGRADATION, STRENGTH, TENSION, FINITE ELEMENT ANALYSIS, FRAGILITY, SOLIDS, COMPRESSION, COMPOSITE STRUCTURES, FRACTURE, MECHANICS, MODELS, PARTS, VOLUME, ENERGY, CRACKS, SOFTENING, EXPERIMENTAL DATA

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AD-A172 482

ABSTRACT (U) This report summarizes one phase of the research on the modeling of buried structures by centrifuge testing and by numerical methods. Testing in the centrifuge makes it possible to simulate the gravity induced overburden pressure effects that dictate the soil stiffness which in turn determine the soil structure phenomena. Scaled model testing in the centrifuge is used in the project to validate analytical methods commonly used to analyze soil structure interaction problems. Data obtained by testing a 4-in diam pipe at 50 g under a static surface pressure loading consist of radial deflections and strains measured around the pipe. These experiments were analyzed by a finite element program in which different constitutive models were incorporated, including a non-linear elastic model and an elastoplastic model. On the basis of comparison with centrifuge test data, the suitability and accuracy of the different analyses were assessed.

DESCRIPTORS (U) CONDUITS, PIPES, STRUCTURAL RESPONSE, ACCURACY, CENTRIFUGAL FIELDS, MATHEMATICAL MODELS, CENTRIFUGES, TEST METHODS, FINITE ELEMENT ANALYSIS, ELASTIC PROPERTIES, MATHEMATICAL MODELS, NONLINEAR SYSTEMS, PRESSURE, SOILS, STIFFNESS, CHANNELS, WATERWAYS, EXPERIMENTAL DATA, MODELS, PLASTIC PROPERTIES, DEFLECTION

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AD A172 482 INTERACTIONS FLEXIBLE STRUCTURES GRAVITY BACKFILLS
STATIC LOADS, STATIC PRESSURE SURFACE PROPERTIES, THESES
SOIL MECHANICS

AD A172 482

AD A172 474 4/1

SRI INTERNATIONAL MENLO PARK CA
(U) High-Latitude Ionospheric Irregularities

IDENTIFIERS U Solvents REF1102F

DISCRIPTIVE NOTE: Final rept 1 Mar 83-30 May 86

JUL 86 9P

PERSONAL AUTHORS: Vickrey, James F.

CONTRACT NO F49620-83-K-0025

MONITOR: AFOSR
TR-86-0853

UNCLASSIFIED REPORT

ABSTRACT: (U) A brief summary of some of key results involving the production, transport, and ultimate decay of naturally occurring ionospheric plasma structure.
Keywords: Scintillation; Plasma structure; and High-latitude ionosphere

DESCRIPTORS: (U) *PLASMAS (PHYSICS); *IONOSPHERIC SCINTILLATIONS; IONOSPHERE; STRUCTURAL PROPERTIES; HIGH LATITUDES; DECAY SCHEMES; RADAR REFLECTIONS

IDENTIFIERS: (U) Harang Discontinuity, LPN-SRI-5741

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AD-A172 470 21 5 20 13

MINNESOTA UNIV MINNEAPOLIS HEAT TRANSFER LAB

(U) Studies of Gas Turbine Heat Transfer: Airfoil Surface and End Wall.

DESCRIPTIVE NOTE: Annual progress rept 3 Jan 85-28 Feb 86.

APR 86 74P

PERSONAL AUTHORS: Eckert E R, Goldstein R U, Simon T W.

CONTRACT NO: F19620 85-C 0049

PROJECT NO: 2307

TASK NO: A1

MONITOR: AFOSR
TR-86-0854

UNCLASSIFIED REPORT

ABSTRACT: (U) The annual report documents progress at the University of Minnesota Heat Transfer Laboratory on the topic of heat transfer from gas turbine airfoil and end wall surface. Subtopics are: Curvature effects. End wall heat transfer and Near end wall heat transfer. Curvature effects on turbulent flow. Turbine shown for a convex concave wall and for single and double curved and concave walls. End wall mass flow transfer coefficient contours show the heat transfer, the passage center and an inner corner.

DESCRIPTORS: AIRFOILS, GAS TURBINES, HEAT TRANSFER, SURFACES, WALLS, TURBINES, CURVATURE, CONVEX, CONCAVE, TURBINE, TURBINE, TRANSFER, COEFFICIENT, FILM COOLING, GAS TURBINE STRUCTURES

IDENTIFIERS: U WUAFOSR2307A1, PE611027

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SEARCH CONTROL NO. EVN54B

AD-A172 433 7/3

GEORGIA UNIV ATHENS

(U) Reaction of 1,2,3-Triphenyl-1,2,3-triphenylphosphine with Nonacarbonyliron and Dodecacarbonyliron Revisited. Structures of Three P3Fe3 Clusters.

DESCRIPTIVE NOTE: Journal article.

85 9P

PERSONAL AUTHORS: Kyba, Evan P.; Hassett, Karen L.; Sheikh, Baharuddin; McKennis, Jeffrey S.; King, R. B.

CONTRACT NO. AFOSR-84-0050

PROJECT NO. 2303

TASK NO. B2

MONITOR: AFOSR
TR-86-0762

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub in Organometallics, v4 n6 p994-1001 1985.

ABSTRACT: (U) The reaction of 1,2,3-triphenyltriphenylphosphine with nonacarbonyliron or dodecacarbonyliron occurs rapidly in benzene at reflux to give a mixture of at least five components as monitored by HPLC. In addition to 1,2-PHENYLENEBIS(PHOSPHIDO) hexacarbonyliron and octacarbonyl 1,2,3-triphenyl 1,2,3-triphenylphosphine superscript P1, K superscript P3 diron(0), three Fe3 species were isolated and their structures determined by x ray crystallography, two of which were P3Fe3 clusters and the other, a P3Fe3 cluster precursor. Keywords: Iron, phosphines, and Metal carbonyls.

DESCRIPTORS: (U) CHEMICAL REACTIONS, PHOSPHINE, ORGANOMETALLIC COMPOUNDS, METAL CARBONYLS, BENZENE, CRYSTALLOGRAPHY, X RAYS, IRON, CLUSTERING, REPRINIS

IDENTIFIERS: (U) WUAFOSR2303B2, PE61102F

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO EVN548
AD A172 429 CONTINUED

AD A172 429 21 4

PRINCETON UNIV NJ DEPT OF MECHANICAL AND AEROSPACE
ENGINEERING

(U) Fuels Combustion Research

methods. Experimentally, a technique to produce isolated slurry fuel droplets of boron and JP-10 has been developed, and observations on the isolated droplet combustion characteristics of several commercially prepared boron/JP-10 slurries were made.

DESCRIPTIVE NOTE Final rept. 1 Mar 82-30 Sep 85.

DEC 85 42P

PERSONAL AUTHORS Dryer, Frederick L.; Glassman, Irvin;
Williams, Forman A.

REPORT NO MAE 1731

CONTRACT NO F49620-82 K-0011

PROJECT NO 2308

TASK NO A2

MONITOR AFOSR
TR 86-0841

UNCLASSIFIED REPORT

ABSTRACT: (U) The qualitative mechanisms for the oxidation of benzene and alkylated benzenes corresponds well with flow reactor results. Major results have been obtained on how the aromatic sidechain reacts and specific fundamental reaction rate data have been obtained. A fundamental correlation with respect to fuel C-C bonds for the sooting tendency of fuels under premixed combustion conditions has been developed and the concept that fuel structure plays no direct role in determining the critical sooting equivalence ratio was put forth and substantiated by results on pure fuels and fuel mixtures. Fuel structure and pyrolysis mechanisms have been found to be the important controlling factors in sooting diffusion flames. From a knowledge of basic pyrolysis studies, it is now possible to predict a fuel's reveal no synergistic trends with diffusion flame sooting trends; however, these trends may be due to the structural aspects of these flames. Experimental and theoretical research efforts on high-energy-density slurry propellants are reported. Transient internal heat conduction and liquid surface regression of a rigid slurry droplet during liquid vaporization and combustion have been investigated using singular perturbation

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UNCLASSIFIED

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DESCRIPTORS: (U) *COMBUSTION, *SLURRY FUELS, *VAPORIZATION, ALKYL RADICALS, BENZENE, BORON, DIFFUSION, FLAMES, FUELS, MIXTURES, HIGH ENERGY, PROPELLANTS, SLURRIES, PYROLYSIS, STRUCTURAL PROPERTIES, DROPS, ISOLATION, LIQUIDS, MIXING, RIGIDITY, PATTERNS, SYNERGISM, PATTERNS, SURFACES, OXIDATION, PURITY, RATES, REACTION TIME, PERTURBATIONS, INTERNAL, THERMAL CONDUCTIVITY, TRANSIENTS, AROMATIC COMPOUNDS, REACTION KINETICS, JET ENGINE FUELS

IDENTIFIERS: (U) Slurry propellants, Aromatic fuel oxidation, Fuel pyrolysis, Alkylated benzenes, Boron fuels, JP-10 fuel, PE61102, WUAF05R2308A2

UNCLASSIFIED

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN54B

AD A172 426 7 4 20/8

AD-A172 426 CONTINUED

SRI INTERNATIONAL MENLO PARK CA

(U) Surface Generation of Electronically Excited States of O₂

DESCRIPTIVE NOTE Final scientific rept.

JUL 85 71P

PERSONAL AUTHOPS Slanger, Tom G

REPORT NO SRI-MP 86 130

CONTRACT NO F49620 82-K-0025

PROJECT NO 2303

TASK NO A2

MONITOR AFOSP
TR 86 0849

UNCLASSIFIED REPORT

ABSTRACT (U) This investigation of surface-related processes consisted of two parts. Laboratory studies of the production and loss of electronically excited oxygen species on metallic surfaces and an investigation of the mechanisms that might contribute to the so-called Space Shuttle glow. In the laboratory work, production by atom recombination of the states of O₂ that lie between 4 and 5 eV was studied. The efficiency of their generation was correlated with the identity of the metal, its position on the periodic chart, surface temperatures, alloy composition, and the electronic heat capacity. Spectra of the emissions originating at the surfaces were shown to be non-specific to the particular metal, implying that internal energy distributions in the emitting metastable molecules were determined by gas phase interactions. Further study of surface energy accommodation, and the possible generation of highly vibrationally excited molecules is called for. The loss of O₂ on metallic surfaces was investigated, and showed both similarities and differences with the production of the higher O₂ states in the same surfaces. Metals in a given group of the periodic chart tend to exhibit similar temperature effects. The Space Shuttle glow study involved development of a model for the process which has been

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useful in guiding the investigations as subsequent in situ experiments have been carried out. By consideration of the present status of the observations, it has been found possible to clarify which of the current explanations of the glow-forming mechanism are viable, and which must be discarded.

DESCRIPTORS (U) *SURFACE REACTIONS, *ELECTRONIC STATES, *OXYGEN, ATOMS, EMISSION, METASTABLE STATE, MOLECULES, DISTRIBUTION, ENERGY INTERNAL, LABORATORY PROCEDURES, SPECIFIC HEAT, EXCITATION, INTERACTIONS, VAPOR PHASES, LABORATORY TESTS, METALS, SURFACES, SPACE SHUTTLES, GLOW DISCHARGES, MOLECULAR VIBRATION, EMISSION SPECTRA, SURFACE TEMPERATURE, ALLOYS, RECOMBINATION REACTIONS, PRODUCTION, TEMPERATURE

UNCLASSIFIED

OTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO EVN54B

AD A172 398 10 4

AD A172 397 7/3 7/4

TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY

CINCINNATI UNIV OH DEPT OF CHEMISTRY

(U) Ground States of Molecules. 64 MNDO Calculations for Compounds Containing Bromine.

(U) Molecular Orbital Conformational Energy Calculations of the Aromatic Heterocyclic Poly(5,5'-Benzoxazole-2,2'-Diyl-1,4-Phenylene) and Poly(2,5-Benzoxazole).

83 112

OCT 85 6P

PERSONAL AUTHORS: Devar, Michael J.; Healy, Eamon.

PERSONAL AUTHORS: Welsh, W. J.; Mark, J. E.;

CONTRACT NO F49620 82-C-0024

CONTRACT NO. AFOSR-83-0027

PROJECT NO. 2303

PROJECT NO. 2303

TASK NO B2

TASK NO. A3

MONITOR: AFOSR
TR 86 0712

MONITOR: AFOSR
TR-86-0706

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Jnl. of Computational Chemistry, v4 n4 p542-551 1983.

SUPPLEMENTARY NOTE Pub. in Polymer Engineering and Science, v25 n15 p965-967 Oct 85.

ABSTRACT: (U) MNDO has been parametrized for bromine. Since d atomic orbitals (AOs) are not included, the calculations are restricted to Br superscript I. Heats of formation, molecular geometries, ionization energies, and dipole moments are reproduced with useful accuracy.

ABSTRACT: (U) Interest in potential high-performance polymers, leading to characterization and development of the rodlike poly(p-phenylene benzobisoxazoles) (PBO) and poly(p-phenylene benzobisthiazoles) (PBT) has recently been extended to a related group of polymers referred to as AAPBO, ABPBO, AAPBT, and ABPBT. In this study, geometry-optimized CNDO/2 molecular orbital calculations have been carried out on AAPBO and ABPBO model compounds to determine conformational energies as a function of rotation about each type of rotatable bond within the repeat units. For AAPBO, which contains two types of rotatable bonds per repeat unit, the bond between the benzoxazole group and p-phenylene group prefers the coplanar conformation with a barrier to free rotation of 2.1 kcal/mol, while the bond between the benzoxazole groups prefers a conformation approximately 60 degrees away from coplanarity with a barrier to coplanarity and to free rotation of 3.6 kcal/mol. For ABPBO, which contains only the former type of rotatable bond per repeat unit, the coplanar conformations were preferred with a barrier to free rotation of 1.6 kcal/mol. These results are in excellent agreement with the results of both theoretical and experimental studies on the structurally analogous PBO. They are also consistent with

DESCRIPTORS: (U) GROUND STATE, QUANTUM CHEMISTRY, BROMINE, ACCURACY, ATOMIC ORBITALS, MOLECULES, GEOMETRY, MOLECULAR PROPERTIES, DIPOLE MOMENT, ENERGY, IONIZATION, HEAT OF FORMATION, IONIZATION POTENTIALS, REPRINTS

IDENTIFIERS: (U) PE61102F, WUAFOSR2303B2

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SEARCH CONTROL NO EVN548

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AD-A172 396 20/12 7/4

the liquid crystalline behavior found for ABPB0 but not for AAPB0 Reprints

DESCRIPTORS (U) BENZOXAZOLES, LIQUID CRYSTALS, MOLECULAR ORBITALS, BONDED JOINTS, COMPUTATIONS, AROMATIC COMPOUNDS, CONFORMITY, ENERGY FUNCTIONS, PERFORMANCE ENGINEERING, PLANAR STRUCTURES, POLYMERS, REPRINTS, ROTATION, HETEROCYCLIC COMPOUNDS

IDENTIFIERS (U) CND072 Molecular Orbitals, Benzenes, Benzoxazole Poly 2,5, Phenylene Poly 55, Bibenzoxazole 2, 2 Diyl 1,4, PE61102F, WUAFOSR2303A

CINCINNATI UNIV OH DEPT OF CHEMISTRY

(U) A Theoretical Study of Conformations and Electronic Band Structures for Two Benzoxazole Polymers.

85 9P

PERSONAL AUTHORS: Nayak, Kasinath ; Mark, James E. ;

CONTRACT NO AFJSR 83-0027

PROJECT NO. 2303

TASK NO. A3

MONITOR AFOSR
TR-86-0700

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Makromolekulare Chemie. v186 p2153-2159 1985.

ABSTRACT: (U) The extended Huckel method within the tight bonding approximation was applied to two benzoxazole polymers of a type much studied because of their excellent mechanical properties. Specifically, band structure calculations were carried out in part to identify the most stable conformation of the polymers in the crystalline state. In the preferred conformation of one polymer the rotational angle between the bibenzoxazole groups is 20 degs. and that between the bibenzoxazole group and the phenylene group is 0 degs. The other polymer consists simply of benzoxazole groups, and these are predicted to be coplanar. The above conformational predictions are in excellent agreement with the results of both experimental and theoretical studies on relevant model compounds. In addition, the band gaps in the axial direction were found to be 1.86 and 2.31 e/v, respectively, and these values are close to the corresponding experimental values 1.4 to 1.8 ev reported for trans-polyacetylene. In both benzoxazole polymers the band gap was found to increase with increase in nonplanarity due to the concomitant reduction in charge delocalization.

DESCRIPTORS (U) ELECTRONIC STATES, ENERGY BANDS, BENZOXAZOLES, POLYMERS, STABILITY, ENERGY GAPS.

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CRYSTALS MECHANICAL PROPERTIES ANGLES ROTATION
CONFORMITY BAND THEORY OF SOLIDS SEMICONDUCTORS
POLYPHENYLENES REPRINTS

AD A172 395 7/4 4/1

JOINT INST FOR LAB ASTROPHYSICS BOULDER CO

(U) Branching Ratios for Electronically Excited Oxygen
Atoms Formed in the Reaction of N⁺ with O₂ at 300K.

IDENTIFIERS U F61102F WUAFOSR2303A2

86 11P

PERSONAL AUTHORS: Langford, Andrew O.; Bierbaum, Veronica M.
; Leone, Stephen R.

CONTRACT NO. F49620-83-C-0013

PROJECT NO. 2303

TASK NO. B1

MONITOR: AFOSR
TR-86-0742

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Chemical Physics, v84
n4 p2158-2166, 15 Feb 86.

ABSTRACT: (U) Absolute branching ratios for production of O(superscript 3P), O(superscript 1D), and O(superscript 1S) in the reaction of N(+) with O₂ are measured using the flowing afterglow/visible chemiluminescence technique. The O(superscript 1S) product is monitored by the O(superscript 1S)-O(superscript 1D) emission at 557.7 nm. The O(superscript 1D) product is monitored via sensitized fluorescence at 760 nm from O(2+1 sigma g +) formed by energy transfer from O(superscript 1D) to O(2+X superscript 3 sigma g-). Absolute O(superscript 1D) and O(superscript 1S) yields of 70 + or - 30% and <0.1%, respectively, of the total atomic oxygen product are inferred by comparison to the known O(superscript 1S) and O(2+1 sigma g +) emission intensities from the reaction of Ar(superscript 3P) with O₂. The low O(superscript 1S) yield is also obtained directly from the relative O(superscript 1S) and O(2+1 sigma g +) emission intensities from the title reaction. A qualitative reaction mechanism consistent with these observations is presented. Keywords: Electron excitation; Ion-molecule reaction; and Flowing afterglow.

DESCRIPTORS: (U) *OXYGEN, *AFTERGLOWS,
*CHEMILUMINESCENCE, *NITROGEN, *AIRGLOW, ELECTRONS, ATOM

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EXCITATION, RATIOS, ENERGY TRANSFER, IONS, MOLECULES,
RESPONSE FLUORESCENCE, EMISSION SPECTRA, REPRINTS

IDENTIFIERS (U) PC61102F, WUAFOSR23045

AD-A172 394 12/1 9/2

CLEMSON UNIV SC DEPT OF MATHEMATICAL SCIENCES

(U) Iterative Algorithms for Generating Minimal Cutsets in
Directed Graphs.

86 16P

PERSONAL AUTHORS: Shier, D. R.; Whited, D. E. ;

CONTRACT NO. AFOSR-84-0154

PROJECT NO. 2304

TASK NO. A5

MONITOR: AFOSR
TR-86-0780

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Networks, v16 p133-147 1986

ABSTRACT: (U) Several approaches for evaluating network reliability require the generation of all minimal cutsets in a directed graph. A general iterative algorithm, based on an underlying algebraic structure, is proposed for generating all minimal s-j cutsets simultaneously for all vertices j in such a graph. In order to implement this algorithm in an efficient manner and to exploit sparsity present in the graph, a number of computational simplifications are developed leading to improved performance of the algorithm. Empirical results show that the choice of certain data structures can have a profound effect on the computational effort required. (Reprints)

DESCRIPTORS: (U) GRAPHS, COMPUTER PROGRAMMING, ALGEBRA, ALGORITHMS, DATA BASES, ITERATIONS, NETWORKS, RELIABILITY, REPRINTS, STRUCTURAL PROPERTIES, OPTIMIZATION

IDENTIFIERS: (U) PC61102F, WUAFOSR2304A5

OFFICE REPORT BIBLIOGRAPHY

SEARCH CONTROL NO EVN54B

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TEXAS UNIVERSITY SYSTEM LEFT OF ELECTRICAL AND COMPUTER ENGINEERING

FLORIDA UNIV GAINESVILLE DEPT OF CHEMISTRY

(U) A Stability Property of Conditional Expectations.

(U) A Simple Inexpensive Computer Controlled Slew-Scan Atomic Fluorescence Flame Spectrometer for Multi-Element Determinations.

APR 86 5P

85

14P

PERSONAL AUTHORS Morrison John M. Wise Gary L.

PERSONAL AUTHORS: Davis, Lori A.; Krupa, R. J.; Winefordner, J. D.

CONTRACT NO AFOSR 81 0047

PROJECT NO 2304

CONTRACT NO. F49620-84-C-0002

TASK NO. A5

PROJECT NO. 2303

MONITOR AFOSR
TR 86 0792

TASK NO. A1

MONITOR: AFOSR
TR-86-0760

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in the Proceedings of the Conference on Information Sciences and Systems (1985) Held in Baltimore, MD on 27-29 Mar 85. p226-229.

SUPPLEMENTARY NOTE: Pub. in Analytica Chimica Acta. v173 p51-62 1985.

ABSTRACT: (U) This paper is concerned with approximating a conditional expectation of a second order random variable given a random process defined over an interval by a conditional expectation of the random variable given distorted values of the random process at finitely many times. A sufficient condition which guarantees a good approximation is presented. Best estimates of more general fidelity criteria than mean square error are also considered and the above situation is addressed for a wide class of fidelity criteria. Keywords Nonlinear estimation

DESCRIPTORS (U) RANDOM VARIABLES, DISTORTION, VALUE, ERRORS, MEAN, STABILITY, GUARANTEES, ESTIMATES, NONLINEAR ANALYSIS, APPROXIMATION, MATHEMATICS.

IDENTIFIERS (U) PE61102F, WUAFOSR2304A5

DESCRIPTORS: (U) *SPECTROMETERS, *ATOMIC SPECTROSCOPY, *COMPUTER APPLICATIONS, FREQUENCY, FLUORESCENCE, MATERIALS, DATA ACQUISITION, STEEL, DETECTORS, PHOTOMULTIPLIER TUBES, MIXTURES, SYNTHETIC MATERIALS, XENON LAMPS, ARC LAMPS, CHEMICAL ELEMENTS, REPRINTS

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SEARCH CONTROL NO. EVN54B

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IDENTIFIERS

(U) PE61102F, WUAFOSR2303A1

GEORGIA UNIV ATHENS

(U) Metal Carbonyl Complexes of Bis(Diisopropylamino)-
Phosphine and Diisopropylaminochlorophosphine.

DESCRIPTIVE NOTE: Journal article.

84

4P

PERSONAL AUTHORS: King, R. B.; Fu, W. K. ;

CONTRACT NO. AFOSR-84 0050

PROJECT NO. 2303

TASK NO. 82

MONITOR: AFOSR
TR-86-0757

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Organometallic
Chemistry, v272 pC33-C35 1984.

ABSTRACT: (U) Reactions of η^5 -Pr₂Ni₂PH with the
tetrahydrofuran (THF) metal carbonyl complexes $(\eta^5\text{-Cp})\text{M}(\text{CO})$
5 (M=Cr, Mo, and W), $(\text{THF})\text{Fe}(\text{CO})_4$, and $(\text{THF})\text{Mn}(\text{CO})_2\text{C}_5\text{H}_5$
give $(\eta^5\text{-Pr}_2\text{Ni}_2\text{PHM}(\text{CO})_5$ (M=Cr, Mo, and W), $\eta^5\text{-Pr}_2\text{Ni}_2$
 $2\text{PHFe}(\text{CO})_4$, and $\eta^5\text{-Pr}_2\text{Ni}_2\text{PHMn}(\text{CO})_2\text{C}_5\text{H}_5$ respectively. One
of the diisopropylamino groups in these complexes can be
selectively cleaved with hydrogen chloride to give the
complexes $\eta^5\text{-Pr}_2\text{Ni}_2\text{PH}(\text{ClM}(\text{CO})_4$ (M=Cr, Mo, and W) and η^5
 $\text{Pr}_2\text{Ni}_2\text{PH}(\text{ClFe}(\text{CO})_4$ containing the unknown phosphorus
compound $\eta^5\text{-Pr}_2\text{Ni}_2\text{PHCl}$ as a ligand.

DESCRIPTORS: (U) PHOSPHINE, CHEMICAL REACTIONS, METAL
CARBONYLS, HYDROGEN CHLORIDE, FURANS, HYDROXYL RADICALS,
METAL COMPLEXES, ORGANOMETALLIC COMPOUNDS, IRON, CHROMIUM,
MOLYBDENUM, TUNGSTEN, REPRINTS

IDENTIFIERS: (U) PE61102F, WUAFOSR2303B2

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NORTH TEXAS STATE UNIV. DEPT OF CHEMISTRY

1. Silanes and Siloxanes 9. The Synthesis of Polyfunctional Bis group 14 Substituted Cyclopentadienes via a Novel Cleavage Reaction of Silicon Chloride Bonds by Chloride Ion

85 89

PERSONAL AUTHORS Pozell James M Jr Jones Paul R

CONTRACT NO AFOSR 83 0244

PROJECT NO 2303

TASK NO 82

MONITOR AFOSR TR 86 0756

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Organometallics v4 p2206-2210 1985

ABSTRACT: (U) Group 14 substituted cyclopentadienes of the type $C_5H_5MMe_2X$ ($M = Si$ or Ge) and $or M = Si$ or Ge , X and $or Y = Cl$ or Me , can be prepared in good yields by the reaction of n butyl lithium with cyclopentadienyltrimethylsilane followed by treatment with Me_2MCl_2 ($M = Si$ or Ge). In hexane the reaction gives 1 $M = Si$, $M = Si$ or Ge , $X = Me$, $Y = Cl$. In THF with excess Me_2MCl_2 lithium chloride catalyzed cleavage of the trimethylsilyl group occurs to give excellent yields of 1 M and $M = Si$ or Ge , X and $Y = Cl$. Methanolysis gives 1 $M = M = Si$ or Ge , $X = Y = OMe$. The cleavage reaction occurs only in THF and when the substrate bears a chlorodimethylsilyl or -germyl substituent

DESCRIPTORS (U) SYNTHESIS; CHEMISTRY; PENTADIENES; POLYMERS; CYCLIC COMPOUNDS; CHEMICAL BONDS; CATALYSIS; LITHIUM SILANES CHLORIDES IONS; CLEAVAGE; RESPONSE; LITHIUM CHLORIDE; HEXANES; CARBON; SILICON

IDENTIFIERS (U) PE61102F WJAFOSR230382

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UNCLASSIFIED

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AL A172 382 14 4 12

ARIZONA UNIV TUCSON DEPT OF MATHEMATICS

2. Lifetime Distribution of Consecutive k out of n F Systems with Exchangeable Lifetimes

DEC 85 5P

PERSONAL AUTHORS Shanthikumar J. G.

CONTRACT NO AFOSR 84-0205

PROJECT NO 2304

TASK NO A5

MONITOR AFOSR TR 86-0709

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in IEEE Transactions on Reliability VR-34 n5 p480-483 Dec 85

ABSTRACT: (U) Algorithms for computing the lifetime distributions of consecutive-k-out-of-n F systems with statistically independent, and statistically exchangeable component lifetimes are presented. A load-sharing model for statistically exchangeable component lifetimes and the effects of minimal repair on system lifetime are considered. (Author)

DESCRIPTORS (U) ALGORITHMS; LIFE EXPECTANCY; SERVICE LIFE; PARTS; RELIABILITY; FAILURE; SYSTEMS ENGINEERING; LIFE SPAN; BIOLOGY; PROBABILITY; PERFORMANCE; ENGINEERING; REPAIR

IDENTIFIERS (U) PE61102F WJAFOSR2304A5

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SEARCH CONTROL NO. EVN548

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7/3

COLUMBIA UNIV NEW YORK DEPT OF CHEMISTRY

GEORGIA UNIV ATHENS DEPT OF CHEMISTRY

PERSONAL AUTHORS: King, R. B. (Sadanani, Narayan D.)
 CONTRACT NO AFOSR-84 0050
 PROJECT NO 2303
 TASK NO. B2
 MONITOR AFOSP
 TR 86 0759

(U) Tetraakis(dialkylamino)cyclotetraphosphines and
 Bis(dialkylamino)dihalobiphosphines,
 85 6P

PERSONAL AUTHORS: King, R. B. (Sadanani, Narayan D.)

CONTRACT NO AFOSR-84 0050

PROJECT NO 2303

TASK NO. B2

MONITOR AFOSP

TR 86 0759

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub in The Jnl. of Organic Chemistry,
 v50 no p1719-1722 1985

SUPPLEMENTARY NOTE: Pub in Ultraviolet Spectrometry v4 p330
 1985 part

ABSTRACT: (U) Dehalogenation of R2NPCl2 (R = isopropyl or cyclohexyl) with magnesium in tetrahydrofuran gives the corresponding cyclotetraphosphines (R2N)4P4; the corresponding biphosphenes (i-Pr)2N)2P2X2 (X = Cl and Br) can be isolated from reactions of (i-Pr)2NPX2 with more limited quantities of magnesium. Dehalogenations with magnesium of R2NPCl2 derivatives having R2N groups smaller than diisopropylamino lead to redistribution of the dialkylamino groups giving (R2N)2P-P(R2N)2 (R2N = piperidino or (R2N)3P (R2N = diethylamino or dimethylamino). Such redistribution reactions can be suppressed but not eliminated by using the homogeneous dehalogenating agent (Me3Si)2Hg in hydrocarbon solvents. The steric bulk of the diisopropylamino groups in (i-Pr)2N)4P4 reduces its chemical reactivity relative to other cyclotetraphosphines; thus (i-Pr)2N)4P4 is unreactive toward oxygen, carbon disulfide, potassium metal, and various metal carbonyls (e.g., Cr(CO)6, Mo(CO)6, and Fe2(CO)9) under conditions where other cyclotetraphosphines react with these reagents. However, the P4 ring in (i-Pr)2N)4P4 is cleaved under mild conditions by hydrogen chloride as well as by bromine and iodine.

DESCRIPTORS (U) *PHOSPHINE *SYNTHESIS(CHEMISTRY)

AD A172 363

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UNCLASSIFIED

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PRIMING, CARBONIZATION, CHEMICAL REACTIONS, HYDROGEN
OXYGEN, FLAME, MAGNESIUM, OXYGEN, REACTIVITIES, ALKYL
RADIATION, AMINO, POLYMERIZATION, HALOGENS, PIPERIDINE'S
CARBONYL COMPOUNDS, ORGANOMETALLIC COMPOUNDS, REPRINTS

IDENTIFIER: PESTICIDE WUAF05P230382

AD A172 359 7 4 20 2

OPINIONMA STATE UNIV STILLWATER DEPT OF CHEMISTRY
(U) Effect of Lattice Potential Upon the Surface Diffusion
of Si on Si(100)

DEC 85 5P

PERSONAL AUTHORS: NoorBatcha, I ; Raff, Lionel M. ; Thompson,
Donald L

CONTRACT NO AFOSR-82 0311

PROJECT NO 2303

TASK NO A2

MONITOR: AFOSR
TR-86-0599

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub. in The Jnl. of Chemical Physics,
v83 n11 p6009-6011, 1 Dec 85.

ABSTRACT: (U) The surface diffusion of silicon atoms on
Si(100) is examined using three different lattice
potentials. Jump frequencies of Si atoms between adjacent
adsorption sites are computed on each potential surface
at 800, 1000, 1200, and 1500 K using classical trajectory
methods. Diffusion coefficients are obtained directly
from the jump frequencies and activation parameters from
Arrhenius plots of the diffusion coefficients. The
activation energy obtained in our previous calculations
using Weber's lattice potential is shown to be too small
due to a lattice force field whose force constants are
too large by about 25%. The best results are obtained
with the Keating potential. This surface gives an
activation energy of 7.47 kcal/mol for Si diffusion on
Si(100). This result, coupled with the ratio of
activation energies for Si(100) and Si(111) surfaces
obtained in our previous studies, suggests an activation
energy of 5.25 kcal/mol for Si diffusion on Si(111). This
is in very good accord with the measured value of 4.6
kcal/mol obtained in ultrahigh vacuum deposition of
silicon. (Reprints)

DESCRIPTORS: (U) *DIFFUSION, *SILICON, *CRYSTAL LATTICES,
*SURFACE REACTIONS, ACTIVATION ENERGY, ACTIVATION

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SEARCH CONTROL NO. 000548

AD A12 158 20 6 20 5

FLORIDA UNIV GAINESVILLE DEPT OF CHEMISTRY
6 Cross Beam Saturated Interference Spectroscopy in
Flames

PERSONAL AUTHORS Zdzak G. Llanauze J. Whitefordner J. D.

OCT 85 4P

CONTRACT NO. F49620 84 C 0002

PROJECT NO. 2303

TASK NO. 21

MONITOR AFOSR
IR 86-0165

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Applied Optics, 24:126
p3319 2321, 15 Oct 85

ABSTRACT (U) The basic idea of saturated interference spectroscopy is to reduce the intensity of the probe beam by destructive interference with a reference beam. This is achieved using two physically separated laser beams. The interference null obtained in a Jamini interferometer is disturbed when a pump beam saturates the absorption along the path of the probe beam. In this work we have extended the saturated interference technique to the hostile environment of a flame by separating and recombining in time two collinearly counter-propagating laser pulses produced by a hydrogen pumped dye laser.

DESCRIPTORS: DYE LASERS; LASER APPLICATIONS; ABSORPTION; DESTRUCTION INTERFERENCE INTERFEROMETERS; PROBES; SATURATION DIFFUSION SURFACES; LIGHT PULSES; PROPAGATION ENVIRONMENTS; LASER BEAMS; PUMPS; LASER INDUCED FLUORESCENCE FLAMES; SODIUM LASERS; ABSORPTION COEFFICIENTS; RASTOP POLARIZATION EXCITATION REFRACTION.

IDENTIFIERS: 0 REF11024 2340522000

AD A12 158

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PAGE 100

AD A172 351

TECHNICAL REPORT, DEPT OF ELECTRICAL AND COMPUTER ENGINEERING

U: Behaviour of Diffusion Processes at Extrema

35 206

PERSONAL AUTHOR: Bronowicz M, Adler R, U

CONTRACT NO: AFOSR 83-0068

PROJECT NO: 2304

TASK NO: A5

MONITOR: AFOSR
TP 85 0775

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub in Advances in Applied Probability, 17, p280-297, 1985

ABSTRACT: (U) Certain aspects of the sample path behaviour of chi square processes are studied, in particular problems related to the behaviour of these processes at their local extrema. Emphasis is placed on behaviour that is qualitatively different to that observed for Gaussian processes, rather than on phenomena common to both classes of processes, such as previously studied global extremal type results. Keywords: Density of Heights and Curvature at Extrema; Horizontal Window Conditioning. Reprints

DESCRIPTORS: (U) CHI SQUARE TEST; STATISTICAL PROCESSES; REPRINTS; GAUSSIAN QUADRATURE

IDENTIFIERS: (U) Extremal problems, PEG 102F
WUAFOSR2304A5

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STAR CONTROL NO: EVN548

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TEXAS UNIV AT AUSTIN DEPT OF ELECTRICAL AND COMPUTER ENGINEERING

U: An Analysis of a CSMA/CD Carrier Sense Multiple Access With Collision Detection Collision Resolution Scheme.

APR 86 11P

PERSONAL AUTHORS: Liu, Yih-Chiao; Wise, Gary L.

CONTRACT NO: AFOSR-81-0047; AFOSR-86-0026

PROJECT NO: 2304

TASK NO: A5

MONITOR: AFOSR
TR-86-0795

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at the Annual Allerton Conference on Communication, Control, and Computing (23rd) Held at Monticello, ILL. on 2-4 Oct 85, p533-542

ABSTRACT: (U) This paper analyzes the performance characteristics of a packet broadcasting random multiple access computer communication network with a CSMA/CD protocol. The analysis is based on the Enet II protocol, which was designed to effectively resolve collisions in such a network. Bounds on the performance of the network are established. Keywords: retransmission; CSMA/Carrier Sense Multiple Access; Nonparametric analysis; (Author)

DESCRIPTORS: (U) COMPUTER COMMUNICATIONS; COMMUNICATIONS NETWORKS; COLLISIONS; DETECTION; NONPARAMETRIC STATISTICS; PROTOCOLS

IDENTIFIERS: (U) CSMA/Carrier Sense Multiple Access; Computer networks; Packet communications; Ethernet computer networks; Computer protocols, PEG1102F
WUAFOSR2304A5

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AD-A172 350 CONTINUED

GORDON RESEARCH CONFERENCES INC KINGSTON RI

IDENTIFIERS (U) Phosphoinositides, PE61102F,
WUAFOSR2312A1

(U) Report on the Gordon Research Conference on Molecular
and Cellular Aspects of Neural Plasticity 5th Held
at Wolfboro New Hampshire on 21-26 Jul 85

DESCRIPTIVE NOTE Final rept. 1-26 Jul 85

DEC 85 RP

PERSONAL AUTHOPS Dunn Adrian J

CONTRACT NO AFOSR-85 0176

PROJECT NO 20 2

TASK NO A1

MONITOR AFOSR
1R 85 0700

UNCLASSIFIED REPORT

ABSTRACT (U) The focus of the conference was on mechanisms of neural plasticity. The scope of the conference was deliberately broad, so that a range of neuroscientists could be exposed to ongoing work in areas that they might not otherwise be aware of, but which might have import for their own studies. Thus anatomists, may benefit from principles used in biochemical or neurophysiological studies, and vice versa. The sessions were informal and concentrated on Factors Affecting the Duration of the Critical Period in the Visual System; Phosphoinositides as Second Messengers; Formation of New Functional Circuits; Formation of new neural connections; Method of Assessing Changes of Neural Connectivity; Regulation of Neurotransmitter and Hormone Receptors; Modulators of Simple Neuronal Systems; Molecular Models of Learning; Role of Biogenic Amines and Endorphins in Neuroplasticity; and Molecular Aspects of Nerve Growth

RECEPTORS (U) MOLECULAR BIOLOGY, CYTOLOGY, NERVES, CATECHOLAMINES, MODULATORS, GROWTH GENERAL, NERVE CELLS, NERVOUS SYSTEM, LEARNING, MODELS, MOLECULES, NERVOUS SYSTEM, PLASTIC PROPERTIES, AMINES, VISION, EYE, NEUROPHYSIOLOGY, TRANSMISSION, NEURAL NETS, MOTOR NEURONS, NEUROPROTEIN, MEMBRANES, CENTRAL NERVOUS SYSTEM

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IDENTIFIERS U PE51102F WUAFOSR2303B2

ABSTRACT U Reactions of 1PR superscript 1 2N 2PH with Mn2 CO 10 photochemical in tetrahydrofuran and Co2 CO 18 hexane at ambient temperature give yellow 1PR superscript 1 2N 2PMn2 CO 18 and green-black 1PR superscript 1 2N 2PMn2 CO 19 respectively whose structures have been determined by X-ray crystallography reaction of 1PR superscript 1 2N 2PMn2 CO 18H with HX (X=Cl and Br) results in cleavage of a Mn-H bond but retention of the Mn-H bond to give 1PR superscript 1 2N 2PMn2 CO 18H

DESCRIPTORS U ORGANOMETALLIC COMPOUNDS CARBONYL COMPOUNDS CLEAVAGE COBALT CRYSTALLOGRAPHY FURANS HEXANES HYDROXYL RADICALS MANGANESE TEMPERATURE X RAYS PHOTOCHEMICAL REACTIONS PHOSPHORUS COMPOUNDS PHOSPHINE

UNCLASSIFIED REPORT

PERSONAL AUTHORS King R B Fu W F Holt E M

CONTRACT NO AFOSR 84 0050

PROJECT NO 2303

TASK NO 82

MONITOR AFOSR TP 86 0726

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Jnl of the Chemical Society, Chemical Communications p1439-1440 1984

ABSTRACT U The Direct Numerical Diagonalization (DND) technique has been applied to the principal symmetric species of carbon dioxide. A three dimensional formulation of the DND method has been implemented as a first step in using the method to calculate properties of simple polyatomic molecules. Recent high resolution observations of both line positions and intensities have been incorporated in to the method to yield new values for the potential function and the dipolar coefficients. The results are compared with the potential functions calculated by earlier DND efforts as well as the contact transformation approach. The results are also discussed in terms of the effects of truncation errors caused by the use of finite matrices to represent the Hamiltonian operator. The resulting eigenvectors have been used to determine a dipole moment function from 21 observed band intensity estimates for Carbon Dioxide (Carbon 12 and Oxygen 16) parallel bands which are being used to update the AFGL line parameter compilation. This list represents the first published set of band intensity values derived from a consistent quantum mechanical model for a linear polyatomic molecule. Keywords: Reprints: Absorption: Infrared; Carbon dioxide; Intensities.

DESCRIPTORS U CRYSTAL STRUCTURE ORGANOMETALLIC COMPOUNDS CARBONYL COMPOUNDS CLEAVAGE COBALT CRYSTALLOGRAPHY FURANS HEXANES HYDROXYL RADICALS MANGANESE TEMPERATURE X RAYS PHOTOCHEMICAL REACTIONS PHOSPHORUS COMPOUNDS PHOSPHINE

IDENTIFIERS U PE51102F WUAFOSR2303B2

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AIR FORCE GEOPHYSICS LAB HANSCOM AFB MA

U Determination of Vibrational Energy Levels and Parallel Band Intensities of ¹²C¹⁸O₂ by Direct Numerical Diagonalization.

86 19P

PERSONAL AUTHORS: Wattson, Richard B.; Rothman, Laurence S

REPORT NO AFGL-TR-86-0187

PROJECT NO 7670

TASK NO 16

MONITOR AFOSR TR-86-0187

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Molecular Spectroscopy, v119 p83-100 1986

ABSTRACT U The Direct Numerical Diagonalization (DND) technique has been applied to the principal symmetric species of carbon dioxide. A three dimensional formulation of the DND method has been implemented as a first step in using the method to calculate properties of simple polyatomic molecules. Recent high resolution observations of both line positions and intensities have been incorporated in to the method to yield new values for the potential function and the dipolar coefficients. The results are compared with the potential functions calculated by earlier DND efforts as well as the contact transformation approach. The results are also discussed in terms of the effects of truncation errors caused by the use of finite matrices to represent the Hamiltonian operator. The resulting eigenvectors have been used to determine a dipole moment function from 21 observed band intensity estimates for Carbon Dioxide (Carbon 12 and Oxygen 16) parallel bands which are being used to update the AFGL line parameter compilation. This list represents the first published set of band intensity values derived from a consistent quantum mechanical model for a linear polyatomic molecule. Keywords: Reprints: Absorption: Infrared; Carbon dioxide; Intensities.

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TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY

DESCRIPTORS (U) CARBON DIOXIDE, MOLECULAR ENERGY LEVELS, MOLECULAR VIBRATION, COEFFICIENTS, CONSISTENCY, DIPOLE MOMENTS, DIPOLES, EIGENVECTORS, ERRORS, FORMULATIONS, HAMILTONIAN FUNCTIONS, HIGH RESOLUTION, LINEAR SYSTEMS, OBSERVATION, PARALLEL ORIENTATION, POLYATOMIC MOLECULES, QUANTUM THEORY, REPRINTS, SYMMETRY, THREE DIMENSIONAL, TRUNCATION, OPERATORS, MATHEMATICS, RADIATION ABSORPTION, INFRARED RADIATION

(U) Comparative Tests of Theoretical Procedures for Studying Chemical Reactions.

85 7P

PERSONAL AUTHORS: Dewar, Michael J.; Storch, Donn M.;

CONTRACT NO. F49620-83-C-0024, NSF-CHE82-17948

PROJECT NO. 2303

TASK NO. B2

MONITOR: AFOSR
TR-86-0772

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub in Jnl of the American Chemical Society, v107 n13 p3898-3902 1985.

ABSTRACT: (U) A simple procedure is described for estimating the effective errors in molecular energies calculated by ab initio methods with respect to use of the latter in studies of chemical reactions. The procedure is illustrated by application to the STO-3G, 3-21G, and 6-31G* models. Parallel results from semiempirical models (MINDO/3, MNDO, AM1) are included for comparison. The STO-3G, 3-21G, and 6-31G* basis sets cover a wide range, from a minimum basis set (STO-3G) to a split basis set with polarization functions (6-31G*). These have been extensively used and the results of calculations for quite a wide range of molecules are listed in a compilation by Pople et al. Using them, we determined values of α and β and ϵ sub p prime for carbon, hydrogen, nitrogen, and oxygen for each of the basis sets indicated above. These are listed in Table II, in atomic units (hartrees), for conformity with published values for the calculated molecular energies. Conversion factors to other units are shown in a footnote to the table

DESCRIPTORS: (U) QUANTUM THEORY, MOLECULAR PROPERTIES, CHEMICAL REACTIONS, CARBON, CONVERSION, ENERGY, MOLECULES, OXYGEN, RANGE (EXTREMES), CHEMICAL REACTIONS, HYDROGEN, NITROGEN, FUNCTIONS, POLARIZATION, HEAT OF

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AD A172 255

PERSONAL AUTHORS Chand Naresh, Morkoc, Hadis
CONTRACT NO F49620 83 K-0021
PROJECT NO 2305
TASK NO C1
MONITOR AFOSR
TR 86-0539

UNCLASSIFIED

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub in IEEE Transactions on Electron Devices, VED 32 n6 p1064-1069 Jun 85.

ABSTRACT: (U) First-order analytical calculations were made for the energy-band diagrams for n-Al_xGa_{1-x}As/p-GaAs heterojunctions for x = 0.15, 0.3, and 0.5 employing different compositional gradings and doping densities specifically for heterojunction-bipolar-transistor (HBT) applications. In the calculations most recently determined conduction-band discontinuity delta EC of 65 percent of the bandgap difference delta Eg between the Al_xGa_{1-x}As and 0.5 respectively were used. The results show that the position of the heterojunction spike barrier, and the depth and width of the notch in the conduction-band edge for a compositionally abrupt heterointerface depend on the respective doping densities on the p and n sides of the heterojunction. Also, for an abrupt heterointerface the difference in barrier heights for electron and hole injections varies between delta Eg and delta EV (the valence band discontinuity), depending on the doping densities and the applied bias, and is not necessarily the generally accepted value of delta EV. Analytical expressions and curves were obtained to estimate the minimum compositional grading L for eliminating the spike.

DESCRIPTORS (U) DOPING, BIPOLAR TRANSISTORS, BARRIERS, BIAS, COMPUTATIONS, DENSITY, DIAGRAMS, DISCONTINUITIES.

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ELECTRONS, ENERGY BANDS, GALLIUM ARSENIDES,
HETEROJUNCTIONS, MATHEMATICAL ANALYSIS, SIDES, SPIKES,
VALENCE BANDS, VALUE, ALUMINUM, GALLIUM ARSENIDES,
CONDUCTION BANDS

NEW YORK UNIV N Y

(U) Visual Motion Perception and Visual Attentive
Processes.

IDENTIFIERS (U) PE61102F WUAFOSR230521

DESCRIPTIVE NOTE: Final rept. 30 Sep 84-29 Sep 85.

JUN 86 7P

PERSONAL AUTHORS: Sperling, George ;

CONTRACT NO. AFOSR-80-0279

PROJECT NO. 2313

TASK NO. A5

MONITOR AFOSR
TR-86-0559

UNCLASSIFIED REPORT

ABSTRACT: (U) The main activities in the fifth year of this grant have been carrying out the experimental research set forth in the proposals (1980, 1984), following up promising leads that developed in the course of this work, and preparing manuscripts for publication.

DESCRIPTORS: (U) *VISUAL PERCEPTION, *ATTENTION, MOTION, PERFORMANCE (HUMAN), IMAGES, COMPRESSION, SPACE PERCEPTION, MEMORY (PSYCHOLOGY), AUDITORY SIGNALS

IDENTIFIERS: (U) Motion detection, Auditory memory, Bandwidth compression, WUAFOSR2313A5, PE61102F

AD A172 253

COLUMBIA UNIV. NEW YORK DEPT OF MATHEMATICS

Nonlinear Partial Differential Equations and Related Problems of Group Approximations

DESCRIPTIVE NOTE Final Rept 30 Jun 81 30 Sep 85

SEP 85 RP

PERSONAL AUTHORS Chudnovsky D V Chudnovsky G V

CONTRACT NO AFOSR 81 0190

PROJECT NO 2304

TASK NO A4

MONITOR AFOSR
TR 84 0654

UNCLASSIFIED REPORT

ABSTRACT: The focus of the authors' work is the understanding and possibly explicit mathematical solution of the physically realistic classical and quantum models of field theories in dimensions one to four. They aim at the description of hidden symmetries and analytic structures of the solutions of various physical systems in dimensions one four described by systems of nonlinear p d e in cases when a system is suspected of being completely integrable or at the investigation of obstructions to complete integrability. We continued and expanded our earlier studies of the structure of infinite-dimensional Lie algebras generated by Baecklund transformations and the geometric interpretation of the structure of S matrices applied to the extension of the Bethe Ansatz determining the solutions of completely integrable quantum systems to three and four dimensional systems. Very little is currently known in these cases and there arise new multidimensional generalizations of factorization equations of S matrices that have to be solved. A totally new area for mathematical studies has been opened by recent progress in the physics of superstrings where we hope to apply our methods of multi particle and multi string interactions and where the use of methods from algebraic topology and theta functions (some of which were introduced by us in lower dimensional cases earlier) seems very promising.

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SEARCH CONTROL NO EVN54B

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DESCRIPTORS: (U) PARTIAL DIFFERENTIAL EQUATIONS, NONLINEAR DIFFERENTIAL EQUATIONS, ALGEBRAIC TOPOLOGY, APPROXIMATION MATHEMATICS, FOUR DIMENSIONAL, MATHEMATICS, MODELS, PHYSICAL PROPERTIES, QUANTUM THEORY, SOLUTIONS (GENERAL), STRUCTURES, THEORY, WORK, LIE GROUPS, S MATRIX

IDENTIFIERS: (U) X-Rate Approximants, Classical physics, PE61102F, WUAFOSR2304A4

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DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN548

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AD A172 252 6 1 6/16

TEXAS A AND M UNIV COLLEGE STATION DEPT OF VETERINARY
PHYSIOLOGY AND PHARMACOLOGY

NERVOUS SYSTEM, ACETYLCHOLINE, CATECHOLAMINES, DOSAGE,
ENZYMES, EPINEPHRINE, LIMITATIONS, LOW TEMPERATURE,
MOLECULAR PROPERTIES, PHOSPHORYLATION, PREPARATION,
PROTEINS, RATES, RATS, RESTRAINT, SECRETION, SYNTHESIS

Biochemical Regulation of the Response of the
Sympathetic Nervous System

DESCRIPTIVE NOTE Final rept Jun 84 Feb 85

MAY 86 8P

PERSONAL AUTHORS Vulliamt, Philip R

CONTRACT NO AFOSR 84-0122

MONITOR AFOSR
TR 86 0630

UNCLASSIFIED REPORT

ABSTRACT U This project has examined molecular mechanisms regulating the reactivity of the adrenal medulla and sympathetic nervous system. The isolated perfused rat adrenal gland preparation was established in this laboratory to evaluate the effects of physiological and environmental manipulation on the reactivity of the adrenal medulla. Treatments such as chronic immobilization or cold stress, which result in prolonged adrenal medullary discharge in vivo, result in enhanced adrenal medullary reactivity in vitro as evidenced by the increased secretion of epinephrine from the perfused adrenal gland. The specific biochemical processes underlying this increased reactivity are being investigated using tyrosine hydroxylase, the rate limiting enzyme in the synthesis of the catecholamine neurotransmitters, as a key marker protein. Tyrosine hydroxylase is known to be phosphorylated by four distinct protein kinases in up to four unique sites. The activity of this protein is correlated with tissue levels of catecholamines and its induction is correlated with the enhancement of the bioreactivity of the perfused adrenal gland. Factors that modulate tissue levels of catecholamines and tyrosine hydroxylase are being investigated to determine the mechanism by which they modulate the amount of catecholamines released in response to a fixed dose of acetylcholine.

AD-A172 252 GENERAL GLANDS, ADRENAL MEDULLA
AD-A172 252 RESPONSE BIOLOGY, BIOCHEMISTRY, SYMPATHETIC

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BROWN ENVI 85 MONOTONE SEMIFLOWS GENERATED BY FUNCTIONAL DIFFERENTIAL EQUATIONS

U Monotone Semiflows Generated by Functional Differential Equations

FEB 85 4 P

PERSONAL AUTHORS Smith Hal

REPORT NO EDS 85 10

CONTRACT NO DAAG29-83-F-0029 AFOSR 84-0376

PROJECT NO 2304

TASK NO A

MONITOR AFOSR
TR 85-0640

UNCLASSIFIED REPORT

ABSTRACT U This obtains sufficient condition for an autonomous functional differential equation to generate a strongly monotone semiflow on a suitable state space. This allows the application to functional differential equations of very powerful recent results on strongly monotone semiflows due to Hirsch and Matano. In addition, a very striking relationship is established between such functional differential equations and corresponding ordinary differential equations. An example, involving a biochemical feedback loop is considered. Keywords: stability, steady states.

DESCRIPTORS U MAPPING; TRANSFORMATIONS;
DIFFERENTIAL EQUATIONS; FUNCTIONAL ANALYSIS; STEADY
STATE; BIOCHEMISTRY; FEEDBACK; LOOPS; BANACH SPACE

IDENTIFIERS U Monotone semiflows; Monotone mappings;
Fixed bifurcation. PE61102F, WUAF05P2304A7

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AD A172 250 7 4 20 P

WISCONSIN UNIV MADISON DEPT OF CHEMISTRY

U Vibrational Relaxation Rates and Pathways in Highly
Excited Molecules

DESCRIPTIVE NOTE Final rept 30 Jun 82 29 Jun 85.

DEC 85 9P

PERSONAL AUTHORS Grim, F. F.

CONTRACT NO AFOSR-82-0244

PROJECT NO 2303

TASK NO B1

MONITOR AFOSR
TR-86-0720

UNCLASSIFIED REPORT

ABSTRACT U The techniques of laser double resonance or near-infrared fluorescence detection in combination with direct excitation of overtone vibrations provide detailed data on the rates and pathways of collisional energy transfer in hydrogen fluoride and deuterium fluoride. These measurements yield the self-relaxation rate constants for HF($v=1,2,3,4,5$) and DF($v=1,2$). In addition, they determine the relative importance of the vibration-vibration and vibration-translation, rotation energy transfer pathways for $v > \text{or} = 2$ in both molecules. Applying these techniques at higher temperatures gives the self-relaxation rate constants between 300 and 700 K for HF($v=1-5$). Using different partners permits the determination of the rate constants for collisional relaxation of HF($v=3,4,5$) by H₂, D₂, CH₄, CD₄, and CO₂.

DESCRIPTORS U ENERGY TRANSFER; HYDROGEN FLUORIDE;
ISOTOPE EFFECT; PARTICLE COLLISIONS; CHEMICAL LASERS;
DATA RATE DETECTION; DEUTERIUM COMPOUNDS; EXCITATION;
FLUORESCENCE; FLUORIDES; HIGH TEMPERATURE; LASERS;
MOLECULES; NEAR INFRARED RADIATION; RATES; RELAXATION;
RESONANCE; ROTATION; ELECTRON NUCLEAR DOUBLE RESONANCE;
RELAXATION TIME; MOLECULAR VIBRATION

IDENTIFIERS U Deuterium fluoride; Hydrogen fluoride;
PE61102F WUAF05R2303B1

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AD-A172 249 4 1 8 14 114 D110 REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN54B

AD-A172 249 4 1 8 14 114 SRI INTERNATIONAL MENLO PARK CA

U. Sondrestrom Radar Observations of the Effect of the IMF by Component on Polar Convection
FIELDS, INTERPLANETARY SPACE TWILIGHT, ELECTRIC FIELDS, E REGION, MAGNETOSPHERE, INCOHERENT SCATTERING, REPRINTS
IDENTIFIERS: (U) IMF (Interplanetary Magnetic Fields), Auroral ovals, PE61102F, WUAFOSR2310A2

85 14P

PERSONAL AUTHORS DE LA Beaujardiere Odile Wickwar V B King V H

CONTRACT NO F49620-83 K 0005 NSF AIRM-1 21571

PROJECT NO 1310

TASK NO A2

MONITOR ARCS# 16 06 0513

UNCLASSIFIED REPORT

ABSTRACT U Average patterns of convection derived from Sondrestrom radar observations reveal that the interplanetary magnetic field dawn-dusk component IMF By strongly influences the nighttime polar convection. The conduction on one orientation of By is not the mirror image of the other orientation. A positive By seems to organize the velocities such that at all local times they are predominantly westward within the radar latitude range. On a case by case basis, auroral oval boundaries can be determined by coincident radar particle data and by radar measured E region densities. On one occasion of positive By, sunward flow in the westward flow is observed in the polar cap between noon and midnight for large negative By, large southward velocities are observed about three hours before midnight. These are the only times when the predominant velocity component is clearly southward. When By is negative in the midnight and dawn sectors, the plasma velocities appear random. However, the average drifts are mostly southward. The radar average patterns are compared with theoretical predictions.

DESCRIPTORS 1 AURORAL BOUNDARIES CONVECTION CONSTITUTIVE EQUATIONS ELECTRIC MEASUREMENT NIGHT ORIENTATION CONVECTION PARTICLES PLASMA PHYSICS RESEARCH CASE STUDY PREDICTIONS RADAR SCIENCE PLASMA THEORY TWILIGHT VELOCITY MAGNETIC

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CINCINNATI UNIV OH DEPT OF CHEMISTRY

4. Ethylamine and Ammonia as Catalysts in the In Situ
Precipitation of Silica in Silicone Networks

JAN 86 5P

PERSONAL AUTHORS Ning, Y. P. (Mar) U. E.

PROJECT NO 2303

TASK NO A3

MONITOR AFOSR
TR-86-0734

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub in Polymer Engineering and
Science, v26 n2 p167-170 Jan 86.

ABSTRACT: (U) Both ethylamine and ammonia in aqueous
solutions catalyze the hydrolysis of
tetraethylorthosilicate to precipitate silica filler
within polydimethylsiloxane elastomers. The rate of
filler precipitation can vary in a complex manner,
possibly due to loss of colloidal silica and, in the case
of the ethylamine solutions, deswelling of the networks.
Increase in catalyst concentration increases the
precipitation rate, and increase in amount of filler
precipitated dramatically increases the modulus and
ultimate strength of the networks, thus demonstrating the
desired reinforcing effects

DESCRIPTORS: (U) CATALYSTS, SILICON DIOXIDE,
ELASTOMERS, CHEMICAL PRECIPITATION, AMMONIA, COLLOIDS,
FILLERS, HYDROLYSIS, LOSSES, METHYL RADICALS, NETWORKS,
POLYMERS, PRECIPITATES, PRECIPITATION, RATES, REINFORCING
MATERIALS, SILICONES, SILOXANES, SOLUTIONS, MIXTURES,
STRENGTH (GENERAL), WATER, AMINES, ETHYL RADICALS,
SILICATES, MODULUS OF ELASTICITY

IDENTIFIERS (U) PEG1102F, WUAF0SR2303A3

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UNCLASSIFIED REPORT

ABSTRACT: (U) HUMAN PERCEPTUAL DYNAMICS OF FORM
Color, depth, and shape perception experiments on
surface perception: shape from shading. Neural Dynamics
of Adaptive Motor Control. Ballistic Eye
Movements: Self-Organizing Recognition Processes for
Vision, Speech, and Cognition. Neural Dynamics of
Conditioning, Attention, and Attention and
Biological Studies and Mental Disorders. Psychology,
Neurophysiology, Color Vision

DESCRIPTORS: (U) SPACE PERCEPTION, VISUAL PERCEPTION,
BALLISTIC, RHYTHMICAL, RHYTHMS, COGNITION, COLOR VISION,
DYNAMICS, PERCEPTUAL, MENTAL DISORDERS, MULTICHANNEL,
NEUROUS SYSTEM, NEUROPHYSIOLOGY, NONLINEAR SYSTEMS,
PERCEPTION, PSYCHOLOGY, RECOGNITION, SELF ORGANIZING
SYSTEMS, SPEECH, VISION, SHAPE, ADAPTATION, PATTERN
RECOGNITION

IDENTIFIERS (U) WUAF0SR2303A3, PEG1102F

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CARBON MONOXIDE, NITROGEN, BOLTZMANN EQUATION, CHANNELS, DISTRIBUTION, DUAL CHANNEL, EIGENVALUES, HIGH TEMPERATURE, QUANTUM THEORY, TEMPERATURE, THERMAL RADIATION, MOLECULAR ROTATION, MOLECULAR VIBRATION

IDENTIFIERS DU PEG1102F, WUAFOSR2303B1

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SRI INTERNATIONAL MEMO PARK CA

GEORGIA INST OF TECH ATLANTA DEPT OF CHEMISTRY

Co-ordinator Engineering for High Speed Devices

Diethylaminodichlorophosphines

DESCRIPTIVE NOTE Quarterly rept no 2 1 Oct 81 Dec 85

DESCRIPTIVE NOTE Journal article

DEC 85 8P

85 8P

PERSONAL AUTHORS Sher A Krishnamoorthy, S. Chandra B

PERSONAL AUTHORS King R B, Sadanani, Narayan D

CONTRACT NO F49620-85-C-0103 ARPA (DAAG 500-5-003)

PROJECT NO 2307

PROJECT NO 453

TASK NO 82

TASK NO 26

MONITOR AFOSR

TR 85 0187

MONITOR AFOSR

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Synth React Inorg Mat Org Chem 1:15 n2 p149-153 1985

ABSTRACT: This report describes the progress to date in the development of a fully automatic model to study the reaction of a range of substituted phosphines with a range of substituted phosphines. The results of the study are presented in the form of a series of tables and graphs. The results show that the reaction of a range of substituted phosphines with a range of substituted phosphines is a complex process which involves a number of steps. The results also show that the reaction of a range of substituted phosphines with a range of substituted phosphines is a complex process which involves a number of steps.

ABSTRACT: (U) Reactions of secondary amines, R2NH, with phosphorus trichloride are used to prepare a variety of dialkylaminodichlorophosphines, R2NPHCl2, R2NPHCl, R2NPH2, R2NPHCl, and R2NPH2. The reaction of 2,2,6,6-tetramethylpiperidine, and 2,2,6,6-tetramethylpiperidine, which have been characterized by their phosphorus 31 NMR and mass spectra. Diisopropylaminodichlorophosphine is also described. Reaction of C2NPH2 with cyclohexylamine, which can be converted into a relatively stable liquid carbonyl complex, C2NPH2M, (M = Cu, Ni, and W), and C2NPH2M (M = Cu, Ni, and W), the 2,2,6,6-tetramethylpiperidine derivative, CMe2CH2(COMe2NPH2), is also isolable.

DESCRIPTORS: AMINES, PHOSPHINE, CHLORINE

COMPOUNDS: ALKYL RADICALS, SYNTHESIS, CHEMISTRY, CHLORIDES, MASS SPECTRA, PHOSPHORUS, SECONDARY, PIPERIDINES, METHYL RADICALS, BROMINE, CARBONYL COMPOUNDS, ORGANOMETALLIC COMPOUNDS

IDENTIFIERS: (U) Diethylaminodichlorophosphines, PE611001, WJAFOSR230382

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CONFIDENTIAL

BUOYANCY WAVES

DESCRIPTIONS OF: ATMOSPHERIC MOTION, TURBULENCE, RADIAR IMAGES, WIND SHEAR, AIRCRAFT, BUOYANCY, ENERGY LEVELS, HYPOTHESES, INTERNAL WAVES, MODELS, REPRINTS, SCALF, SPECTRA, THEORY, TWO DIMENSIONAL, WAVES, WIND, WIND VELOCITY

IDENTIFIERS: WIAFOSR2310A1

PERSONAL AUTHOR: GARDNER, S. (Nashrom 3, 6)

CONTRACT NO: F49620-82-C-0229

PROJECT NO: 2110

TASK NO: A1

MONITOR: AFOSR
TR 86-0722

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub in Radio Science, 20, n6 p1339-1347 Nov-Dec 85

ABSTRACT: If we consider the observations of the spectrum of atmospheric motions over the range of periods from a few minutes to many hours that have been made with ST MST radars in the past 5 years, this range of periods includes the periods associated with buoyancy waves and the scale of atmospheric motions often referred to by meteorologists as the mesoscale. We consider the spectra of both horizontal and vertical velocities and examine their interpretation in terms of buoyancy wave theory and turbulence theory. To help in interpreting these spectra we present some recently determined aircraft wavenumber spectra. It is found that radar and aircraft horizontal wind spectra are in reasonable accord with expectations from quasi two dimensional turbulence theory. The vertical velocity spectra are believed to be due to waves. Comparison of the energy levels and shapes of the horizontal and vertical velocity spectra are not consistent with existing models of internal wave spectra. However, it is possible that these inconsistencies arise from Doppler shifting effects that are not taken into account in existing internal wave models. Nevertheless we stress that all the observations we have examined support the hypothesis that quasi two dimensional turbulence coexists with a nearly universal spectrum of

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AD A172 153 DATA REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN54B

AD A172 153 CONTINUED

GEORGIA UNIV ATHENS DEPT OF CHEMISTRY

LITHIUM, ALUMINUM, ALKYL RADICALS LIGANDS, REPRINTS

DIETHYLAMINO PHOSPHINES AND THEIR METAL CARBONYL COMPLEXES

IDENTIFIERS: (U) WUAFOSR2303B2, PE61102F

DESCRIPTIVE NOTE Journal Article

85 5P

PERSONAL AUTHOR: KING, P. B. (See also AD A172 153)

CONTRACT NO: AFOSR 84 0050 AFOSR 84 0050

PROJECT NO: 1002

TASK NO: 82

MONITOR: AFOSR 84 0050

UNCLASSIFIED REPORT

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PAGE 193

PAGE 1

AD A112 162

FLUORESCENCE, LASER, PLASMA, SPECTROSCOPY, LASER, INDUCED

Laser excited atomic fluorescence of 30 elements
Metals and metalloids, a group of 30 elements
coupled plasma

55 50

PERSONAL AUTHOR: Page 1, Language: English

CONTRACT NO: 149020 A4 C 0002

PROJECT NO: 2000

TASK NO: A1

MONITOR: AFSP
TR 35 0154

UNCLASSIFIED REPORT

SUPPLEMENTARY TITLE: Pub in Applied Spectroscopy, Vol 39, No
p1042-1047, 1985

ABSTRACT: The combination of an excimer XeCl pumped pulsed dye laser with frequency-doubled output as an excitation source and the inductively coupled argon plasma ICP as an atom ion reservoir was used in the study of the atomic fluorescence of Ag, Au, Hf, Ir, Mo, Nb, Pd, Pt, Ru, Ti, and Zr. The detection limits were found to be in the range of 1-3.58 ng/mL/ppb with a linear dynamic range (LDR) of over four orders of magnitude except for Au and Hf. These represent the first published results for laser excited atomic fluorescence spectroscopy in the ICP cell for the elements studied except for Mo and Zr and the LODs found were superior to those obtained by flame atomic absorption spectroscopy (FAAS) except for Ag, Au, and Mo and similar to those obtained by emission ICP.

DESCRIPTORS: ATOMIC SPECTROSCOPY, LASER INDUCED
FLUORESCENCE, ATOMS, IONS, RESERVOIRS
COUPLING, INTERACTION, PLASMAS, PHYSICS, DYNAMIC RANGE
ABSORPTION, SPECTRA, ATOMIC SPECTROSCOPY, DYE LASERS
ARGON, DETECTION, LIMITATIONS, EXCITATION, SOURCES
FREQUENCY MULTIPLIERS, PRECIOUS METALS, COMPARISON
EXCIMER, LASER PUMPING, GOLD, IRIUM

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NEUTRONIUM, NIUBIUM, PALLADIUM, PLATINUM, RUTHENIUM,
TANTALUM, ZIRCONIUM, REPTINS

IDENTIFIERS: U-FAAS Flame Atomic Absorption
Spectroscopy, WUAF5R2303A, PE61102F

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TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY

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Department of Psychology, University of Tennessee, Knoxville, Tennessee 37996-0170

CONTRACT NO. 19620-63-1-0004

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to show that the model predictions are accurate for 2.4 G. The model predictions are compared with the experimental data for the first 100 ns of the experiment. The model predictions are compared with the experimental data for the first 100 ns of the experiment. The model predictions are compared with the experimental data for the first 100 ns of the experiment.

STUDIES OF THE EFFECTS OF
STRESS ON THE BEHAVIOR OF
THE RAT IN THE MULLER-LUTHER
TEST

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GEORGIA UNIV ATHENS DEPT OF CHEMISTRY

(11) Metal Complexes of Fluorophosphines. Part XIV. Structures of Five Zerovalent Metal Complexes of Methylaminobis(difluorophosphine).

531

PERSONAL AUTHORS: Fing, R. B., Chang, M., Newton, M. G.

CONTRACT NO AFOSR 84 0050

PROJECT NO 2302

TASK NO. E2

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| MONITOR | AFCSR |
| | TR 25 07 88 |

UNCLASSIFIED REVIEW

SUPPLEMENTARY NOTE Pub. in Jnl. of Organometallic Chemistry 226 p15 30 1985 See also 8 AD AB 80 277

ABSTRACT: Details are presented of single-crystal x-ray diffraction determinations of the structures of the five zerovalent metal complexes, $\text{CH}_3\text{NPF}_2\cdot 2\text{CH}_3\cdot 2\text{LiPF}_2$, $2\text{NCH}_3\cdot \text{FePF}_2\cdot 2\text{NCH}_3\cdot 4$ and $\text{CH}_3\text{NPF}_2\cdot 2\text{CH}_3\text{C}_6\text{H}_5\cdot 2\text{LiPF}_2$, $\text{CH}_3\text{NPF}_2\cdot 2$ and $2\text{CH}_3\cdot 2\text{NPF}_2$. The phosphorus atom in $\text{CH}_3\text{NPF}_2\cdot 2\text{CH}_3\cdot 2\text{LiPF}_2$ has a distorted octahedral coordination with four monodentate $\text{CH}_3\cdot 2\text{NPF}_2$ ligands and one bidentate $\text{CH}_3\text{NPF}_2\cdot 2$ ligand; the small bite of the latter ligand distorts one of the idealized 90 degree angles of the CoF_6 octahedron to 61 degrees. The iron atom in $\text{FePF}_2\cdot 2\text{NCH}_3\cdot 4$ has a distorted trigonal bipyramidal coordination with three monodentate $\text{CH}_3\cdot \text{PF}_2\cdot 2$ ligands and one bidentate $\text{CH}_3\text{NPF}_2\cdot 2$ ligand; the bidentate $\text{CH}_3\text{NPF}_2\cdot 2$ ligand in $\text{FePF}_2\cdot 2\text{NCH}_3\cdot 4$ is coordinated to an axial and an equatorial position of the CoF_6 trigonal bipyramid and because of its small bite squeezes the relevant Fe-F bond angle from the ideal value of 90 degrees down to 69 degrees. The structure of the binuclear cobalt complexes $\text{CH}_3\text{NPF}_2\cdot 2\text{CH}_3\cdot 2\text{LiPF}_2$, $\text{CH}_3\cdot 2\text{NPF}_2$ and CH_3NPF_2 may be regarded as consisting of two CoPF_6 trigonal bipyramids linked through a cobalt-cobalt bond.

DESCRIPTORS: FLUOROPHOSPHINES; METAL COMPLEXES

AD A:72 148

PAGE 191

22

3. Retrieval of Sinusoidal Signals by Adaptive Notch Filtering

100 58 100 301

MONITOR AFOSR
TR-85-0713

SUPPLEMENTARY NOTE Pub in Annual Conference on
Communication, Control and Computers (23rd), p514 583 Oct
85

DESCRIPTORS. U. *ADAPTIVE FILTERS. COMPUTATIONS.
CONVERGENCE ERRORS. GRADIENTS. LEAST SQUARES METHOD.
MEAN SIMPLIFICATION. SIMULATION. STEADY STATE
VARIATIONS. NOTCH SENSITIVITY. SINE WAVES. REPRINTS.
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PRINCETON UNIV. NO. DEPT OF ELECTRICAL ENGINEERING AND
COMPUTER SCIENCE

U¹ On the convergence of a variable step-size adaptive filter

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CRYSTALLINITY, U. GRAVITY'S SPECTRA, RAYLEIGH,
 SCATTERING, CONVERGENCE, HYPOTHESIS, LIGHT SCATTERING,
 COMBUSTION, METALS, REPRINTS, STABILITY, SURFACES, FLAME
 WATER, BEAMS, ANGLE, LASER COMPONENTS

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2000

SUPPLEMENTARY NOTE PUBLISHED IN PHYSICAL REVIEW B 133 14
 2296: 2100 15 Feb 88

ABSTRACT. The justification of continuing the Rayleigh expansion to the grating's surface (the Rayleigh hypothesis) and its convergence properties are considered for arbitrary gratings for which the Rayleigh hypothesis is not satisfied. A practical example of which is the corrugated grating. Based on an identification of the grating's limited stability of the Rayleigh expansion, a modified expansion is introduced, different from the original Rayleigh hypothesis. This new expansion not only is excellent for the structural grating as previously demonstrated for the sinusoidal grating. The periodicity N of the matrix which must be inverted for a grating of arbitrary depth g is periodically d is found to be $N \approx 2\pi/g$ and g/d Rayleigh scattering, lasers, photonic gratings, Rayleigh hypothesis, convergent expansion, sinusoidal grating, beams.

CRYSTALLINITY, U. GRAVINGS SPECTRA, RAYLEIGH,
 SCATTERING, CONVERGENCE, HYPOTHESIS, LIGHT SCATTERING,
 COMPLETION, METALS, REPRINTS, STABILITY, SURFACES, FINE
 WATER, BEAMS, ANGLE, LASER COMPONENTS

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AD A172 138

MONITOR: AFOSR 85-0007
PROJECT NO: 2304
TASK NO: A4
MONITOR: AFOSR
TR-86-0769

PERSONAL AUTHORS: Feller, Joseph B

CONTRACT NO: AFOSR 85-0007

PROJECT NO: 2304

TASK NO: A4

MONITOR: AFOSR
TR-86-0769

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub in Reliability and Quality Control, 1985

ABSTRACT: This report discusses the occurrence of failures with a nonhomogeneous Poisson process, the mean time between failures is constant. In the case of a nonhomogeneous Poisson process, this is no longer true and it is not clear what concept should take the place of the mean time between failures as a criterion for assessing system reliability. Two possibilities are explored in this report. Keywords: Stochastic processes. Author

DESCRIPTORS: STOCHASTIC PROCESSES, ASYMPTOTIC SERIES, MEAN RELIABILITY, REPAIR, REPRINTS, TIME FAILURE, TIME INTERVALS

IDENTIFIERS: AFOSR 85-0007, PROJECT NO: 2304, TASK NO: A4, MONITOR: AFOSR, TR-86-0769

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MONITOR: AFOSR 85-0007
PROJECT NO: 2304
TASK NO: A4
MONITOR: AFOSR
TR-86-0769

PERSONAL AUTHORS: Feller, Joseph B

CONTRACT NO: AFOSR 85-0007

PROJECT NO: 2304

TASK NO: A4

MONITOR: AFOSR
TR-86-0769

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub in Theoretical and Applied Mechanics, p31-41 1985

ABSTRACT: This report discusses the occurrence of failures related to the use of computers in the solution of problems, in the control of experiments, and in the analysis of data. These tools have made certain kinds of calculations and measurements easier. But they have also revealed the widespread occurrence of chaotic and stochastic behavior of mechanical systems and have shown that there are certain regularities in this behavior. The understanding of the chaotic behavior and its regularities, and of how to analyze and control it, are unsolved problems. Many theoretical attacks have been made on these problems but they have only touched the surface.

DESCRIPTORS: STOCHASTIC PROCESSES, MECHANICS, PROBLEM SOLVING, MECHANICAL COMPONENTS, ENTRY, COMPUTER APPLICATIONS, APPLIED MECHANICS, THEORY, REPRINTS

IDENTIFIERS: AFOSR 85-0007, PROJECT NO: 2304, TASK NO: A4, MONITOR: AFOSR, TR-86-0769

AD A172 126

UNIVERSITY OF SOUTHERN CALIFORNIA LOS ANGELES DEPT OF CHEMISTRY

U Evidence for Soliton-Phonon Interaction in trans Polyacetylene: Temperature and Frequency Dependence of Electron Spin Lattice Relaxation Data

PERSONAL AUTHOR Robinson, B. H. (Schurr, J. M. Kurnam, A. L. Thoma, H. Kim, H.)

CONTRACT NO AF 58-54-0000

PROJECT NO 82

TASK NO 82

MONITOR AFOSR TR-86-0000

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub in Optics Letters, 13, 1359, 1991

ABSTRACT (U) The temperature, frequency, and isotope dependence of the electron spin lattice relaxation rate R sub 1 for the paramagnetic defects in pristine trans polyacetylene is analyzed in terms of a model in which the electron electron dipolar interaction between spins is modulated by one-dimensional diffusion induced by phonon scattering of the mobile spins. At room temperature, this model predicts a T to the 1/2 power temperature dependence for R sub 1 at low temperatures depending upon assumptions about the phonon spectrum estimates in the temperature dependence of R sub 1 range from T squared to T to the 5/2 power. The frequency dependence of R sub 1 is theoretically predicted to be described by a angular frequency to the 1/2 power dependence which is found to accurately fit the experimental data obtained over the frequency range 35 MHz to 40 GHz. The interpretation of electron spin lattice relaxation data is consistent with ENDOR electron phase memory relaxation data. We consider the data and nuclear relaxation data. We consider the implications of this analysis for various soliton descriptions of the paramagnetic defect.

DESCRIPTION: 1. CROSS BEAM DEVICE
2. LASER
3. BEAMS
4. INTERFEROMETER MEASUREMENT
5. RELAXATION RATE
6. SCALE TIME

PROJECT NO AF 58-54-0000

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PAGE 100 EVN54B

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DTIC REPORT BIBLIOGRAPHY

SEARCH CONTROL NO EVN548

AD A172 125 CONTINUED

AD A172 125 7/4

DESCRIPTORS: POLYMERS; POLYMERIZATION; POLYMERIZATION STATES; RELAXATION TIME; CRYSTAL LATTICES; SPIN STATES; REPRINTS; ANGULAR MOTION; DIPOLES; ELECTRONS; INTERACTIONS; ISOTOPES; DIFFUSION; ONE DIMENSIONAL; DEFECTS; MATERIALS; PARAMAGNETISM; IMAGES; PHENOMENA; SPECTRA; MEMORY DEVICES; FREQUENCY; LOW TEMPERATURE; SCATTERING; ROOM TEMPERATURE; TEMPERATURE

IDENTIFIERS: U. Solitons; Electronic Interactions; Interactions; WUAFSR2303A3; PES1103

STATE UNIV OF NEW YORK AT BUFFALO DEPT OF CHEMISTRY
 CO-OPERATIVE Emission by Two Different Atoms into
 Surface Plasmons.

DEC 85 19P

PERSONAL AUTHOR(S): LIU, K. C.; George, Thomas F.

CONTRACT NO AFOSR-82 0046

PROJECT NO 2303

TASK NO 83

MONITOR: AFOSR
TR-86 0776

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Surface Science 166:1 n1 p149
 166 Dec 85.

ABSTRACT: (U) The interaction between surface plasmons and two atoms with different electronic resonant frequencies near a metal-coated semiconductor surface is considered. The atom atom and atom surface resonances are assumed to be smaller than the corresponding atom resonance separation. The evolution of the emission rate of such an atomic pair to surface plasmon modes is calculated via a fully quantum mechanical approach. Explicit results are given for various initial states of the diatomic system. As the frequency difference between the atomic resonances approaches the half width of the atomic resonant lines, the emission behaves as if there are two identical atoms. On the other hand, when Delta's gamma's associated are found in the emission rate is a function of Delta's gamma's in all cases as a manifestation of beating. The beating phenomenon is especially pronounced when the diatomic system is initially in a coherent state. For the case of the particular state corresponding to complete photon trapping in the case of two identical atoms, a pair of two different atoms exhibits oscillating emission into the super-radiant region before eventual decay to zero. Beyond two interacting atoms, metal surface resonant doped semiconductor surface super-radiance and photon trapping, cooperative emission, surface plasmon modes

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DESCRIPTORS: (U) ATOM-ION-CHARGED PARTICLES, PLASMAS, PHOTOELECTRIC EMISSION, SURFACE CHEMISTRY, ATOMIC SPECTRA, ATOMS, DIATOMIC MOLECULES, ELECTRON TRANSITIONS, EMISSION INTERACTIONS, METALS, OSCILLATION, PHOTONS, RADIANCE RATES, REPRINTS, RESONANCE, SEPARATION, SPECTRAL LINES, TIME DEPENDENCE, QUANTUM THEORY, DOPING, SEMICONDUCTORS

IDENTIFIERS: (U) Superradiance, WUAFOSR230383631303, PEG1102F

AD A172 124 UNCLASSIFIED

DESCRIPTORS: (U) TRAJECTORY STUDY OF NONEQUILIBRIUM EFFECTS IN DIATOM DISSOCIATION REACTIONS, TORONTO UNIV (ONTARIO), DEPT OF CHEMISTRY

PERSONAL AUTHORS: Burns, George, Cohen, L. K.

CONTRACT NO: AFOSR-84-0127

PROJECT NO: 2303

TASK NO: B1

MONITOR: AFOSR
TR 86-0771

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in the Jnl. of Physical Chemistry, v89 n20 p4161-4163 26 Sep 85

ABSTRACT: (U) Five ensembles of 3 D classical trajectories, totalling over 100000 trajectories, were used to study the dissociation of Br in Ar in the linear regime, i.e. with recombination neglected. It was found that for a given temperature and potential energy function dissociation occurs at a precisely determinable, unique steady state. Consequently, the steady state nonequilibrium energy distribution functions and rate constants are also unique for a given trajectory ensemble; they differ quantitatively from equilibrium distribution functions and the corresponding equilibrium rate coefficients. The findings obtained substantially tighten up the conceptual framework of the single uniform ensemble method and justify its further use as a tool to determine new observables in chemical reaction kinetics.

DESCRIPTORS: (U) REACTION KINETICS, DISSOCIATION, BROMINE, CHEMICAL REACTIONS, COEFFICIENTS, DISTRIBUTION FUNCTIONS, EQUILIBRIUM, GENERAL, NONEQUILIBRIUM FLOW, POTENTIAL ENERGY, REPRINTS, STEADY STATE, TRAJECTORIES, THERMAL PROPERTIES, THREE DIMENSIONAL

IDENTIFIERS: (U) WUAFOSR230381, PEG1102F

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AD-A172 123 7/4 8/10 DEPT OF CHEMISTRY SEARCH CONTROL NO. EVN548

AD-A172 123 CONTINUED

FLORIDA UNIV GAINESVILLE

U. Determination of Copper in Seawater by High Temperature Gas Chromatography with an Atomic Absorption Spectrometric Detector

85 TP

PERSONAL AUTHORS: Ohta, Kiyohisa (Sm to Be) ; Winefordner, James D.

CONTRACT NO. F49620 80 C 0005

PROJECT NO. 103

TASK NO. A1

MONITOR: AFSP
TE 46 0761

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Sub in Microchemical Jnl v32 p50 54 1985

ABSTRACT U. The large amount of chlorides in seawater give rise to severe chemical as well as physical interferences related to the complex physicochemical phenomena for the determination of copper in electrothermal atomic absorption spectrometry. Therefore, great efforts have been devoted to decrease and minimize the interferences, such as treatment of phosphoric acid addition of thiourea and extraction of the copper complex of ammonia pyrrolidone dithionite as a surface developed a high temperature gas chromatography system at temperature more than 1500 K. In order to analyze of trace elements and found the decomposition of several elements which were fed as organic compounds, such as methyl, we describe an attempt to determine copper directly in seawater by a combination of high temperature gas chromatography, 1500 K and atomic absorption detection. In this study, the performance of the high temperature gas chromatography column is discussed. Keywords: Atomic fluorescence

DEPT OF CHEMISTRY, FLORIDA UNIV, GAINESVILLE, FLORIDA 32611-0005
OCHA, KIYOHISA; WINEFORDNER, JAMES D.

AD-A172 123

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CHLORIDES, COLUMN CHROMATOGRAPHY, DETECTION, DETECTORS, DETERMINATION, GASES, HIGH TEMPERATURE, INORGANIC COMPOUNDS, PYRROLIDINES, REPRINTS, SEA WATER, SPECTROMETRY, TEMPERATURE, THERMOELECTRICITY, THIOUREA, TRACE ELEMENTS, PHYSICO-CHEMICAL PROPERTIES

IDENTIFIERS: (U) WUADSR2303A1 PE61102F

AD-A172 122

PENNSYLVANIA STATE UNIV, UNIVERSITY PARK, PA 16802
MATERIALS SCIENCE AND ENGINEERING

U Transformation Range Viscosity of Fluorozirconate Glasses

AUG 84 3P

PERSONAL AUTHORS Shelby, James E.; Pantano, Carlo G.
Tessier, Alecia A.

CONTRACT NO AFOSR-82-0013

PROJECT NO 2303

TASK NO A3

MONITOR AFOSR
TP 86 0598

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of American Ceramic Society, v.67, no. 6, p. 164 C-165 Aug 84.

ABSTRACT: U Heavy metal fluoride glasses have been the subject of intense study because of their potential application as infrared optical fibers. Although many glass forming systems based on fluorides have been investigated, the fluoro-zirconate glasses appear to be the most widely studied to date. Transformation range viscosity was measured for multicomponent fluoro-zirconate glasses in the system $0.56\text{ZrF}_4 \cdot 0.34 \cdot x\text{BaF}_2 \cdot 0.06\text{LaF}_3$ ($0.41\text{F}_3\text{O}_2$), where R = Li, Na, K, or Cs. The results indicate that the viscosity range from 10,000,000 to the melt power law with an activation energy of the order of 650 kJ. In general, the effects of alkali fluoride additions on the viscosity of fluoro-zirconate glasses are comparable to those in silicate systems.

DESCRIPTORS: U GLASS; VISCOSITY; FLUORINE COMPOUNDS; ZIRCONATES; FLUORIDES; SILICATES; FIBER OPTICS; INFRARED RADIATION; TRANSFORMATIONS; ACTIVATION ENERGY; ALKALI METAL COMPOUNDS; BARIUM; ALUMINUM; REPRINTS

IDENTIFIERS: U WUAFOSR2303A3; PE61102F

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AD-A172 121

CALIFORNIA UNIV SAN DIEGO

U1 Ether Cleavage Following Insertion of Carbon Monoxide

into the Tantalum-Silicon Bond of $\eta^5\text{-C}_5\text{Me}_5\text{-TaSiMe}_3\text{Cl}_3$

85 3P

PERSONAL AUTHORS: Arnold John Tilley, T. D.

CONTRACT NO AFOSR-85-(228)

PROJECT NO 2303

TASK NO B2

MONITOR AFOSR
TR-86-0701

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of The American Chemical Society, v.107 p6409-6413 1985

ABSTRACT: (U) The tantalum silyl $\text{Cp}^*\text{TaSiMe}_3\text{Cl}_3$ ($\text{Cp}^* = \eta^5\text{-C}_5\text{Me}_5$), prepared from Cp^*TaCl_4 and AlSiMe_3 , reacts with carbon monoxide (10-100 psi) to yield products which are determined by the react on solvent. In ethers with Beta-CH_3 groups (diethyl ether and 2-methyltetrahydrofuran), insertion of CO leads to cleavage of an ether carbon-oxygen bond to produce the cyclic complexes $\text{Cp}^*\text{Cl}_3\text{TaOCH(SiMe}_3\text{C(O)OR)}$ (4, R = Et and 6, R = $\text{CH}_2\text{(CH=CH}_2\text{)}$). Compounds 4 and 6 have been characterized by elemental analysis, IR and NMR (^1H and ^{13}C) spectroscopy. Labelling studies and derivative chemistry. These reactions are believed to involve addition of the ethers to an intermediate ketone complex derived from CO insertion. In tetrahydrofuran, the reaction of 3 with CO leads to reductive elimination of $\text{Me}_3\text{Si-Cl}$ with formation of $\text{Cp}^*\text{TaCl}_2(\text{C}_5\text{H}_5)(\text{C}_5\text{H}_5\text{THF})$.

DESCRIPTORS: U ETHERS; CLEAVAGE; CARBON MONOXIDE; TANTALUM; SILICON; CHEMICAL BONDS; ADDITION; CHEMICAL DERIVATIVES; ETHYL RADICALS; FURANS; HYDROXYL RADICALS; SOLVENTS; SPECTROSCOPY; YIELD; CHEMICAL REACTIONS; ADDITION REACTIONS; REDUCTION CHEMISTRY; ELIMINATION REACTIONS; CHLORINE

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SEARCH CONTROL NO. EVN54B

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AD-A172 108 20/10 7/3

TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY

TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY

(U) The MNDO Potential Energy Surface and Tunnelling Dynamics of the Cyclobutane Radical Cation

(U) AM1: A New General Purpose Quantum Mechanical Molecular Model

85 9P

85 10P

PERSONAL AUTHORS: Dewar, Michael J.; Menz, Kenneth M.; Jurek, Healy, Eamonn F.; Stewart, James J.

PERSONAL AUTHORS: Dewar, Michael J.; Zoebisch, Eve G.; Healy, Eamonn F.; Stewart, James J.

CONTRACT NO F49620-83 C-0024

CONTRACT NO F49620-82-C-0024

PROJECT NO 2303

PROJECT NO 2303

TASK NO 82

TASK NO 82

MONITOR AFOSR

TR 86-0702

MONITOR AFOSR

TR 86-0784

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Jnl of Molecular Structure, v122 p59-65 1985

SUPPLEMENTARY NOTE Pub in Jnl of American Chemical Society, v107 n13 p3902-3909 1985

ABSTRACT (U) The potential energy surface of the cyclobutane radical cation is examined in detail using the MNDO method. The calculations contradict a recent ESR study where the lowest energy structure was assigned as a bridged rhombus (C sub 2v). Our calculations suggest that the trapezoid structure (C sub 2v) is the lowest energy species. Tunneling calculations also predict that the cyclobutane radical cation undergoes rapid interconversion via tunnelling between equivalent trapezoids at temperatures below 100 K. These results are then used to explain the observation of a single ESR spectra for the cyclobutane radical cation.

DESCRIPTORS (U) CATIONS; CYCLOBUTANES; POTENTIAL ENERGY; SURFACE REACTIONS; CHEMICAL RADICALS; ENERGY; RHOMBUS; SURFACES; TUNNELING; ELECTRON SPIN RESONANCE; SPECTROSCOPY; QUANTUM CHEMISTRY; MOLECULAR STRUCTURE; PEPPINS

IDENTIFIERS U PEG1102F WJAFOSR230282

DESCRIPTORS (U) MOLECULAR STRUCTURE; QUANTUM THEORY; HYDROGEN BONDS; MOLECULES; MODELS; PARAMETRIC ANALYSIS; REPRIN; S; CARBON; HYDROGEN; OXYGEN; NITROGEN

IDENTIFIERS (U) NDDO Molecular Orbitals; Austin 1 Molecular Model; PEG1102F; WJAFOSR230382

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AD A172 104 UNCLASSIFIED BIBLIOGRAPHY SEARCH CONTROL NO EVN546

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AD A172 103 6.3

COLUMBIA UNIV NEW YORK DEPT OF CHEMISTRY

TEXAS UNIV MEDICAL SCHOOL AT HOUSTON

(U) Coherence Effects in Pump-Probe Measurements with Collinear Copropagating Beams

(U) Neural and Molecular Mechanisms Underlying Information Storage in Aplysia: Implications for Learning and Memory.

84 3F

NOV 85 7P

PERSONAL AUTHORS Palfrey S L Heintz J F Eisenthal K B

PERSONAL AUTHORS Byrne, John R

CONTRACT NO AFOSR-84-0013

CONTRACT NO AFOSR-84-0213

PROJECT NO 2303

PROJECT NO 2312

TASK NO B2

TASK NO A1

MONITOR AFOSR TR-86 0746

MONITOR AFOSR TR-86-0782

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Ultrafast Phenomena, v4 p216-219 1984

SUPPLEMENTARY NOTE: Pub. in Trends in Neurosciences, v8 n11 p478-482 Nov 85.

ABSTRACT: (U) When pump-probe measurements are performed using pulses originating from the same laser, it is necessary to consider the coherent interaction of the two pulses in determining material relaxation rates on the time scale of the pulse duration. In the usual geometry in which the beams cross at an angle the effects of the coherent coupling on the observed signal are well known. In this case the coherent contribution to the signal may be viewed as a scattering of the pump radiation into the probe direction by a spatial grating induced when the pump and probe are simultaneously present in the sample. We consider here the influence of coherence effects on pump-probe measurements with collinear, copropagating beams of orthogonal polarization. Despite the fact that the grating vanishes in this geometry we find in contradiction with earlier predictions that the coherent interaction still remains

DESCRIPTORS: (U) LASERS, PROBES, PUMPS, COHERENCE, COUPLING, INTERACTION, GRATINGS, SPECTRA, INTERACTIONS, MATERIALS, PULSE RATE, PULSES, RADIATION RATES, RELAXATION SCALE, SPATIAL DISTRIBUTION, TIME

IDENTIFIERS U PE61102F WUAFOSR230382

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ABSTRACT: (U) The marine Mollusk Aplysia is one of several experimental preparations that neuroscientists are using to help understand the mechanisms underlying learning and memory. Simple behavioral modifications such as sensitization and classical conditioning can be related to changes in the ability of previously formed synaptic connections to release neurotransmitter substance. The modifications of transmitter release in turn are regulated by the intracellular second messengers Cal2+ and cAMP. The second messenger systems may act separately in the case of non-associative learning (sensitization) but their specific interactions may underly forms of associative learning such as classical conditioning. Keywords: Artificial intelligence.

DESCRIPTORS: (U) APLYSIA, ARTIFICIAL INTELLIGENCE, DATA STORAGE SYSTEMS, INTERACTIONS, LEARNING, MODIFICATION, MOLECULAR PROPERTIES, NERVE TRANSMISSION, NERVOUS SYSTEM, TRANSMITTERS, NEUROBIOLOGY, MEMORY, PSYCHOLOGY, REPRINTS

IDENTIFIERS (U) F 61102F, WUAFOSR2312A1

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SEARCH CONTROL NO. EVN54B

AD-A172 102 20/5 7 5

AD-A172 101 7/4 20/10

STATE UNIV OF NEW YORK AT BUFFALO AMHERST

CHICAGO UNIV IL JAMES FRANK INST

(U) Laser Induced Collision Processes Polarization Effects and Ionization

(U) Control of Selectivity of Chemical Reaction Via Control of Wave Packet Evolution.

85 25P

NOV 85 8P

PERSONAL AUTHORS: Shue Kai Shu Devries Paul L George Thomas F

PERSONAL AUTHORS: Tannon, David J.; Rice, Stuart A

CONTRACT NO AFOSR 82 0046

CONTRACT NO. F49620-85-C-0003

PROJECT NO 2203

PROJECT NO. 2303

TASK NO B3

TASK NO. B1

MONITOR AFOSR

MONITOR: AFOSR

TR 16 0704

TR 86-0752

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Spectral Line Shapes, V3 P369 392 1985

SUPPLEMENTARY NOTE Pub in Jnl of Chemical Physics, V83 N10 P5013 5018, 15 Nov 85

ABSTRACT Polarization aspects of photon emission occurring in laser induced collision processes are addressed systematically along with a review of recent work on the problem of energy transfer spectral features of collision induced emission. Theoretical ionization of atoms and molecules by laser induced ionization is also discussed. Theoretical work on the induced ionization of atoms and molecules by laser induced ionization is also discussed. Theoretical work on the induced ionization of atoms and molecules by laser induced ionization is also discussed.

ABSTRACT (U) Is it possible, by control of the nature of the excitation process, to control the selectivity of a chemical reaction? Previous attempts to answer this question have focused attention on the free rotation of an excited molecule, treating the excitation and the evolution processes as separate. These analyses and the various experiments carried out to date, lead to the conclusion that, because of rapid intramolecular vibrational redistribution, any induced selectivity of reaction is not in general viable. In this direct paper we show that, despite showing of a prepared vibrational state distribution, selectivity of reaction can be achieved by use of coherent wave packet processes. The problem of finding the optimum wave packet pulse sequence that will maximize the formation of a desired chemical product is formulated as a problem in the excited state dynamics and solved for two different cases.

AD-A172 101 20/5 7 5

DESCRIPTIONS: (U) CHEMICAL REACTIONS MOLECULAR VIBRATION TWO PHOTON ABSORPTION QUANTUM THEORY CALCULUS OF VARIATIONS CHEMICAL KINETICS DISTRIBUTION EVOLUTION GENERAL EXCITATION LAGERS MOLECULES OPTIMIZATION PHOTONS PULSES REACTIVITIES SEQUENCES VIBRATION WAVE PACKETS WAVEFORMS EMISSION

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AD 172 101 DEPHASING

AD 172 095 SEARCH CONTROL NO EVN51E

AD 172 101 DEPHASING

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SPECTROSCOPY COHERENT SCATTERING TRANSITIONS MOLECULAR STATES FLUORESCENCE CONTROL, REPRINTS

TEXAS UNIV AT AUSTIN DEPT OF ELECTRICAL AND COMPUTER ENGINEERING

IDENTIFIERS U Dephasing PE61102F WJAFOSR2304B1

U A Performance Analysis of a CSMA/CD Protocol

DESCRIPTIVE NOTE Rept. for 1 Oct 30 Sep 85.

APR 86 5P

PERSONAL AUTHORS Liu, Yih-Chiao, Wise, Gary L.

CONTRACT NO AFOSR-81-0047

PROJECT NO 2304

TASK NO A5

MONITOR AFOSR
TR-86-0793

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at the Midwest Symposium on Circuits and Systems (28th) Held at Louisville, KY on 19-20 Aug 85.

ABSTRACT: U An analysis of some performance characteristics of a CSMA/CD computer network protocol is presented. The analysis is based on the Enet II protocol which is designed to effectively resolve collisions in the network. In this paper we derive an expression for the average time to resolve a collision involving a given number of stations. We also give an expression for the average time until a packet involved in a collision is successfully transmitted.

DESCRIPTORS: U NETWORKS, MESSAGE PROCESSING, COMPUTER COMMUNICATIONS, PERFORMANCE TESTS, COMPUTER PROGRAMMING, DATA LINKS, CONTROL

IDENTIFIERS: U Local area networks, Computer networks, Computer protocols, ENET 2 computer networks, CSMA/CD, Carrier Sense Multiple Access Collision Detection, PE61102F, WJAFOSR2304A5

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AD A172 092 12 1 6 3

NORTH CAROLINA UNIV AT CHAPEL HILL DEPT OF MATHEM

SPI INTERNATIONAL MENLO PARK CA

U: Bisonar Signal Perception and Analysis

U: Semiconductor Engineering for High Speed Devices

DESCRIPTIVE NOTE Final Rept 15 Dec 84 31 Dec 85

DESCRIPTIVE NOTE Quarterly status report no 1 1 Jun 85

FEB 86 5P

SEP 85 5P

PERSONAL AUTHOR: Henson, D W CR

PERSONAL AUTHOR: Sher, A Krishnamurthy S Chen, A B

CONTRACT NO AFOSR 85 0063

CONTRACT NO F49620-85 C 0103 ARPA Order-5396

PROJECT NO 2917

PROJECT NO 0053

TASK NO A4

TASK NO 96

MONITOR AFOSR

MONITOR AFOSR TR 86 0797

UNCLASSIFIED REPORT

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ABSTRACT: U: This project has pursued behavioral physiological and anatomical correlates of the biosonar system of bats. We have used a simulated flight system to record signal emissions and to analyze the response properties of the ear and brain centers in animals actively engaged in the imaging of specific targets. Much new information has been obtained, especially with respect to the potential importance of interference patterns (beats) in biosonar signal detection and analysis. Computer reconstruction techniques have been used to study FFT displays and various anatomical structures. Keywords: Acoustic signal perception, and Bioacoustics

DESCRIPTORS: U: ANIMALS, BIOACOUSTICS, ACOUSTIC SIGNALS, ANATOMY, BRAIN, EAR, EMISSION, FLIGHT, SIMULATION, IMAGES, INTERFERENCE, PATTERNS, PERCEPTION, RESPONSE, SIGNALS, STRUCTURES, TARGETS

IDENTIFIERS U: D651102F WUAFUSR2917A4

ABSTRACT: U: This report contains a summary of significant accomplishments and progress during the reporting period. Programs to calculate pure crystal and alloy band structures have been completed and now include all important components, e.g. long-range interactions, spin orbit interactions, and molecular CPA. The parameters that properly reproduce the band structures of light III-V compounds--GaP, InP, AlAs, GaAs, InAs, AlSb, GaSb, and InSb--have been selected and their band structures calculated. We are now prepared to run the band structures of the 14 three-component pseudo binary alloys of these materials. These calculations were undertaken to test our procedures on a comparatively simple, well characterized alloys system. The results agree with experiment and give satisfactory explanation of several features that were previously thought to be anomalous. It is clear that the general trends of the data and theory agree.

DESCRIPTORS: U: SEMICONDUCTORS, BAND THEORY OF SOLIDS, SILICON ALLOYS, GERMANIUM ALLOYS, BINARY ALLOYS, CRYSTALS, ENGINEERING, INTERACTIONS, PATTERNS, PURITY, MOLECULAR ORBITALS, SPIN STATES, GALLIUM ARSENIDES, GALLIUM PHOSPHIDES, GALLIUM ANTIMONIDES, INDIUM ANTIMONIDES, INDIUM PHOSPHIDES, ALUMINUM ARSENIDES, ELECTRONIC SWITCHING, HIGH RATE

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NATIONAL ACADEMY OF SCIENCES NATIONAL RESEARCH COUNCIL
WASHINGTON DC

U Partial Support of Board on Atmospheric Sciences and Climate

DESCRIPTIVE NOTE Final report 1 Dec 84-30 Nov 85

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PERSONAL AFFAIRS Perry Jones

CONTRACT N° AFOSR 84-0002

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THE UNIVERSITY OF CHICAGO

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MANAGEMENT, ENVIRONMENT, ATMOSPHERES, ATMOSPHERIC
CHEMISTRY, EARTH PLANET, ECONOMICS, GLOBAL, PHYSICAL
PROPERTIES, SOLAR SCIENCES, SOLAR SYSTEM, WEATHER
MODIFICATION, SOLAR ACTIVITY, CORRELATION TECHNIQUES
ECOLOGICAL

IDENTIFIERS: World climate program GAPP Global
Atmospheric Research Project FEB102F WUAFOSP231061

AD A172 099 20-6
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PENNSYLVANIA STATE UNIV UNIVERSITY PARK DEPT OF
ELECTRICAL ENGINEERING

U Studies of Optical Wave Front Conjugation and Imaging
Properties of Nematic Liquid Crystal Films

DESCRIPTIVE NOTE Annual rept 15 Sep 84 14 Sep 85

JUN 86 49P

PERSONAL AUTHORS Khoo, Iam Choon

CONTRACT NO AFOSR 84-0375

PROJECT NO 2305

TASK NO 84

MONITOR AFOSR
TR 85-0696

UNCLASSIFIED REPORT

ABSTRACT: Optical nonlinearities of liquid crystals
owing to laser induced molecular reorientation or laser
induced thermal index change were studied in the context
of optical wave mixings and real time imagings. The basic
mechanisms and the dynamics of the nonlinearities were
studied in details in theories, and in experiments using
lasers of various time scales and temporal
characteristics. Quantitative documentation of nanosecond
laser induced thermal grating was performed for the first
time, and further established the optical imaging and
switching capabilities of nematic liquid crystal film.
The conversion of infra-red images to visible images via
real time optical wave mixing process was also
demonstrated. The capability of optical four wave mixing
to generate amplified reflection and self oscillation in
nematic liquid crystal film was also demonstrated for the
first time. Such a process will be useful for image
processing as well as laser oscillator adaptive optics
applications. In this period, new optical intensity
switching effects using the transverse optical
nonlinearity were also experimentally demonstrated that
will find applications in optical switching and power
self limiting devices.

DESCRIPTORS: U GRATINGS, OPTICAL, NONLINEAR SYSTEMS

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UTIC REPORT BIBLIOGRAPHY

SEARCH CONTROL NO EVN54B

AD A172 039 CONTINUED

AD A172 088 20.11 11/4

DOCUMENTS DYNAMICS FILMS IMAGE PROCESSING IMAGES
INFRARED IMAGES LASERS LIMITATIONS LIQUID CRYSTALS
MIXING OPTICAL IMAGES OPTICAL PROPERTIES OPTICAL
SWITCHING OSCILLATION POWER REAL TIME SCALE
SWITCHING THERMAL PROPERTIES TIME TRANSVERSE VISIBLE
SPECTRA WAVES

TECHNION - ISRAEL INST OF TECH HAIFA MATERIAL MECHANICS
L/R

(U) Thermomechanical Effects in Inelastic Materials and
Structures.

DESCRIPTIVE NOTE. Annual Scientific Rpt 1 Jan 84-31 May
85

IDENTIFIERS U PE51102F UNAFCSRZ 0584

JUN 85 11P

PERSONAL AUTHORS Fedrier Sol R

CONTRACT NO AFOSR-84-0042

PROJECT NO 2307

TASK N° B1

MONITOR AFOSR
TR-36 0887

UNCLASSIFIED REPORT

ABSTRACT (U) The following topics were studied:
generalization of a set of constitutive equations to
include thermal dependence of viscoplastic flow and
thermal recovery of hardening; determination of the
effective thermoelastic viscoplastic properties of metal
matrix composites; including the influence of residual
thermal stresses; and the generalization of the
constitutive equations to the case of large deformations.
Publications based on the research program are listed.

DESCRIPTORS U THERMOMECHANICAL VISCOPLASTIC
PROPERTIES THERMOELASTICITY METAL MATRIX COMPOSITES
COMPOSITE MATERIALS THERMAL STRESSES PLASTIC
DEFORMATION ABSTRACTS

IDENTIFIER U PE51102F UNAFCSRZ 0584

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AD A172 083 SEARCH CONTROL NO EVN54B

AD A172 083

AD A172 079 7/4

CITY COLL NEW YORK

COLUMBIA UNIV NEW YORK DEPT OF CHEMISTRY

(U) Identifying Coefficients in the Spectral Representation for First Passage Times

(U) Studies of Liquid Surfaces by Second Harmonic Generation

DESCRIPTIVE NOTE Technical rept

DESCRIPTIVE NOTE Rept. for 1984-1985

MAY 86 13P

86 4P

PERSONAL AUTHORS Brown, Mark Shao Yi Shi

PERSONAL AUTHORS Hicks, J. M.; Kemnitz, K.; Eissenthal, K. B.; Heinz, T. F.

REPORT NO CUNY-MB84-02 TR 84-02 AFOSR

CONTRACT NO AFOSR-84-0013

PROJECT NO AFOSR 84-0015

TASK NO 2304

TASK NO B2

MONITOR AFOSR

MONITOR AFOSR

TR 86-0779

TR-86-0755

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

ABSTRACT (U) The spectral approach to first passage time distributions for Markov processes requires knowledge of the eigenvalues and eigenvectors of the infinitesimal generator matrix. We demonstrate that in many cases knowledge of the eigenvalues alone is sufficient to compute the first passage time distribution

SUPPLEMENTARY NOTE Pub. in Jnl. of Physical Chemistry, v90 n4 p560 562 1986

ABSTRACT (U) Information on the orientation and relative composition of solute molecules at the surface of a liquid solution has been obtained by the technique of second harmonic generation. In an aqueous phenol solution, the phenol molecules at the vapor/solution interface are found to be oriented with their long axes tilted 50 degs from the surface normal. The orientation is found to be insensitive to the concentration of the phenol solution. A comparison with surface concentration information obtained from surface tension data is made.

DESCRIPTORS (U) MARKOV PROCESSES; EIGENVALUES; COEFFICIENTS; MATRICES; MATHEMATICS; SPECTRUM ANALYSIS

IDENTIFIERS (U) first passage time; Birth and death processes; Spectral representation; PEG1102F; WUAFOSR2304A5

DESCRIPTORS (U) SURFACE CHEMISTRY; SURFACE ACTIVE SUBSTANCES; SOLUTES; PHENOLS; HARMONIC GENERATORS; DYE LASERS; POLARIZATION; MOLECULES; CHEMICAL COMPOSITION; ORIENTATION (DICTION); INTERFACIAL TENSION; VAPORS; SOLUTIONS; MIXTURES

IDENTIFIERS (U) WUAFOSR2303B2; PEG1102F

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AD A172 079

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| AD-A172 077 | 7.4 | 7'3 |
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AD A172 077 7.4 7'3
COLUMBIA UNIV NEW YORK DEPT OF CHEMISTRY
U: Studies of the Chemical Intermediate Diphenylcarbene:
Inter-system Crossing, Solvent Effects on Dynamics,
Spin State Selective Chemistry, Photochemistry of the
Excited Triplet State.

GEORGIA UNIV ATHENS DEPT OF CHEMISTRY

COLUMBIA UNIV NEW YORK DEPT OF CHEMISTRY

10. Synthesis of Heterobimetallic Complexes from Carbonyl Complexes of β -disubstituted Propylamine Phosphine

DESCRIPTIVE ARTICLES JOURNAL ARTICLES

53 49

84 24P

PERSONAL AUTHORS
FIGURE B FOUR + F M

PERSONAL AUTHORS: Sitzmann, E. V., Eisenthal, F. B.

CONTRACT NO AFOSR 84 0050

CONTRACT NO AFOSR-84-0013

PROJECT NO. 2103

PROJECT NO 2303

TASK NO 82

| TASK NO | 32 |
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TR 86-0749

UNCLASSIFIED REPORT

UNCLASSIFIED PORT

SUPPLEMENTARY NOTE Pub in Inorganic Chemistry, v24
p3094 1995 1995

SUPPLEMENTARY NOTE Pub in Applications of Picosecond Spectroscopy to Chemistry, p41-63 1984

ABSTRACT: The preliminary observations described in this communication suggest that the selective cleavage of disubstituted amino groups from metal-phenyl complexes of $\text{Cr}(\text{NH}_2)_2\text{Ph}$ can lead ultimately to a wide variety of interesting heterometallic derivatives. These derivatives contain potentially reactive phenorus-bridged ligands in contrast to the numerous known diacylphosphine heterometallic complexes such as $\text{Ni}(\text{H}_2\text{P}(\text{Ph})_2)_2$, $\text{Co}(\text{P}(\text{Ph})_2)_2$, $\text{Fe}(\text{P}(\text{Ph})_2)_2$, $\text{Mn}(\text{H}_2\text{MCP}(\text{O})_2\text{Ph})_2$, $\text{Co}(\text{H}_2\text{MCP}(\text{O})_2\text{Ph})_2$, and $\text{Cr}(\text{Zr}(\text{H}_2\text{MCP}(\text{O})_2\text{Ph})_2)_2$.

ABSTRACT: (U) Because of their importance as reactive chemical intermediates, the novelty of their reactions and their unusual spectroscopy, carbenes have been and will continue to be the focus of intense study. The study of intramolecular relaxation processes of carbenes by time-resolving experiments provides important insight into the properties inherent to the carbene system. Employing picosecond spectroscopy, the time evolution of the rapidly interconverting singlet and triplet carbene states can be mapped out, thus allowing for determination of the spin equilibration rate between singlet and triplet states, which is of key importance in determining the nature and distribution of chemical products and providing an estimate of the energy separation between these states.

DESCRIPTIONS OF CRYSTALLINE COMPOUNDS, METAL COMPLEXES, ORGANOMETALLIC COMPOUNDS, HETEROCYCLIC COMPOUNDS, METAL METAL BONDS, METALS, PHOSPHINE, PROPYL, RADICALS, AMINES, IRON, CROMIUM, MOLYBDENUM, PHOTOLYSIS, CLEAVAGE, REPRINTS.

| DESCRIPTIONS | "U" | "C" CARBENES | PHENYL RADICALS |
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IDENTIFIERS

Triplet States Singlet States

10

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AD A172 077 CONTINUED

AD A172 076 7/4 7.5

Crossing WUAFOSR2303B2 PE61102F

COLUMBIA UNIV NEW YORK DEPT OF CHEMISTRY

- (U) Intermolecular Effects on Intersystem Crossing Studied on the Picosecond Time Scale: The Solvent Polarity Effect on the Rate of Singlet to Triplet Intersystem Crossing of Diphenylcarbene.

84 3P

PERSONAL AUTHORS: Sitzmann, E. V.; Langan, J.; Eisenthal, K. B.

CONTRACT NO. AFOSR-84-0013

PROJECT NO. 2303

TASK NO. B2

MONITOR: AFOSR
TR-86-0748

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of the American Chemical Society, v106 p1868-1869 1984.

ABSTRACT: (U) Intersystem crossing plays a critical role in defining the intramolecular dynamics of diphenylcarbene (DPC) and thereby directly affects its spin state dependent chemistry. In the studies reported here the diphenylcarbene is generated by photoexcitation of diphenyldiazomethane in the ultraviolet, which yields DPC upon loss of nitrogen from the excited singlet state of the diazo compound. Once formed, DPC will undergo energy relaxation via intersystem crossing to produce the ground triplet.

DESCRIPTORS: (U) *CARBENES, *PHENYL RADICALS, *MOLECULE MOLECULE INTERACTIONS, *PHOTOCHEMICAL REACTIONS, TRANSPORT PROPERTIES, DYNAMICS, SPIN STATES, EXCITATION, RELAXATION, GROUND STATE, SOLVENTS, POLARITY, REPRINTS

IDENTIFIERS (U) Crossing, Singlet States, Triplet States, WUAFOSR2303B2, PE61102F

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AD-A172 070 6/1 6-15

NAVAL ORDNANCE TEST STATION CHINA LAKE CALIF MICHELSON
LABS

ISTITUTO DI RICERCHE FARMACOLOGICHE MARIO NEGRI MILAN
(ITALY)

(U) Exoatmospheric Applications of Obisquants and Smokes
DESCRIPTIVE NOTE Final rept

(U) Anticholinesterase Effects on Number and Function of
Brain Muscarinic Receptors and Central Cholinergic
Activity: Drug Intervention

SEP 85 99P

DESCRIPTIVE NOTE Final rept 31 Dec 84 30 Nov 85

PERSONAL AUTHORS Wilhelm H E

APR 86 60P

CONTRACT NO AFOSR 85 0011

PERSONAL AUTHORS Consolo Silvana

PROJECT NO 2 06

CONTRACT NO AFOSR 85-0025

TASK NO C4

PROJECT NO 2312

MONITOR AFOSR

TASK NO A5

TP 35 0634

MONITOR AFOSR

TP 86-0624

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

ABSTRACT (U) Contents: Dissociation Association
Equilibrium of Magnetic Particle Chains in Homogeneous
Magnetic Fields; Diffusion and Coagulation of Magnetic
Dipole Particles in Inhomogeneous Magnetic Fields;
Statistical Distribution of Collective Electric Fields in
Charged Particle Gases; Covariant Electromagnetic Theory
for Inertial Frames with Substructure

ABSTRACT (U) The effects of acute and chronic
treatments with the organophosphorous cholinesterase
inhibitor DDVP, dichlorvos (O, O dimethyl 0-12 2-
dichlorovinyl) prostate, combined with drug treatments
were studied on rat brain regional cholinergic parameters
(acetylcholine content, choline content,
acetylcholinesterase, choline acetyltransferase, sodium
dependent high affinity choline uptake, muscarinic
receptor subtypes). Results show that the increase in
brain regional acetylcholine induced by DDVP can, to some
extent, be dissociated from the cholinesterase inhibitor
of the drug. DDVP appears to stimulate a positive
feedback mechanism to shut down cholinergic nerve
terminals and this is held to be at least partly
responsible for the increase in acetylcholine. This
results in an intraneural accumulations of the
cholinergic neurotransmitter. Drugs that possibly
interfere with the feedback may cause a shift in the
proportion of intraneural acetylcholine in favor of the
former, in cholinesterase poisoned rats. In rats treated
chronically with DDVP, AChE activity was reduced by more
than 70% in the striatum, hippocampus and cortex. At the
same time, ACh content in these regions was not altered.
Marked tolerance to the ACh accumulating action of DDVP

DESCRIPTORS (U) AEROSOLS; MAGNETIC MATERIALS; SMOKE
CONDENSATION; PARTICLES; MAGNETIC FIELDS; ELECTRIC FIELDS;
CHARGED PARTICLES

IDENTIFIERS (U) Progress; Inertial Frames;
Electromagnetic Waves; REF102F 4 0000, 1000

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SEARCH CONTROL NO EVN54B

AD-A172 070 CONTINUED

and cross tolerance to the increase produced by physostigmine were induced in the striatum but not in the hippocampus or cortex.

DESCRIPTORS: (U) CHOLINESTERASE INHIBITORS, ACETYLCHOLINE, BRAIN, CHEMORECEPTORS, MUSCARINE, NEUROCHEMISTRY, CHOLINES, ACETYLCHOLINESTERASE, HIPPOCAMPUS, ORGANIC PHOSPHORUS COMPOUNDS, NEUROCHEMICAL TRANSMISSION, CEREBRAL CORTEX, CHOLINERGIC NERVES, RATS, ITALY

IDENTIFIERS: (U) Anticholinesterase effects, Striatum, Dichlorvos, DDVP, PEG1102F, WUAFOSR2312A5

AD-A172 069 12/1 13/13

PENNSYLVANIA STATE UNIV UNIVERSITY PARK DEPT OF MATHEMATICS

(U) Stabilization and Control Problems in Structural Dynamics

DESCRIPTIVE NOTE: Annual rept 1 Sep 85-31 Mar 86.

MAY 86 6P

PERSONAL AUTHORS: Chen, Goong

CONTRACT NO. AFOSR-85-0253

PROJECT NO. 2304

TASK NO. A1

MONITOR: AFOSR
TR-86-0605

UNCLASSIFIED REPORT

ABSTRACT: (U) The completed research includes significant accomplishments on such problems as the stabilization and control of serially connected beams, the point actuators and sensors for second order systems, the boundary element numerical method for two dimensional linear quadratic elliptic problems, quasi-variational inequalities, analysis and design of dissipative joints in structures, a boundary element method based on Cauchy integrals for some linear quadratic elliptic problems, and the stabilization of nonlinear strings.

DESCRIPTORS: (U) PARTIAL DIFFERENTIAL EQUATIONS, STABILIZATION SYSTEMS, CONTROL SYSTEMS, OPTIMIZATION, ACTUATORS, STRUCTURAL ANALYSIS, DYNAMICS

IDENTIFIERS: (U) Structural dynamics, PEG1102F, WUAFOSR2304A1

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AD-A172 060 7/4 DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN54B
CHICAGO UNIV IL JAMES FRANCK INST AD-A172 060 CONTINUED
WUAFOSR230381

(U) A Scattering Resonance Description of Very Low Energy
Collision Induced Vibrational Relaxation.

SEP 85 14P

PERSONAL AUTHORS Gray, Stephen K.; Rice, Stuart A. ;

CONTRACT NO F49620-85-C-0003

PROJECT NO. 2303

TASK NO B1

MONITOR AFOSP
TR 86-0753

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE. Pub. in J. of Chemical Physics, v83
no p2318-2428 15 Sep 85

ABSTRACT (U) A study is reported of very low energy collision induced vibrational relaxation using an approximate resonant state formalism which relates the inelastic cross section to the properties of metastable states. A study of models loosely based on the He + I2(B3 pi sub 0 sub 0) system reveals that the combined effect of a low collision energy resonance and high initial diatomic vibrational excitation can lead to a large enhancement of the vibrational relaxation cross section. However, even in the absence of resonances the cross section for very low energies increases with decreasing energy. It is found that this effect increasingly enhances the contribution of a resonance to the cross section the closer the resonance is to zero collision energy. Because the density of resonances near zero collision energy is small, the collision dynamics near zero collision energy is very sensitive to the nature of the potential energy surface.

DESCRIPTORS (U) MOLECULAR VIBRATION; RESONANCE
SCATTERING; RELAXATION TIME; PARTICLE COLLISIONS; LOW
ENERGY; HELIUM; IODINE; CROSS SECTIONS; DIATOMIC
MOLECULES; REPRINTS

IDENTIFIERS (U) Vibrational relaxation, PFS1102F.

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BIBLIOGRAPHY

SEARCH CONTROL NO EVN540

AD A172 059 7 4 7 3

AD A172 058 7 4

COLUMBIA UNIV NEW YORK DEPT OF CHEMISTRY

FLORIDA UNIV GAINESVILLE DEPT OF CHEMISTRY

(U) Inverse Deuterium Isotope Effect in the Intersystem Crossing of Diphenylcarbene.

(U) Atomic Emission/Fluorescence Spectrometry with Second Derivative Wavelength Modulation and Its Application to Analysis of Copper Alloy.

DESCRIPTIVE NOTE Rept. for 1984-1985

FEB 86 5P

85 11P

PERSONAL AUTHORS: Langan, J. G.; Sitzmann, E. V.; Eisenthal, K. B.;

PERSONAL AUTHORS: Kurirai, O.; Davis, L.; Winefordner, J. D.

CONTRACT NO. AFOSR-84-0013

CONTRACT NO. F49620-84-C-0002

PROJECT NO. 2303

PROJECT NO. 2303

TASK NO. B2

TASK NO. A1

MONITOR: AFOSR

MONITOR: AFOSR

TR-86-0754

TR-86-0763

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Chemical Physics Letters, v124 n1 p59-62, 7 Feb 86.

SUPPLEMENTARY NOTE: Pub. in Spectroscopy Letters, v18 n10 p781-789 1985.

ABSTRACT: (U) The singlet-to-triplet intersystem crossing rate k sub ST of diphenylcarbene (DPC) is found to exhibit an inverse isotope effect in various solvents. An off-resonance coupling model between the initial singlet state and a sparse triplet vibronic manifold accounts for k sub ST showing both an inverse isotope effect in a given solvent as well as an inverse energy gap effect in a solvent series.

ABSTRACT: (U) Atomic emission and fluorescence signals were collected simultaneously with sinusoidal wavelength modulation and detection of the second harmonic mode. The system consisted of a continuum source, argon-separated air/acetylene flame and a wavelength-modulated monochromator. Limits of detection of several elements were measured. This method was applied to the analysis of a copper alloy and Co, Cu, Fe, Mn, Ni, Pb and Zn were successfully determined.

DESCRIPTORS: (U) *CARBENES, *PHENYL RADICALS, *DEUTERIUM, *ISOTIPE EFFECT, TRANSPORT PROPERTIES, SOLVENTS, RESONANCE, COUPLING INTERACTION, ELECTRONIC STATES, MOLECULAR VIBRATION, ENERGY GAPS, POLARITY, REPRINTS

DESCRIPTORS: (U) *ATOMIC SPECTROSCOPY, *EMISSION SPECTIOSCOPY, FLUORESCENCE, MODULATION, ZINC, COPPER ALLOY, COBALT, COPPER, IRON, MANGANESE, LEAD, METAL, REPRINTS

IDENTIFIERS: (U) Crossing, Dibenzocycloheptadienylidene, Isooctane, Singlet states, Triplet states, PE61102F, WUAFOSR230392

IDENTIFIERS: (U) Wavelength modulation, Atomic emission, Atomic fluorescence, PE61102F, WUAFOSR2303A1

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SEARCH CONTROL NO. EVN54B

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MASSACHUSETTS INST OF TECH CAMBRIDGE RESEARCH LAB OF ELECTRONICS

TEXAS UNIV AT AUSTIN DEPT OF PHYSICS

(U) Single Crystal Films of Semiconductors on Amorphous Substrates Via a Low Temperature Graphoepitaxy.

(U) High Resolution Electron Energy Loss Studies of Chemisorbed Species on Aluminum and Titanium.

DESCRIPTIVE NOTE Annual technical rept. 1 Mar 85-28 feb 86.

DESCRIPTIVE NOTE Final rept. 1 Apr 83-31 Mar 86.

APR 86 18P

APR 86 14P

PERSONAL AUTHORS Smith, Harry I.

PERSONAL AUTHORS Erskine, J L

CONTRACT NO AFOSR 85 0154

CONTRACT NO AFOSR 83-0131

PROJECT NO 2406

PROJECT NO 2303

TASK NO B2

TASK NO A2

MONITOR AFOSR
TR 86-0751

MONITOR AFOSR
TR-86-0750

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

ABSTRACT (U) The objective of this program is to carry out basic research in order to acquire fundamental understanding which will permit the development of a general low temperature process for obtaining oriented, defect free single crystal semiconductor films on amorphous substrates.

ABSTRACT (U) This project utilized high resolution electron energy loss spectroscopy to investigate chemical processes at metal surfaces. The research during the grant period being reported has been highly successful in advancing the state of the art in instrumentation, by developing lattice dynamical techniques for calculating the vibrational properties of surfaces and demonstrating the application of these techniques to structure determination, by exploring the application of vibrational spectroscopy to novel underlayer formation occurring as a consequence of chemisorption at Al and Ti surfaces, by examining some of the fundamental issues related to scattering mechanisms and selection rules that govern them. Our experiments have also uncovered an interesting relationship between the surface vibrational properties and the order-disorder phase transformation of W-100.

DESCRIPTORS (U) SEMICONDUCTING FILMS; SINGLE CRYSTALS; SUBSTRATES; AMORPHOUS MATERIALS; GERMANIUM; SURFACE ENERGY; ION BOMBARDMENT; GERMANIUM; SILICON; DOPING; PHOSPHORUS; ARSENIC; BORON; ZONE REFINING; RECRYSTALLIZATION

IDENTIFIERS (U) SEDG6 Surface Energy Driven Grain Growth; FERM1 ENERGY PER1102F; WUAF05R2305B2

DESCRIPTORS (U) SURFACE CHEMISTRY; ELECTRON SPECTROSCOPY; MOLECULAR VIBRATION; CHEMISORPTION; PHONONS; LATTICE DYNAMICS; ORDER DISORDER TRANSFORMATIONS; TUNGSTEN; ALUMINUM; TITANIUM; VIBRATIONAL SPECTRA; NICKEL; RESEARCH MANAGEMENT

IDENTIFIERS (U) Vibrational spectroscopy; EELS Electron Energy Loss Spectroscopy; PER1102F; WUAF05R2303A2

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AD-A172 052

SRI INTERNATIONAL MENLO PARK CA

U) Semiconductor Engineering for High Speed Devices

DESCRIPTIVE NOTE Quarterly Rept no 3 1 Jan 31 Mar 86

MAR 86 6P

PERSONAL AUTHORS Sher A Krishnamurthy, S Chen, A B

CONTRACT NO F49620 85 C 0103 ARPA Order-5396

PROJECT NO 0053

TASK NO 96

MONITOR AFOSR
TR 86 0799

UNCLASSIFIED REPORT

ABSTRACT: (U) This report summarizes accomplishments during the 3rd Quarterly reporting period. Our aim has been to improve the accuracy of the model described in the previous report as to predict v-E behavior in various alloys. The two valley single electron temperature model was further generalized to calculate v-E characteristics without assuming a constant energy relaxation time. As the electric field is increased, the average energy of electrons increases. Electrons lose some energy to the lattice. The rate of energy loss is calculated by assuming that energy transfer takes place only through longitudinal optical phonons. Based on our preliminary calculations we conclude that alloys with constituent materials that exhibit an indirect gap are not suited for high speed devices. However, there are some interesting features to their behavior, e.g. a large negative temperature coefficient of the mobility which could prove to be useful in temperature sensors.

DESCRIPTORS: (U) SEMICONDUCTORS, ALLOYS, TEMPERATURE MEASURING INSTRUMENTS, ELECTRONS, INDIUM PHOSPHIDES, PHONONS, ENERGY TRANSFER, MOBILITY, GALLIUM PHOSPHIDES, ANTIMONIDES

IDENTIFIERS: (U) Speeds, High, Lattices, Crystals, Optical phonons, Gallium indium, Indium Arsenides

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SEARCH CONTROL NO EVN54B

AD-A172 052 8P

CALIFORNIA UNIV BERKELEY ELECTRONICS RESEARCH LAB

U) QUEL as a Data Type

DEC 83 25P

PERSONAL AUTHORS Stonebraker, Michael, Anderson, Erika, Hanson, Eric, Ribenstein, Brad

REPORT NO. UCB/ERL/M83/73

CONTRACT NO. AFOSR-83-0254

PROJECT NO. 2304

TASK NO. A2

MONITOR: AFOSR
TR-86-0781

UNCLASSIFIED REPORT

ABSTRACT: (U) This paper explores the use of commands in a query language as an abstract data type (ADT) in data management systems. Basically, an ADT facility allows new data types, such as polygons, lines, money, time, arrays, of floating point numbers, bit vectors, etc. to supplement the built-in data types in a data base system. In this paper we demonstrate the power of adding a data type corresponding to commands in a query language. We also propose three extensions to the query language QUEL to enhance its power in this augmented environment. (Author)

DESCRIPTORS: (U) COMPUTER PROGRAMMING, INSTRUCTIONS, DATA BASES, DATA MANAGEMENT, INTERROGATION, COMPUTER OPERATORS, FLOATING POINT OPERATION, POLYGONS, LINES, GEOMETRY, MONEY, TIME, ARRAYS

IDENTIFIERS: (U) ADT, Abstract Data Type, Data base management systems, QUEL programming language, PE61102F, WUAFOSR2304A2

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AD A172 047 7:3

NORTHWESTERN UNIV EVANSTON IL DEPT OF CHEMISTRY

AI'RON UNIV OH INST OF POLYMER SCIENCE

(iii) Pulsed Laser Processes on Surfaces: Formation of Structural Defects, Measurement of Surface Diffusion and Direct Detection of Reaction Intermediates

(U) Time-Dependent Response and Fracture of Cross-Linked Polymer.

DESCRIPTIVE NOTE - Final rept 1 Jul 31 0000 85

DESCRIPTIVE NOTE Final rept. Jan 83-Dec 86.

55 38 833

DEC 86 36P

PERSONAL AU: HOPS. Stair, Peter O.

PERSONAL AUTHORS: Kelley, F. N.; Morton, M.; Plazek, D.

CONTRACT NO AFOSR 84 Q199

CONTRACT NO F49620-83-C-0032

PROJECT NO 2 03

PROJECT NO 2303

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TR 86-0695

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

ABSTRACT: The Research Projects Making Use of the Above Equipment: The Role of Surface Structural Defects in Surface Chemistry: The Formation and Surface Chemistry of Laser-Induced Defects: The Nature of Catalytically Active Surfaces and The Mechanisms of Life and Film Breakdown.

ABSTRACT: (U) This study was concerned with the synthesis, preparation and characterization of cross linked polymers, and their time dependent fracture behavior. Emphasis was given to well-defined polymer network structures of two types: (1) end linked terminal functional liquid polymers having nearly uniform or deliberately distributed initial chain lengths and (2) model glassy networks in which the network topology was varied with respect to chain length per crosslink and network defects such as dangling ends and solvate fraction. Also, a model rubber toughened resin was developed by dispersing well characterized rubber particles, made separately from the matrix, into an epoxy matrix resin. Thermally stable poly(n-butyl acrylate) based particles, crosslinked and functionalized, had their size and size distribution controlled by the polymerization method. Differences were observed in the fracture energies of the individual matrix resins containing different rubber particle sizes and particle reactivity. The model composite fracture energies displayed a linear relationship with rubber particle size in the theoretical model for rubber toughening by Kuntz-Baker et al. was examined but this model was shown to be inadequate in predicting the composite fracture energy dependence on constituent properties, as well as in predicting the correct functional form.

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DESCRIPTORS POLYMERS, ACRYLATES, POLYMER RESINS, ISOPRENE, POLYMER CHEMISTRY, CRYSTALLINE CHEMISTRY, LIQUIDS, HYDROLYTIC RADICALS, REPRINTS

IDENTIFIERS POLYMER RESINS, PE61102F, WUAFOSR55260A3

OHIO STATE UNIV RESEARCH FOUNDATION COLUMBUS

U Strength and Structure of Gal-xIn-yAs Alloys

DESCRIPTIVE NOTE Quarterly rept no 1, 1 Oct 31 Dec 85

JAN 86 7P

PERSONAL AUTHORS Faber, Katherine T, Hirth, John P

CONTRACT NO F49620 85 C 0129 ARPA Order-5526

PROJECT NO 5526

TASK NO 00

MONITOR AFOSR TR 85 0796

UNCLASSIFIED REPORT

ABSTRACT U Substantial solid solution strengthening of GaAs by In acting as InAs₄ units has recently been predicted. This strengthening could account for the reduction of dislocation density in GaAs single crystals grown from the melt. Our objective is to investigate the mechanism by which strengthening is produced by In additions to GaAs. In the first stages of this study experimental measurements of hardness as a function of temperature and In content are reported.

DESCRIPTORS U GALLIUM ARSENIDES, INDIUM COMPOUNDS, CRYSTAL GROWTH, SOLID SOLUTIONS, SINGLE CRYSTALS, CRYSTAL STRUCTURE, DISLOCATIONS, CRYSTAL DEFECTS, HARDNESS, ARSENIDES, ADDITIVES

IDENTIFIERS U Gallium Indium Arsenides, LPN OSURF 764977 717536 WUAFOSR55260A3 PE61102F

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AD A172 038

PITTSBURGH, PA. 15261-1700. HANSEN, MA. J. W. 1971.

U. Multivariate nonparametric analysis. J. W. Hansen, MA. J. W. 1971.

DESCRIPTIVE NOTE. Summary of report.

JAN 85 185

PERSONAL AUTHORS: Block, Henry W.; Savits, Thomas H.

REPORT NO. TR 85-11

CONTRACT NO. N00014-84-K-0084 AFOSR 84-0119

PROJECT NO. 2304

TASK NO. A5

MONITOR: AFOSR
TR 85-0794

UNCLASSIFIED REPORT

ABSTRACT: U. Multivariate nonparametric classes have been proposed as early as 1970. For background and references as well as some discussion of univariate classes with multivariate generalizations in mind see Block and Savits (1981). This paper describes only a few fundamental developments prior to 1981 and focuses on developments since then. The coverage will not be exhaustive but will emphasize the topics which the authors feel are most important. Section 2 deals with multivariate nonparametric classes. In section 2.1 multivariate IFPA is discussed with emphasis on the Block and Savits (1980) class. Multivariate NBU is covered in Section 2.2 and multivariate IFR are considered in Section 2.4 and in Section 2.5 the topics of multivariate DMPL and HNBUE are touched on.

DESCRIPTORS: U. MULTIVARIATE ANALYSIS. NONPARAMETRIC STATISTICS. RELIABILITY SURVEYS. INEQUALITIES.

IDENTIFIERS: U. IFR Increasing Failure Rate. Univariate analysis. WUAFOSR2304A5. PE61102F

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PITTSBURGH, PA. 15261-1700. HANSEN, MA. J. W. 1971.

U. Multivariate nonparametric analysis. J. W. Hansen, MA. J. W. 1971.

TEXAS UNIV. AT AUSTIN. DEPT. OF ELECTRICAL AND COMPUTER ENGINEERING.

U. A well posedness property of a class of variational problems and its application to nonlinear estimation.

DESCRIPTIVE NOTE. Rept. for 1 Oct 80-31 Oct 85

APR 85 8P

PERSONAL AUTHORS: Morrison, John H.; Wise, Gary L.

CONTRACT NO. AFOSR-81-0047 AFOSR-86-0026

PROJECT NO. 2304

TASK NO. A5

MONITOR: AFOSR
TR 86-0794

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE. Presented at the Annual Allerton Conference on Communication Control, and Computing (23rd), Monticello, IL, 2-4 Oct 85.

ABSTRACT: U. In this paper we consider a class of nonlinear estimators that are the solutions to a certain variational problem. These estimators generalize the concept of conditional expectation. We investigate their continuity and convergence properties. Author

DESCRIPTORS: U. ESTIMATES. CONVERGENCE. MEAN. NONLINEAR SYSTEMS. LEAST SQUARES METHOD. APPROXIMATION. MATHEMATICS. CONTINUITY. ERROR ANALYSIS. OPERATORS. MATHEMATICS.

IDENTIFIERS: U. SPACES. ORLICZ SPACES. CONDITIONAL EXPECTATION. ESTIMATION. NONLINEAR ESTIMATION. HILBERT SPACE. PROJECTIONS. NORM. ESTIMATOR CONVERGENCE. NONEXPANSIVE OPERATIONS. THEOREM. PROJECTION. SUBSPACES. CLOSED. LINEAR OPERATORS. WUAFOSR2304A5. PE61102F

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OTIC REPORT BIBLIOGRAPHY

SEARCH CONTROL NO. EVN54B

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CALIFORNIA UNIV DAVIS INTERCOLLEGE DIV OF STATISTICS

FLORIDA STATE UNIV TALLAHASSEE DEPT OF STATISTICS

(U) Hazard Rate Estimation for Censored Data via Strong Representation of the Kaplan Meier Estimator

(U) Exact Significance Testing with Biased Coin Randomization

DESCRIPTIVE NOTE Technical rept

DESCRIPTIVE NOTE Technical rept

AUG 85 15P

JUN 85 19P

PERSONAL AUTHORS LOUIS H JACKSON RAYMOND J

PERSONAL AUTHORS Hollander Myles (Pena Edsel

REPORT NO GOD STATISTICS-64

REPORT NO FSU STATISTICS-M28 TR 86-189 AFOSR

CONTRACT NO AFOSR 15-0268

CONTRACT NO F49620 85-C-0017

PROJECT NO 14

PROJECT NO 2304

TASK NO AF

TASK NO A5

MONITOR AFOSR

MONITOR AFOSR

TR 85 0694

TR 86 0603

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

ABSTRACT (U) This document studies the estimation of a hazard rate function based on censored data by the kernel smoothing method. Our technique is facilitated by a robust method of kernel smoothing which establishes a strong uniform approximation of the kernel Meier estimator by the kernel of a degree 2 polynomial. The variables are discrete and ordered, and the kernel is derived as well as the mean squared error of the kernel smoothing. The kernel is obtained by a method of functional analysis which is compared with the usual method employed by Tanner and Wong (1982). Author

DESCRIPTORS (U) ESTIMATES; HAZARD RATE ANALYSIS; HAZARDS; APPROXIMATION; MATHEMATICS; KERNEL FUNCTIONS; RANDOM VARIABLES; ASYMPTOTIC NORMALITY; CONSISTENCY

IDENTIFIERS (U) Kaplan Meier estimator; Hazard rate smoothing in truncations; Censored data; WJAF000504A5 PE61102F

ABSTRACT (U) For a clinical trial where two treatments have been assigned sequentially to patients via Fisher's (1971) biased coin design, a recursion procedure is derived for obtaining the exact randomization distribution of a class of test statistics. This enables one to perform exact significance tests of the hypothesis of no treatment difference. A randomization distribution of the statistic is conditional on the imbalance of the treatment allocation. It is illustrated that if the analysis is performed as if complete randomization was used, conservative and antic conservative errors can be incurred. The applicability of the test to censored data is also discussed. Author

DESCRIPTORS (U) STATISTICAL TESTS; CLINICAL MEDICINE; STATISTICAL DISTRIBUTIONS; PROBABILITY; PATIENTS; MARKOV PROCESSES; COMPUTATIONS; FORTRAN; COMPUTERIZED SIMULATION; RANDOM VARIABLES; BIAS

IDENTIFIERS (U) Significance tests; Biased coin design; WJAF000504A5 PE61102F

AD A172 031

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SEARCH CONTROL NO. EVN548

AD-A172 028 4/2

FLORIDA STATE UNIV. TALLAHASSEE DEPT OF STATISTICS

U. Supports of BIB: Balanced Incomplete Block Designs
An Algebraic and Graphical Study

DESCRIPTIVE NOTE Technical report

MAK 86 50P

PERSONAL AUTHORS Foody W. Hedayat A

REPORT NO. TP 86 02

CONTRACT NO. AFOSR 85 0320

PROJECT NO. 2004

TASK NO. A5

MONITOR AFOSR
TP 86 0625

UNCLASSIFIED REPORT

ABSTRACT U. The structure and the size of the supports of balanced incomplete block (BIB) designs are explored. The concepts of fundamental BIB designs is introduced and its usefulness in can be reduced via a technique call trade on a design. A new graphical method of studying the supports of BIB designs with blocks of size three is introduced. Several useful results are obtained via this graphical method. In particular, it is shown that no BIB design with seven varieties in blocks of size three can be built based on sixteen distinct blocks. Contributions made here have immediate applications in controlled experimental designs and survey samplings

DESCRIPTORS U. EXPERIMENTAL DESIGN, GRAPHICS, OPTIMIZATION, MATHEMATICAL PROGRAMMING, GRAPHS, SET THEORY

IDENTIFIERS U. BIB: Balanced Incomplete Block
PE61102F. WIAFOSR2304A5

AD-A172 028

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EVN548

COLORADO STATE UNIV. FORT COLLINS DEPT OF ATMOSPHERIC SCIENCE

U. The Atmospheric Heat Budget Over the Western Part of the Tibetan Plateau During MONEX, 1979.

NOV 85 16P

PERSONAL AUTHORS Zhigiang Feng; Reiter, Elmar R.; Longyun, Chen;

CONTRACT NO. AFOSR-82-0162

PROJECT NO. 2310

TASK NO. A1

MONITOR AFOSR
TR-86-0740

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub. in Advances in Atmospheric Sciences, v2 n4 p455-468 Nov 85.

ABSTRACT: U. The atmospheric heat source strength over western Tibet has been computed for the period beginning with the last ten days in May, 1979 and extending through August, 1979. Our results show a significantly smaller heat source than that obtained by other authors. The discrepancy is mainly due to adjustments in the drag coefficient suggested by observations and numerical modeling experiments. In the north, sensible heating, SH, provides the dominant input into the atmospheric heat source, whereas in the southern part latent heat, LP, offers a significant contribution after the start of the rainy season. Detailed heat budget calculations were also carried out over limited regions of southwestern Tibet which had good station coverage. During periods with area-averaged rainfall <1 mm/day an atmospheric heat source maximum was located over southwestern Tibet near the 500 hPa level, while a heat sink dominated the upper troposphere in a layer of subsidence. When rainfall exceeded 4 mm/day, ascending motions and heat sources prevailed throughout the troposphere with maxima near 400 hPa. Time series analyses of the heat source components show that the total atmospheric heat source is strongly modulated by the release of latent heat. Atmospheric

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radiational cooling reveals a phase shift in its relation with precipitation. During the first part of the observation period a correlation of that cooling exists mainly with the net radiation at the top of the atmosphere during the last part with the net radiation at the ground.

DESCRIPTORS: (U) *ATMOSPHERE *HEAT *MEASUREMENTS *CHINA *WEST DIRECTION *SOURCES *VARIATIONS *STATISTICAL *ANALYSIS. REPRINTS

IDENTIFIERS: (U) *Heat budget *WUAT/P23-001 *PE51102F

PRINCETON UNIV NJ DEPT OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

(U) A Class of Low-Noise Computationally Efficient Recursive Digital Filters with Applications to Sampling Rate Alterations.

FEB 85 10P

PERSONAL AUTHORS Ansari, Rashid ; Liu, Bede ;

CONTRACT NO. AFOSR-81-0186

PROJECT NO. 2304

TASK NO. A6

MONITOR AFOSR
TR 86 0715

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub in IEEE Transactions on Acoustics, Speech, and Signal Processing, VASSF 33 nt p90-97 Feb 85

ABSTRACT: (U) A new structure for multiband recursive digital filters is proposed for meeting low pass filter specifications. It uses fewer multiplications than conventional elliptic filter realizations. An approximation to the minimax solution is obtained numerically by minimizing the P error norm. The analytic optimum for odd order low pass filters of this new class turns out to be the elliptic filter itself but in a new configuration. Analytic solution is also obtained for filters used in decimation interpolation by a factor of 2. There are several realizations for this new structure the choice of which depends on the location of poles and zeros. Some selected realizations always have low roundoff noise and small limit cycle bounds.

DESCRIPTORS: (U) *DIGITAL FILTERS *RECURSIVE FILTERS *LOW PASS FILTERS *TRANSFER FUNCTIONS *SAMPLING NOISE *ADDITION *ERRORS *MULTIPLICATION *SPECIFICATIONS *FAIR PRODUCTION *CIRCLES *INTERPOLATION *HIGH PASS FILTERS *BANDPASS FILTERS. REPRINTS

IDENTIFIERS: (U) *Filter architecture *Multiband

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filters, Elliptic filters, Odd orders, Pole locations,
Zero location, lattice filters, Computation reduction,
Unit circles, Formulation, Cycle bounds,
Efficiency Computational, Rounding noise, Butterworth
filters, Pairing Pole zero, PE61102F WJAFUSR2304A6

PRINCETON UNIV NJ DEPT OF ELECTRICAL ENGINEERING AND
COMPUTER SCIENCE

(U) A Robust Conjugate Directions Method for Solving
Linear Systems.

OCT 84 10P

PERSONAL AUTHORS: Sullivan, Barry J.; Liu, Bede ;

CONTRACT NO AFOSR-81-0186

PROJECT NO 2304

TASK NO A6

MONITOR: AFOSR
TR-86-0717

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in the Proceedings of the
Annual Allerton Conference on Communication, Control, and
Computers (22nd) p450-458 Oct 84.

ABSTRACT: (U) The method of conjugate gradients is the
most popular of several conjugate directions methods. In
this paper, a second conjugate directions method, known
as A-minimal iterations, is examined. It differs from
conjugate gradients primarily in that the direction
vectors are computed in a manner independent of the
observations. When the observations are the dominant
noise source in the problem, this difference makes A-
minimal iterations the more robust of the two methods.
Examples from the area of signal extrapolation support
this assertion. (Author)

DESCRIPTORS: (U) Iterations, LINEAR SYSTEMS, PROBLEM
SOLVING, SIGNALS, EXTRAPOLATION, REPRINTS

IDENTIFIERS: (U) Robust procedures, PE61102F
WJAFOSR2304A6

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SEARCH CONTROL NO. EVN54B

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AD-A172 022 20/5 20/6

PENNSYLVANIA UNIV PHILADELPHIA DEPT OF PHYSICS

ILLINOIS UNIV AT URBANA CHARGED PARTICLE RESEARCH LAB

(U) Nonlinear Optical Processes in Organic and Polymeric Crystals and Films

(U) Luminescent Characteristics Study of Mather-Type Dense Plasma Focus and Applications to Short-Wavelength Optical Pumping.

DESCRIPTIVE NOTE: Final rept for period ending 14 May 85.

APR 86 8P

DESCRIPTIVE NOTE: Final technical rept. 1 May 84-30 Sep 85.

PERSONAL AUTHORS Garito, A. F.

JUN 86 37P

CONTRACT NO AFOSR 84 0135

PERSONAL AUTHORS Kim, Kyekyoon K.

PROJECT NO 2303

REPORT NO CPRL-2-86, UIIU-ENG-86-2551

TASK NO A3

CONTRACT NO AFOSR-84-0138

MONITOR AFOSR TR 85 0606

PROJECT NO 2301

TASK NO K1

UNCLASSIFIED REPORT

MONITOR AFOSR TR-86-0688

UNCLASSIFIED REPORT

ABSTRACT (U) Physical studies have demonstrated that organic and polymer structures possess unusually large, ultrafast second and third order nonlinear optical properties, in a large number of material structures, phases, and states that include organic crystals, monomolecular films, polymer structures, liquid crystals, and liquid crystal polymers. For two such polymer systems, PBI and PBT, third harmonic generation measurements show that they possess large non-resonant third order optical susceptibilities whose origin resides in ultrafast, lossless excitations of highly charge correlated pi-electron states. Multilayer thin films have been fabricated as organic superlattices, by the Langmuir-Blodgett technique to produce finite sequences of from one to several hundred molecular monolayers of different amphiphilic molecules. When one of the molecules contains a pi electron system the macroscopic nonlinear optical properties of such thin films can be controlled.

DESCRIPTORS (U) *POLYMERS, *LIQUID CRYSTALS, *ORGANIC COMPOUNDS, *THIN FILMS, EXCITATION, ELECTRONIC STATES, PHONONS, VIBRATION, OPTICAL PROPERTIES, HARMONICS, MEASUREMENT

UNCLASSIFIED REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN54B

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EVN54B

ABSTRACT (U) A Mather type dense plasma focus (MDPF) system was designed, built, and tested specifically to study its luminescent characteristics and to assess its potential as a new light source of high energy, short wavelength lasers. The luminescence study of MDPF showed that the conversion efficiency from the electrical input to the optical output energies is at least 50% up to the time the plasma compression is complete. Using the system, for the first time as an optical pump, laser activities were successfully obtained from a variety of liquid organic dyes. Diagnostic capabilities included an optical multichannel analyzer system complete with a computer control, a nitrogen pumped tunable dye laser system, a high speed streak framing camera, a digital laser energy meter, voltage and current probes, and a computer based data acquisition system.

DESCRIPTORS (U) *DYE LASERS, *OPTICAL PUMPING, PLASMA PHYSICS, LUMINESCENCE, ULTRAVIOLET LASERS, EMISSION SPECTRA, EFFICIENCY, TUNABLE LASERS, STREAK CAMERAS, HIGH SPEED PHOTOGRAPHY, BREAKDOWN, ELECTRONIC THRESHOLD

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DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO EVN54B

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IDENTIFIERS U MDPT Mother Type Dense Plasma Focus
Laser diagnostics Blue Green Lasers. WUAFOSR2301K1.
PE61102F

CALIFORNIA UNIV SAN DIEGO LA JOLLA DEPT OF CHEMISTRY
(U) Synthetic, Structural, Spectroscopic, and Theoretical
Studies of Decamethylvanadocene Arylnitrenes.

85 9P

PERSONAL AUTHORS: Osborne, Joseph H.; Rheingold, Arnold L.;
Trogler, William C.

CONTRACT NO. AFOSR-84-0021

PROJECT NO. 2303

TASK NO. 82

MONITOR: AFOSR
TR-86-0726

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of the American Chemical
Society. v107 n26 p7945-7952 1985.

ABSTRACT: (U) Studies of metal oxo complexes have led to
the development of reagents and catalysts for selective
oxidations of organic substrates. Isoelectronic metal-
nitrene or imido complexes have received less attention
but may prove useful for transferring N-R groups to
organic molecules. Most examples of metal-nitrene
complexes have been of high oxidation state coordination
complexes. Properties of organometallic nitrenes need
further definition. Our group has been interested in the
properties of unsaturated metal-nitrogen complexes.
Herein we report syntheses of a family of aryl nitrenes of
decamethylvanadocene, structural studies of the 2,6-
dimethylphenyl derivative, spin-polarized theoretical
calculations, electrochemical oxidations, and EPR
spectroscopic studies.

DESCRIPTORS: (U) *ORGANOMETALLIC COMPOUNDS, *ARYL
RADICALS, *VANADIUM COMPOUNDS, *COMPLEX COMPOUNDS,
NITROGEN COMPOUNDS, SYNTHESIS(CHEMISTRY), CHEMICAL
REACTIONS, MOLECULAR STRUCTURE, ELECTRON PARAMAGNETIC
RESONANCE, REPRINTS

IDENTIFIERS: (U) *ARYLNITRENES, WUAFOSR2303B2, PE61102F

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AD A172 013 12/2 DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN548

AD A172 013 12/2

AD-A172 009 20/6

GEORGIA INST OF TECH ATLANTA

ARIZONA UNIV TUCSON OPTICAL SCIENCES CENTER

U) Extreme Values of Queues Point Processes and Stochastic Networks

(U) Research in the Optical Sciences.

DESCRIPTIVE NOTE Annual technical report 30 Sep 84 30 Sep 85

DESCRIPTIVE NOTE Final rept. 1 Oct 79-30 Jun 85.

JUL 85 86P

NOV 85 12P

PERSONAL AUTHORS Sentoro, Richard R.

PERSONAL AUTHORS Shannon, Robert R.

CONTRACT NO AFOSR 84 0387

CONTRACT NO F49620-80 C-0022

PROJECT NO 2.04

PROJECT NO 2301

TASK NO A5

TASK NO A1

MONITOR AFOSR

MONITOR AFOSR TR-86-0632

TR 86 0721

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

ABSTRACT U) Work progressed on four topics in modeling of stochastic flows in networks: compound Poisson approximations for random variables and point processes were developed. In extremal problems in stochastic networks, a family of bounds for the distributions of certain queueing variables were obtained. In optimization of queueing systems, progress was made in determining ways to control the system. Extremes of queues finally were not the focus on extreme values of queues and point processes. Authors.

DESCRIPTORS 1. NETWORK FLOWS 2. QUEUEING THEORY. MATHEMATICAL MODELS 3. OPTIMIZATION 4. STOCHASTIC PROCESSES. APPROXIMATION MATHEMATICS 5. RANDOM VARIABLES. POINTS MATHEMATICS

IDENTIFIERS U WUAFOSR22004A5 PG61102F

ABSTRACT (U) Contents: A Search for Optical Bistability in Thin Evaporated Films; Long Range Surface Plasmon Polaritons; Nonlinear Guided Wave Interactions; Theory of Two Photon Doppler Free Spectroscopy; X Ray Image Intensifiers with Electronic Readout; Optical Bistability, Optical Bistability Experiments to Improve Solid State Devices and Basic Understanding Modulated Emission Spectroscopy; High Resolution Wavefront Sensing Through the Atmosphere; Aberrated Gaussian Beams; Ion Beam Processing of Optical Coatings on Plastics; Optical Coatings for the X Ray to Ultraviolet Wavelength Range

DESCRIPTORS: U) OPTICS, OPTICAL PROPERTIES, STABILITY THIN FILMS, PLASMONS, ULTRAVIOLET SPECTRA, RESEARCH MANAGEMENT, WAVEFRONTS, DETECTION, HIGH RESOLUTION, SPECTROSCOPY, OPTICAL COATINGS, X RAY APPARATUS, SOLID STATE ELECTRONICS, IMAGE INTENSIFIERS, ELECTRONICS, GAUSSIAN QUADRATURE, LASER BEAMS

IDENTIFIERS (U) Optical bistability Polaritons WUAFOSR2201A1 PG61102F

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CALIFORNIA A UNIV RIVERSIDE DEPT OF STATISTICS

PENNSYLVANIA STATE UNIV UNIVERSITY PARK DEPT OF PHYSICS

(U) Influential Nonnegligible Parameters Under the Search Linear Model

(U) Hole Gratings and Diffraction of Gaussian Beams

DESCRIPTIVE NOTE Interim rept.

DESCRIPTIVE NOTE: Final rept 1 Jul 83-31 Dec 84

APR 86 16P

MAR 86 13P

PERSONAL AUTHORS Ghosh Subir

PERSONAL AUTHORS: Wiggins, T. A.

REPORT NO TR 141

CONTRACT NO AFOSR-83-0258

PROJECT NO 2304

PROJECT NO 2306

TASK NO A5

TASK NO D9

MONITOR AFOSR

MONITOR: AFOSR
TR-86-0641

TR-86 0733

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

ABSTRACT: (U) In this paper some results useful in detecting the Influential Nonnegligible parameters under the search linear model are presented. An estimator of the number of nonnegligible parameters which are significant and influential is also given.

DESCRIPTORS: (U) *FACTORTIAL DESIGN, LINEAR SYSTEMS, MATHEMATICAL MODELS, SEARCHING

IDENTIFIERS: (U) Design models, WUAFOSR2304A5, PE61102F

ABSTRACT: (U) Methods for the determination of waist size and position for Gaussian beams are summarized and an alternative method which applies to pulse systems was proposed and tested. The general theory of Fraunhofer diffraction of Gaussian beams was developed which permitted a new method for location of laser waists. An extension to Fresnel diffraction was proposed. The use of hole gratings for production of multiple spots for damage threshold measurements is inherent to this work. The effects of their characteristics on the intensity profile are included.

DESCRIPTORS: (U) *LASER BEAMS, *DIFFRACTION, GRATINGS(SPECTRA), GAUSSIAN QUADRATURE

IDENTIFIERS: (U) Gaussian beams, Fraunhofer diffraction, PE61102F, WUAFOSR2306D9

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DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN548

AD A172 005 14 2 17 8 17 1

STANFORD UNIV CA EDWARD L GINZTON LAB OF PHYSICS

(U) Application of Nondestructive Testing Techniques to Materials Testing

DESCRIPTIVE NOTE Annual rept 1 Jan 31 Dec 85.

FEB 86 78P

PERSONAL AUTHORS KINO, G S

CONTRACT NO AFOSR-84-0063

PROJECT NO 2006

TASK NO A2

MONITOR AFOSR
1P 86 0635

UNCLASSIFIED REPORT

ABSTRACT (U) A range of fundamentally new optical nondestructive techniques has been demonstrated for measuring the surface topography of a surface. A wide-angle, low-resolution, low-magnification, low-cost, and low-cost acoustic beam has been demonstrated to measure range to a far greater accuracy than with conventional A-scan systems using ultrasonic waves. The range resolution of such a lens is comparable to a wavelength, which is about 1 cm for a short pulse system. In fact, two or three well-tempered optical methods are being developed during the program. The beam is useful in a variety of applications. This paper reports on an accuracy of measurement of 1000.

DESCRIPTORS (U) NONDESTRUCTIVE TESTING, ACOUSTIC MICROSCOPY, ACOUSTICS, OPTICAL MATERIALS, SURFACE ROUGHNESS, DISPLACEMENT, THIN FILMS, ACOUSTIC BEAMS, RESOLUTION, MIRRORS, OPTICAL DETECTION, ACCURACY, DATA ACQUISITION, PHOTOGRAPHY, MANUFACTURING

IDENTIFIERS (U) WUAFOSR2306A1 PE61102F

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CALIFORNIA UNIV DAVIS INTERCOLLEGE DIV OF STATISTICS

(U) Estimating IFRA (Increasing Failure Rate Average) Based on Censored Data.

DESCRIPTIVE NOTE Technical rept.

NOV 85 21P

PERSONAL AUTHORS Wang, Jane-Ling

REPORT NO. TR 70

CONTRACT NO. AFOSR-85-0268

PROJECT NO. 2304

TASK NO. A5

MONITOR: AFOSR
TR-86-0655

UNCLASSIFIED REPORT

ABSTRACT (U) This paper considers the problem of estimating a survival curve from randomly censored data when it is known to have increasing failure rate. Average IFRA or to be New Better than Used (NBU). Let F sub n(t) be the product-limit estimator. PL estimator of Kaplan and Meier for the life distribution. Since F sub n(t) never has the IFRA property and may not be NBU, we modify F sub n(t) to have the desired IFRA (NBU) properties. The modified estimators are easy to compute and under mild conditions are shown to be asymptotically n raised to the 1/2 power equivalent to F sub n(t) on compact intervals. Thus the modified estimators share the asymptotic properties of the PL estimator F sub n(t). (Author)

DESCRIPTORS (U) DISTRIBUTION CURVES, NONPARAMETRIC STATISTICS, ESTIMATES, DISTRIBUTION FUNCTIONS, INTERVALS, ASYMPTOTIC NORMALITY, SURVIVAL, GENERAL

IDENTIFIERS (U) IFRA, Increasing Failure Rate Average, NBU, New Better than Used, Censored data, WUAFOSR2304A5, PE61102F

STATE UNIVERSITY OF NEW YORK AT BUFFALO DEPT OF PSYCHOLOGY

AD A172 002

12 1

AD A172 002 6:16 6:4 9:2

NORTH CAROLINA UNIV AT CHAPEL HILL CENTER FOR STOCHASTIC PROCESSES

(U) Spreading and Predictable Sampling for Exchangeable Sequences and Processes

DESCRIPTIVE NOTE Technical rept

MAY 86

44P

PERSONAL AUTHORS Kallenberg, Olav

REPORT NO TP 136

CONTRACT NO F49620 85 C-0144

PROJECT NO 2304

TASK NO A5

MONITOR AFOSR

TP-85 0658

UNCLASSIFIED REPORT

ABSTRACT: (U) Rydill-Nardzewski (1957) proved that an infinite sequence of random variables is exchangeable, if every subsequence has the same distribution. This document discusses some restatements and extensions of this result in terms of martingales and stopping times. In the other direction, it is shown that the distribution of a finite or infinite exchangeable sequence is invariant under sampling by means of a.s. distinct (but not necessarily ordered) predictable stopping times. Both types of result generalize to exchangeable processes in continuous time. Author.

DESCRIPTORS: (U) *STATISTICAL SAMPLES, *MATHEMATICAL PREDICTION, *RANDOM VARIABLES, INVARIANCE, DISTRIBUTION FUNCTIONS, STOPPING RULES, *MATHEMATICS, SEQUENCES, *MATHEMATICS, STOCHASTIC PROCESSES

IDENTIFIERS: (U) Martingales, Stopping times, mathematics, Pe61102F, WUAFOSR2304A5

AD-A172 002

UNCLASSIFIED

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EVN54B

STATE UNIV OF NEW YORK AT BUFFALO DEPT OF PSYCHOLOGY

(U) Human Information Processing of Targets and Real-World Scenes.

DESCRIPTIVE NOTE: Final rept. 1 Apr 83-31 Aug 85.

JUL 85

83P

PERSONAL AUTHORS: Biederman, Irving

CONTRACT NO. F49620-83-C-0086

PROJECT NO. 2313

TASK NO. A5

MONITOR AFOSR

TR-86-0679

UNCLASSIFIED REPORT

ABSTRACT: (U) Substantial progress has been made on an empirical and theoretical analysis of human image understanding. The theory, termed Recognition-by-Components (RBC), holds that the perceptual recognition of objects is a process in which the image of the input is segmented at regions of deep concavity into simple volumetric components. These components can be derived from properties of the two dimensional image that are invariant over viewing position and image quality, such as collinearity and symmetry. Experimental results support the sufficiency of RBC in showing efficient speeded recognition of objects missing parts or lacking color and texture. Also confirmed was a prediction derived from RBC that selective contour deletion that bridged concavities and prevented retrieval of the components would render object identification impossible. (Author)

DESCRIPTORS: (U) *VISION, *VISIONICS, *PATTERN RECOGNITION, *IMAGE DISSECTION, *VISUAL PERCEPTION, *COMPUTER APPLICATIONS, COMPREHENSION, IDENTIFICATION, IMAG PROCESSING, EDGES

IDENTIFIERS: (U) Understanding, Image, RBC, Recognition By Components, Interpretation, Image, Nonaccidentalness, Computer vision, Components, Volumetric, Line drawings,

AD-A172 002

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AD-A172 002 CONTINUED

AD-A171 993 4/1 4/2

Nonrigid objects, Concavity, Degraded images, Matching,
Edge extraction, WUAFOSR2313A5, PF61102F

BOSTON UNIV MA DEPT OF ELECTRICAL COMPUTER AND SYSTEMS
ENGINEERING

(U) Dynamical - Chemical Coupling in the Mesosphere and
Lower Thermosphere

DESCRIPTIVE NOTE: Final rept. 1 Jun-1 Dec 84.

JAN 85 4P

PERSONAL AUTHORS Forbes, Jeffrey M

CONTRACT NO AFOSR-84 0182

PROJECT NO. 2310

TASK NO A2

MONITOR AFOSR
TP 86-0653

UNCLASSIFIED REPORT

ABSTRACT: (U) The dynamic ionosphere over Arecibo is simulated using a finite element technique. It is shown that the so called collapse of the Arecibo F layer is caused by the upward propagating semidiurnal tide excited in the upper stratosphere by ozone heating. The steep underside density gradients observed in conjunction with the collapse are shown to be due to the shear in the meridional wind field of the semidiurnal tide. These gradients are capable of triggering the gradient drift plasma instability, and accounting for plasma irregularity formation and observations of VTE scintillations associated with the collapse phenomenon.

DESCRIPTORS: U ATMOSPHERIC PHYSICS, ATMOSPHERIC CHEMISTRY, COUPLING INTERACTION, IONOSPHERE, DYNAMICS, MESOSPHERE, THERMOSPHERE, MATHEMATICAL MODELS, FINITE ELEMENT ANALYSIS, COLLAPSE, F REGION, ATMOSPHERIC TIDES, OZONE, HEATING, DENSITY GRADIENTS, WIND SHEAR, PLASMA PHYSICS, IONOSPHERIC SCINTILLATIONS

IDENTIFIERS (U) WUAFOSR2310A2, PF61102F

AD A171 993 3 5
 DTD REPORT PREPARED BY: SCIENCE CONTROL NO EVN548

AD A171 993 3 5

AD A171 985 3 2

CALIFORNIA UNIV BERKELEY ELECTRONICS RESEARCH LAB

TUFTS UNIV MEDFORD MA DEPT OF PHYSICS AND ASTRONOMY

U Joint Services Electronics Program

U Radio Wavelength Observations of Magnetic Fields on Active Dwarf-M, RS CVN and Magnetic Stars, 18

DESCRIPTIVE NOTE Annual progress rept 1 May 85-30 Apr 86

86 5P

APR 86 41P

PERSONAL AUTHORS: Lang, Kenneth R. ;

PERSONAL AUTHORS Oldham, W G

CONTRACT NO N00014-86-K-0068 AFOSR-83-0019

REPORT NO UCB ERL 86-1

MONITOR AFOSR
 TR-86-0983

CONTRACT NO F49620 84 C 0057

PROJECT NO 2305

UNCLASSIFIED REPORT

TASK NO A9

ABSTRACT: (U) The dwarf M stars YZ Canis Minoris and AD Leonis exhibit narrow band, slowly varying (hours) microwave emission that cannot be explained by conventional thermal radiation mechanisms. The dwarf M stars AD Leonis and Wolf 424 emit rapid spikes whose high brightness temperatures similarly require a nonthermal radiation process which could result from coherent mechanisms such as an electron cyclotron maser or coherent plasma radiation. If the electron cyclotron maser emits at the second or third harmonic of the gyrofrequency, the coronal magnetic field strength $H = 250$ G or 167 G and constraints on the plasma frequency imply an electron density of $N_{\text{sub } e} = 6 \times 10$ to the 9th power/cc. Coherent plasma radiation requires similar values of electron density but much weaker magnetic fields. Radio spikes from AD Leonis and Wolf 424 have rise times $\tau_{\text{sub } R} < 5$ ms, indicating a linear size of $L < 1.5 \times 10$ to the 8th power cm, or less than 0.005 of the stellar radius. Although Ap magnetic stars have strong dipole magnetic fields they exhibit no detectable gyroresonant radiation, suggesting that these stars do not have hot, dense coronae. The binary RS CVn star UX Arietis exhibits variable emission at 6 cm wavelength on time scales ranging from 30 s to more than one hour. The shortest variation implies a linear size much less than that of the halo observed by VLBI techniques, and most probably sizes smaller than those of the component stars. The observed variations might be due to absorption by a thermal plasma located between the stars.

MONITOR AFOSR
 TR 86-0592

UNCLASSIFIED REPORT

ABSTRACT: (U) An annual report of the JSEP (Joint Services Electronics Program) in Electromagnetics, Quantum Electronics, Solid State Electronics, Materials and Devices and Information System is presented. In addition, results of the research to date are summarized and significant accomplishments are indicated.

DESCRIPTORS: (U) ELECTRONICS, JOINT MILITARY ACTIVITIES, QUANTUM ELECTRONICS, SOLID STATE ELECTRONICS, INFORMATION SYSTEMS

IDENTIFIERS: (U) Electromagnetics, Materials (Electronic), Devices, Electronics, WUAFOSR2305A9, PE611C2F

DESCRIPTORS: (U) DWARF STARS, EMISSION SPECTRA, MICROWAVES, CYCLOTRON RESONANCE, COMPARISON, MASERS

AD A171 993

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AD A171 985 CONTINUED

AD A171 984 12-1

SOLAR FLARES PLASMAS PHYSICS ELECTRON DENSITY

NORTHERN ILLINOIS UNIV DE KALB DEPT OF MATHEMATICAL SCIENCES

IDENTIFIERS (U) Gamma Minors Leonis V1R1 Very Long Baseline Interferometry Gyro resonance

(U) On the Structure of (v, k, t) Trades

85 14P

PERSONAL AUTHORS Huang, H. L.

CONTRACT NO AFOSR-85-0320

PROJECT NO 2304

TASK NO A5

MONITOR AFOSR
TR-86 0725

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Jnl of Statistical Planning and Inference, v13 p179-191 1986

ABSTRACT (U) The (v, k, t) trades can be utilized to construct new t designs from a given t -design. The goal of this paper is to study the structure of (v, k, t) trades and to provide information and guidance for searching trades on a given t -design. Our study shows that when $v < k < t$, there is no (v, k, t) trade. In the case $v < k < t+1$, the volume of a (v, k, t) trade is at least 2 superscript t and can never be 2 superscript $t-1$. We also characterize the (v, k, t) trades of volume 2 superscript t and show that the trades with minimum volume and minimum foundation size have a unique structure. These latter trades, called minimal trades, can be utilized to generate trades on a t -design.

DESCRIPTORS (U) SET THEORY; TRADE OFF ANALYSIS; VOLUME; VECTOR ANALYSIS; MATRICES; MATHEMATICS; THEOREMS; PERMUTATIONS; INTEGRAL EQUATIONS; STATISTICAL ANALYSIS; PERMITS

IDENTIFIERS (U) Trades-Mathematics; T Design; Blocks; PERMITS; WDAF06R2304A5

AD A171 985

AD A171 984

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PAGE 239 EVN54B

AD A171 982

PLASMA PHYSICS DEPT OF PHYSICS AND ASTRONOMY

U Multispectral Radio Spikes from the Dwarf M Emission Star
AD Leonis

JUN 86 7P

PERSONAL AUTHORS Lang Kenneth R

CONTRACT NO N00014 86 K 0068 AFOSR 83 0019

MONITOR AFOSR
TR 86-0981

UNCLASSIFIED REPORT

Availability: Pub in Astrophysical Jnl V85 n1 pt 1
p363-368 1 Jun 86 No copies furnished by DTIC NTIS

ABSTRACT U The Arecibo Observatory was used to detect
two circularly polarized bursts at 1415 MHz from the
dwarf M star AD Leonis with total durations of 50 s and
25 s. A sequence of quasi periodic pulsations with a mean
periodicity of 3.2 ± 0.3 s and a total
duration of 3.0 ± 2.5 s was superposed on the 50 s burst

DESCRIPTORS U BURST TRANSMISSION

*MAGNETOHYDRODYNAMIC GENERATORS *SPIKES *DWARF STARS
*SOLAR FLARES *RADIOFREQUENCY PULSES *VARIABLE STARS
*SOLAR CORONA *BINARY STARS *TRAPPING CHARGED PARTICLES
*AREA COVERAGE *CYCLOTRON RESONANCE *POLARIZATION
*REPRINTS *CIRCULAR LOOPS *PUERTO RICO

IDENTIFIERS U Multispectral Durations, LCP Left
Circular Polarization AD Leonis, RCP Right Circular
Polarization, M Stars, Plasma Frequency, Binary Stars
Alven Velocity, Coronal Loops, UV Ceti, Arecibo
Observatory, 27 Canis Minoris, EQ Region, 47 Geminoorum

AD A171 982

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PLASMA PHYSICS DEPT OF PHYSICS AND ASTRONOMY

U Flare Stars and Solar Bursts: High Resolution in Time
and Frequency

PLASMA PHYSICS DEPT OF PHYSICS AND ASTRONOMY

U Flare Stars and Solar Bursts: High Resolution in Time
and Frequency

JUN 86 7P

PERSONAL AUTHORS Lang Kenneth R

CONTRACT NO N00014 86 K 0068 AFOSR 83 0019

MONITOR AFOSR
TR 86-0981

UNCLASSIFIED REPORT

Availability: Pub in Solar Physics, v104 p227-233 1986
(No copies furnished by DTIC NTIS)

ABSTRACT: (U) Coronal loops on the Sun and nearby stars
are investigated using observations at 20 cm wavelength
with high resolution in time and frequency. Observations
of the dwarf M star AD Leonis with high time resolution
using the Arecibo Observatory have resulted in the
discovery of a quasi-periodic train of circularly
polarized spikes with a mean periodicity of 3.2 ± 0.5
ms and a total duration of 150 ms. The individual spikes
had rise times of < 0.5 ms, leading to an upper limit
to the linear size $L < 0.5 \times 10^8$ to the 8th power cm
for the spike emitter. This size is only 0.005 of the
estimated radius of AD Leonis. Provided that the emitter
is symmetric, it has a brightness temperature of $T \text{ sub B}$
 > 0.1 to the 16th power K, suggesting a coherent
burst mechanism such as an electron cyclotron maser.
Coronal oscillations might modulate the maser output
producing the quasi-periodic spikes. Observations at
closely spaced wavelengths, or high frequency resolution,
using the Very Large Array have revealed narrow band
structure ($\Delta \nu / \nu < 0.01$) in solar bursts and
in the slowly varying radiation of the dwarf M star YZ
Canis Minoris. The narrow band emission cannot be
explained by continuum emission processes, but it might
be attributed to electron cyclotron maser radiation.
Maser action at the second or first harmonic of the
gyrofrequency implies magnetic field strengths of 250 and
500 G, respectively. Thus, observations with high
resolution in time and frequency suggest coherent
processes in the coronae of the Sun and dwarf M stars.

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OTIC REPORT BIBLIOGRAPHY

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AD-A171 982 CONTINUED

The scientific potential of these discoveries may be best fulfilled by the construction of a solar radio interferometer with a synthesis radiotelescope

DESCRIPTORS (U) STARS, SOLAR FLARES, CYCLOGRAPHY, RESONANCE, COMPARISON, MASERS, EMISSION SPECTRA, MICROWAVES, REPRINTS

IDENTIFIERS (U) Solar bursts, Very long arrays

AD-A171 981 1201

STATE UNIV OF NEW YORK AT STONY BROOK DEPT OF APPLIED MATHEMATICS AND STATISTICS

(U) Modules of Continuum Structures.

86 13p

PERSONAL AUTHORS: Baxter, Laurence A., Kim, Chul

CONTRACT NO AFOSR-84-0243

PROJECT NO 1304

TASK NO. A5

MONITOR AFOSR
TR-85-0724

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Reliability and Quality Control, p57-68, 1986

ABSTRACT (U) A continuum structure function (CSF) is a nondecreasing mapping from the unit hypercube to the unit interval. Such a function, g , say, is said to be weakly coherent if sub g is sub g for each component i an element of G . Suppose that g is weakly coherent and that λ is nonempty. Then $\lambda(g)$ is a module of g if g is weakly coherent and there exists a CSF f such that $g(x) = f(g(x))$ for all x . A superscript λ is essential if a subset of G which is necessary and sufficient for the CSF to attain any value in its image when every other component is in state zero. Using these concepts, the main results of Birnbaum and Esary's theory of modules of binary structure functions, in particular the First Modules Theorem, generalize to the continuum case.

DESCRIPTORS (U) MAPPING, TRANSFORMATIONS, SET THEORY, CONFERENCE, REPRINTS

IDENTIFIERS (U) CSF, Continuum Structure Function, Structure Functions, Hypercubes, PE61102F, WUAFDSR23046.

AD-A171 982

AD-A171 981

UNCLASSIFIED

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AD A171 978

UNIVERSITY OF CALIFORNIA LOS ANGELES
HYDROCARBON RESEARCH INST

CINCINNATI UNIV OH DEPT OF CHEMISTRY

(U) Co 2+ Co 3+ Catalyzed Reactions of Styrene Oxide with Trialkylsilanes

(U) Reinforcing Effects of Silica Type Fillers Containing Hydrocarbon Groups.

85 8P

85 6P

PERSONAL AUTHORS: Kang Kyung Tae, Weber, William P.

PERSONAL AUTHORS: Mark, J. E.; Sur, G. S.

CONTRACT NO: AFOSR 82 0333

CONTRACT NO: AFOSR-83-0027

PROJECT NO: 2203

PROJECT NO: 2303

TASK NO: B2

TASK NO: A3

MONITOR: AFOSR
TP 89 0019

MONITOR: AFOSR
TR-86-0736

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Tetrahedron Letters v26 n44
p5415 5416 1985

SUPPLEMENTARY NOTE: Pub. in Polymer Bulletin v14 p325-329 1985

ABSTRACT (U) The dicobalt octacarbonyl catalyzed reaction of styrene oxide with trialkylsilanes yields a mixture of 1-phenyl 2-trialkylsiloxyethane and 2-phenyl 2-trialkylsiloxyethane. The ratio of these products can be controlled.

ABSTRACT (U) Curing hydroxyl-terminated chains of polydimethylsiloxane is achieved by reacting them with tetraethoxysilane, vinyltriethoxysilane, methyltriethoxysilane, and phenyltriethoxysilane, with excess amounts of the silanes hydrolyzed in-situ to filler particles. When triethoxysilanes are used, the vinyl, methyl, and phenyl groups must be part of the filler particles and, in at least some cases, the resulting reinforcement is better than that given by the silica particles obtained from the (unsubstituted) tetraethoxysilane.

DESCRIPTORS: U STYRENES, SILANES, OXIDES, COBALT COMPOUNDS, CARBON-14 COMPOUNDS, ALKYL RADICALS, SYNTHESIS, CHEMISTRY, CHEMICAL REACTIONS, CATALYSTS, REPRINTS

IDENTIFIERS: U Dicobalt Octacarbonyl PE61102F

DESCRIPTORS: (U) SILOXANES, POLYMERS, SILANES, HYDROLYSIS, METHYL RADICALS, ELASTOMERS, REPRINTS

IDENTIFIERS: (U) PE61102F WUAFPSR2303A3

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AD-A171 975 20/10 20/8

UNIVERSITY OF SOUTHERN CALIFORNIA LOS ANGELES LOKER
HYDROCARBON RESEARCH INST

TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY

U Co 2 Cu 91 Catalyzed Reaction of Octanes with
Trialkylsilanes.

U Ground States of Molecules. 67. MNDO Calculations for
Compounds Containing Iodine.

85

3P

84

6P

PERSONAL AUTHORS Kang Kyung-Tae Wee William P

PERSONAL AUTHORS Dewar Michael J Healy Eamonn P
Stewart James J

CONTRACT NO AFOSR 82 0333

CONTRACT NO F49620-83 C-C024 AFOSR-79 0002

PROJECT NO 2303

PROJECT NO 2303

TASK NO B2

TASK NO B2

MONITOR

MONITOR AFOSR
TR-86-0725

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Tetrahedron Letters, V26 N47
P5153 5751 1985

SUPPLEMENTARY NOTE Pub in Intl. of Computational
Chemistry V5 N4 P358-362 1984

ABSTRACT U Dicarboxy octadecanoyl catalyzed silyl-
hydroformylation of octanes can be controlled by the
choice of trialkylsilane. Triethylsilane gives 1:4 bis-
silyl octanes while t-butyltrimethylsilane yields silyl-
mono octane.

ABSTRACT U Previous articles of this series have
described the MNDO model in detail and have reported
parameters for hydrogen carbon nitrogen and oxygen
for beryllium for boron for fluorine for aluminum for
silicon and phosphorus for sulfur for chlorine and for
bromine Here we describe the extension of MNDO to a
fifth period element namely iodine together with
results of calculations for a number of iodine containing
molecules. Since atomic orbitals (AOs) are not included
in the present version of MNDO calculations for iodine
are limited to compounds of I. The parameters for iodine
were optimized as usual by a least squares fit to
various experimental properties of a basis set of
molecules. The properties included heats of formation
geometry ionization potentials and dipole moments.

DESCRIPTORS U HYDROXYGENS CARBON MONOXIDES ALKYL
POLYMERIZATION HYDROFORMYLATION CATALYSTS RADIATION
EFFECTS

IDENTIFIERS U Hydroformylation Catalysis Radical End
Group Cationic Bulk Trimethyl Silane WJAFOSR2303B2

DESCRIPTORS U IODINE GROUND STATE QUANTUM THEORY
COMPUTATIONS MATHEMATICAL MODELS MOLECULES INTEGRALS
LEAST SQUARES METHOD FITTING FUNCTIONS MATHEMATICS
HEAT OF FORMATION IONIZATION POTENTIALS DIPOLE MOMENTS

IDENTIFIERS U MNDO-Modified Neglect of Differential
Overlap PE61102F WJAFOSR2303B2

AD-A171 975

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AD A171 974 11P OCT 84 AFOSR 81-0186

AD A171 974

11P

AD A171 973 7.4 7.5

PRINCETON UNIV. DEPT OF ELECTRICAL ENGINEERING AND
COMPUTER SCIENCE

TORONTO UNIV. (ONTARIO) LASH MILLER CHEMICAL LABS

(U) A Perturbation Approach to Improving Pisarenko
Harmonic Retrieval

(U) Laser-Induced Addition of Hydrogen Fluoride to
Unsaturated Molecules. The $\text{HF} + \text{CH}_2(\text{CF}_2)_2$ System.

OCT 84 11P

84 9P

PERSONAL AUTHORS: Fuhrmann, Daniel R.; Liu, Bede

PERSONAL AUTHORS: Beck, Walter H.; Burns, George

CONTRACT NO AFOSR 81-0186

CONTRACT NO AFOSR-84-0127

PROJECT NO 2304

PROJECT NO 2303

TASK NO A6

TASK NO B1

MONITOR AFOSR

MONITOR AFOSR

TR 86 0716

TR-86-0729

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub. in Allerton Conference on
Communication Control and Computers, (22nd) p891-900
Oct 84

SUPPLEMENTARY NOTE Pub. in Canadian Jnl. of Chemistry.
v62 p2302-2309 1984

ABSTRACT (U) One of the apparent drawbacks to
eigenstructure based (Pisarenko) spectrum estimation is
the tendency of the resultant eigen-polynomial to have
extraneous roots on the unit circle when the
autocorrelation matrix R is overdetermined. This problem
can be dealt with successfully by a complete eigenvector
decomposition of R ; however, this method can be
computationally expensive. Similar results can be
obtained by simply subtracting a small perturbation from
the 10.0 element of R prior to finding the minimum
eigenvector

ABSTRACT: (U) Although certain classes of reactions are
known to occur via 4-centre transition states, there has
been no irrefutable proof that in the gas phase reactions
also proceed via a 4-centre concerted process. Results of
recent information theory calculations on the $\text{HF}(\nu_1) +$
 CH_2CF_2 system indicate that it should be possible to
observe reaction products for $\text{HF}(\nu_1 = 5)$. Results are
presented here on experiments attempting to achieve laser
induced 4-centre addition of HF to several unsaturated
molecules (C_2H_2 , C_2H_4 , C_4H_6 , CH_2CF_2 , and CF_2CClF). A
mixture of HF and co-reactant was irradiated by a dye-
laser tuned photo-acoustically to the fifth vibrational
level of HF , and the resulting mixture was analysed by
gas chromatography and mass spectrometry. There was no
evidence of any laser-induced products. An upper bound
was deduced for the $\text{HF} + \text{CH}_2\text{CF}_2$ addition rate constant at
610 K.

DESCRIPTORS (U) MATRIX THEORY, EIGENVECTORS,
PERTURBATIONS, COVARIANCE, SPECTRUM ANALYSIS, ESTIMATES,
REPRINTS

IDENTIFIERS (U) Harmonic Analysis, Pisarenko Method,
Toeplitz Matrices, Spectrum Estimation

DESCRIPTORS: (U) ADDITION REACTIONS, +PHOTOCHEMICAL
REACTIONS, +HYDROGEN FLUORIDE, +UNSATURATED HYDROCARBONS,
+LASER APPLICATIONS, VINYL RADICALS, TRANSITIONS,
MOLECULAR STATES, VAPOR PHASES, IRRADIATION, DYE LASERS,
REACTION KINETICS, CONSTANTS, RELAXATION, REPRINTS

IDENTIFIERS: (U) Vinylidene Fluoride, PE61102F

AD A171 974

AD A171 973

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SEARCH CONTROL NO EVN54B

AD A171 973

CONTINUED

WUAFOSR230381

AD A171 964

7/3

CINCINNATI UNIV OH

(U) Elastomeric Networks Cross-Linked By Silica or Titania
Fillers.

DESCRIPTIVE NOTE: Rept. for Nov 84-Nov 85.

85

3P

PERSONAL AUTHORS: Sur, G. S.; Mark, J. E. ;

CONTRACT NO AFOSR-83-0027

PROJECT NO 2303

TASK NO A3

MONITOR: AFOSR
TR-86-0735

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in European Polymer Journal, v21
n12 p1051-1052 1985.

ABSTRACT: (U) Triethoxysilyl terminated
polydimethylsiloxane (PDMS) was prepared by reacting
triethoxysilane with vinyl terminated PDMS having a
number-average molecular weight of 11.3×1000 g/mol.
Particles of silica and titania generated in situ by the
hydrolysis of triethoxysilane and titanium n-propoxide,
respectively, were found to end link this polymer. The
presence of a stable elastomeric network structure was
confirmed by stress-strain measurements in elongation.

DESCRIPTORS: (U) *ELASTOMERS; *SILOXANES; *POLYMERS;
*SILANES; *TITANIUM OXIDES; *SILICON DIOXIDE;
SYNTHESIS CHEMISTRY; *CROSSLINKING CHEMISTRY; *HYDROLYSIS;
STRESS STRAIN RELATIONS; *ELONGATION; REPRINTS

IDENTIFIERS: (U) END LINKING; PE61102F; WUAFOSR230381

AD A171 973

UNCLASSIFIED

AD A171 964

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DIL. GROUP: BIBLIOGRAPHY SEARCH CONTROL NO EVN54R

AD-A171 962

AD A171 963 CONTINUED

COLUMBIA UNIV. NEW YORK DEPT OF CHEMISTRY

(U) Temperature Dependence of the Reactions of Singlet and Triplet Diphenylcarbene: Evidence for Reversible Ylide Formation in the Reaction with Alcohols

85

5P

PERSONAL AUTHORS Turro, Nicholas J., Cha, Yuan, Gould, Ian R.

CONTRACT NO AFOSR 84-0040

PROJECT NO 2303

TASK NO B2

MONITOR AFOSR
TR 86-0737

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub. in Tetrahedron Letters, v26 n48
p5951-5954 1985

ABSTRACT: (U) The insertion of iphenylcarbene (DPC) into the OH bonds of alcohols has received considerable attention. It is generally accepted that it is the singlet state of DPC (1DPC), in equilibrium with the ground triplet state (3DPC), that reacts with the alcohols. However, the reaction mechanism is not yet fully understood, and recent kinetic data have been viewed as inconsistent with the conventional mechanism shown in Scheme I. We now describe the effect of temperature on the products of the reaction of DPC with methanol, and with isoprene, in several solvents. These findings, together with measurements of product isotope effects, provide additional insight into the carbene-alcohol reaction and are consistent with an articulation of the conventional mechanism. DPC yields benzhydryl methyl ether upon reaction with methanol, and two isomeric cyclopropanes with isoprene. At sufficiently low concentrations of the carbene quenchers, equilibrium between 1DPC and 3DPC is more rapid than reaction. At sufficiently high concentrations, isoprene efficiently traps 3DPC but does not compete for 1DPC in the presence of methanol, which is a poor quencher of 3DPC, but a very efficient quencher of 1DPC. The methanol reaction

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monitors 1DPC and the isoprene reaction monitors 3DPC. In figure 1 it is shown the effect of temperature on the reaction of the quantum yields for triplet (Q3) and singlet (Q1) product information in several solvents. In each solvent triplet products are more favored at low and high temperatures than at intermediate temperatures. In figure 2 are shown the results of similar experiments for CH3OD and t-butanol.

DESCRIPTORS: (U) CARBENES, ALCOHOLS, CHEMICAL REACTIONS, TEMPERATURE, PHENYL RADICALS, ISOPRENE, REPRINTS

IDENTIFIERS: (U) DIPHENYL CARBENE, CARBENE/DIPHENYL, ISOOCTANE, PE61102F, WUAFOSR2303B2

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AD-A171 960 6 20 DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN54B
WRIGHT STATE UNIV DAYTON OH SCHOOL OF MEDICINE AD-A171 960 CONTINUED
WUAFOSR2312A5

(U) Comparison of PFDA (Perfluoro-n-Decanoic Acid) and TCDD on Heart Membranes.

DESCRIPTIVE NOTE: Final rept. 1 May 82-14 Aug 85.

JUN 86 53P

PERSONAL AUTHORS Langley, Albert E.

CONTRACT NO AFOSR-82-0264

PROJECT NO 2312

TASK NO A5

MONITOR AFOSR
TR 45-0651

UNCLASSIFIED REPORT

ABSTRACT U Our initial observations of a reduced responsiveness to adrenergic stimulation of hearts from Perfluoro-n-decanoic acid (PFDA) treated rats has been examined in terms of functional components of the myocardial membrane. The reduced responsiveness can be explained in part by a decrease in the number of cell surface beta adrenergic receptors. An early and dramatic fall in serum levels of thyroid hormones was observed. Because much of the loss of adrenergic responsiveness can be explained by the effects of PFDA on thyroid hormones we concentrated our research on the adithyroid actions of PFDA. The most significant results of this research was the observation reported in detail herein that thyroxine supplementation could prevent the hypophasia characteristic of PFDA treatment without affecting the body wasting syndrome and hypothermia. The mechanism of these paradoxical actions remains to be determined.

DESCRIPTORS U CARBOXYLIC ACIDS, DIOXINS, TOXICITY, MEMBRANES, BIOLOGY, HEART, MYOCARDIUM, STIMULATION, PHYSIOLOGY, NERVES, THYROID HORMONES, LOW LEVEL, BODY TEMPERATURE, HYPOTHERMIA, ADENYL CYCLASE

IDENTIFIERS U Decanoic Acid, Perfluoro-n-
Perfluoro-n-Decanoic Acid, 1,2,3,4-Tetrachlorodibenzo-
P-dioxin, Dioxin, 1,2,3,4-Tetrachlorodibenzo-P, PE61102F

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REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN548

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CHICAGO UNIV I I JAMES FRANK INST

10.10 Dynamics of Gas Surface Interactions Instrumentation

DESCRIPTIVE NOTE Final rept 1 Jan-31 Dec 85

MAR 85 105

PERSONAL AUTHORS Sibener, Steven J

CONTRACT NO AFOSR 85-0051

PROJECT NO 2303

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MONITOR: AFOSR
TR-86-0659

UNCLASSIFIED REPORT

ABSTRACT: "U". This instrumentation grant was used to procure several pieces of equipment with significantly enhanced research capabilities for studying the interactions of molecular beams and laser radiation with well defined surfaces in an ultra-high vacuum environment. A partial listing of the topics that are being explored in greater as a direct result of the new instrumentation includes surface phonon spectroscopy, the dynamics and energetics of heterogeneous interactions, thin film growth including nucleation in two-dimensional systems, gas surface energy transfer interaction potentials, and a variety of laser surface processes such as surface photochemistry, radical reactions, desorption, ablation, energy transfer, and photoemission.

DESCRIPTORS: U, *LABORATORY EQUIPMENT, *ELECTRON SPECTROSCOPY, *INELASTIC SCATTERING, MOLECULAR BEAMS, HIGH VOLTAGE, SPECTROMETERS, VACUUM APPARATUS, LASER TARGET INTERACTIONS, PHONONS, THIN FILMS, ENERGY TRANSFER, EXCIMERS, AUGER, *ELECTRON SPECTROSCOPY, *ELECTRON OPTICS, REFRIGERATION SYSTEMS, CLOSED CYCLE SYSTEMS, HELIUM

IDENTIFIERS: U. Electron spectrometers, Molecular scattering, Photocmission spectra, PE61102F, WJAFOSR2303A2

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UTAH STATE UNIV LOGAN CENTER FOR ATMOSPHERIC AND SPACE
SCIENCES

5.1. Effects of Different Convection Models upon the High-Latitude Ionosphere.

58 199

PERSONAL AUTHORS: Rasmussen, C. E. ; Schunk, R. W. ; Sojka, J. J. ;

CONTRACT NO. AFOSR-84-0029

PROJECT NO. 2310

| TASK NO. | A2 |
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MONITOR: AFOSR
TR-86-0670

UNCLASSIFIED REPORT

ABSTRACT: (U) It is well known that convection electric fields have an important effect on the ionosphere at high latitudes and that a quantitative understanding of their effect requires a knowledge of plasma convection over the entire high latitude region. Two empirical models of plasma convection that have been proposed for use in studying the ionosphere are the Volland and Heelis models. Both of these models provide a similar description of two celled ionospheric convection, but they differ in several ways. In particular, in the manner in which plasma flows over the central polar cap and near the polar cap boundary. To obtain a better understanding of the way in which these two models affect the ionosphere, two separate runs of our high latitude, time dependent ionospheric model were made, with only the convection models distinguishing the two runs. It was found that the two models were made, with only the convection models distinguishing the two runs. It was found that the two models lead to differences in the ionosphere but often the differences are subtle and are swamped by universal time effects. The most notable differences are in predictions of the height of the F2 peak and in the ion temperature, particularly along the evening polar cap boundary and in the cusp region. For these two parameters, the differences caused by the two different convection models dominate the universal time effects. One question

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SEARCH CONTROL NO. EVN548

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that arises is whether one could examine measurements of plasma density and temperature and determine which of the two convection models most accurately represents actual ionospheric convection.

DESCRIPTORS: (U) CONVECTION; ATMOSPHERIC; IONOSPHERIC MODELS; PLASMA PHYSICS; POLAR REGIONS; THERMOSPHERE; MAGNETIC FIELDS; STAGNATION POINT; F REGION; ELECTRON DENSITY; MAGNETOSPHERE; ELECTRIC FIELDS

IDENTIFIERS: (U) Volland model; Heelis model; PE61102F; WUAFOSR231002

AD-A171 954 7/3 7/2

WISCONSIN UNIV-MADISON DEPT OF CHEMISTRY

(U) Metal Halide Catalyzed Rearrangements of Alkylcyclosilanes.

86 7P

PERSONAL AUTHORS: Blinks, Thomas A.; West, Robert

CONTRACT NO. F49620-83-C-0044

PROJECT NO. 2303

TASK NO. B2

MONITOR: AFOSR
TR-86-0588

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub in Organometallics, v5 p128-133 1986.

ABSTRACT: (U) In the presence of an $Al(FeCl_3)$ catalyst ($Al(FeCl_3)_6$, the $Al(FeCl_3)_3$ notation is being used because the exact nature of the catalyst is unknown), a series of permethylcyclosilanes ($Me_2Si(n)H_{2-2n}$, $n = 5-12$, rearranged to form isomeric branched cyclopentasilanes or cyclohexasilanes. For each permethylcyclosilane only one rearranged product was obtained. With the same catalyst, ethylundecamethylcyclohexasilane exhibited both skeletal rearrangement and alkyl group redistribution reactions. Perethylcyclosilanes, cyclopentamethylcyclooctasilanes, cyclooctamethylcyclooctasilanes, and ethylmethylnonamethylcyclooctasilanes either decomposed or did not react with the $Al(FeCl_3)_3$ catalyst, depending upon the choice of solvent used in the reaction. A mechanism involving a cyclosilane $Al(FeCl_3)_3$ complex is proposed to explain the observed rearrangement and redistribution reactions. The branching pattern and ring size of the rearranged permethylcyclosilanes are explained by sigma conjugation effects and steric interactions.

DESCRIPTORS: (U) SILANES; CYCLIC COMPOUNDS; ALKYL RADICALS; CATALYSTS; ALUMINUM COMPOUNDS; IRON COMPOUNDS; CHLORIDES; CATALYSTS; METHYL RADICALS; ISOMERS; STEREOCHEMISTRY; REPRINTS

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DATE RECD: B181064P45 SEARCH CONTROL NO: EVN54B

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IDENTIFIERS: PEG11024 WUAFOSR2303B2

CALIFORNIA UNIV SANTA BARBARA QUANTUM INST

(U) Free Electron Lasers

DESCRIPTIVE NOTE: Final technical rept 15 Feb 84-29 Feb 85.

85 32P

PERSONAL AUTHORS: Colson, W B. Sessler, A. M. ;

CONTRACT NO.: AFOSR-84-0079 DE AC03-76SF-00098

PROJECT NO.: 2301

TASK NO: A1

MONITOR: AFOSR
TR-86-0237

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Annual Review of Nuclear and Particle Sciences, v35 p25-54 1985.

ABSTRACT: (U) This paper reviews the experimental and theoretical development of free electron lasers. There is a review of types of accelerators driving FEL, the history of FELs, and the prospects for the future.

DESCRIPTORS: (U) *FREE ELECTRON LASERS, PUMPING(ELECTRONICS), ELECTRON ACCELERATORS, COMPTON SCATTERING, COMPARISON, TRAVELING WAVE TUBES, LASER AMPLIFIERS, REPRINTS

IDENTIFIERS: (U) PEG11024 WUAFOSR2301A1

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 AD-A171 952 CONTINUED

CALIFORNIA UNIV RIVERSIDE DEPT OF CHEMISTRY

(U) Synthesis, Structure, and Electronic Properties of
 $\eta^5\text{-C}_5\text{Me}_5\text{2 V-CO-OC1 V-CO-5 A}$ Complex with a
 Linear V-O-C-V Bond.
 IDENTIFIERS: (U) PE61102F, WUAF0SR2303B2

85 7P

PERSONAL AUTHORS Osborne Joseph H. Rheingold, Arnold L. J.
 Trogler William C.

PROJECT NO 2303

TASK NO B2

MONITOR AFOSR
 TR 86 0727

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub in Jnl of the American Chemical
 Society 197 n22 p6292-6297 1985

ABSTRACT (U) The reaction between V-CO-6 and $\eta^5\text{-C}_5\text{Me}_5\text{2V}$ yields the $\mu\text{-}(\eta^5\text{-C}_5\text{Me}_5)_2\text{V}_2\text{CO-6}$ complex. $\eta^5\text{-C}_5\text{Me}_5\text{2V-CO-5}$ Crystals of I belong to the space group C2/c . An important aspect of the structure is the linear V-O-C-V moiety with $\text{V-O} = 2.075(4)$ Å, $\text{C-O} = 1.167(16)$ Å, and $\text{C} = 1.299(15)$ Å. Complex I is a paramagnetic, contains two unpaired electrons, and obeys the Curie law between 5 and 293 K. SCF X α MO calculations of $\eta^5\text{-C}_5\text{Me}_5\text{2V-CO-5}$ show that nearly degenerate frontier orbitals localized on the $\eta^5\text{-C}_5\text{Me}_5\text{2V}^+$ fragment lead to a high-spin 3d¹ ground state. The V-O bond arises mainly from an electrostatic interaction between $\eta^5\text{-C}_5\text{Me}_5\text{2V}^+$ and V-CO-6 , however, a small covalent Pt back-donation from a d_{xy} sub 2g⁻ orbital on V-CO-6 into a partly occupied t_{2g} sub 1g⁻ orbital on the $\eta^5\text{-C}_5\text{Me}_5\text{2V}^+$ fragment is observed. Photolysis of I as well as its thermal reaction with carbon monoxide in solution yields $\eta^5\text{-C}_5\text{Me}_5\text{2V-CO-5}$.
 6

DESCRIPTORS (U) ORGANOMETALLIC COMPOUNDS; CARBONYL COMPOUNDS; VANADIUM; SYNTHESIS; CHEMISTRY; MOLECULAR STRUCTURE; ELECTRONIC STATES; CHEMICAL BONDS; CRYSTALS; PARAMAGNETIC MATERIALS; GROUND STATE; ELECTROSTATICS; MOLECULAR GROUPS; PHOTOLYSIS; SUPRAMOLECULAR CHEMISTRY; ENERGY PROPERTIES; REPRINTS

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AD A171 949 BIRLIOGRAPHY SEARCH CONTROL NO EVN54R

AD A171 949 CONTINUED

STANFORD UNI STANFORD LINZON, LAB OF PHYSICS

U Laser Physics and Laser Techniques

DESCRIPTIVE NOTE Final Rept 1 Mar 84 28 Feb 85

MAY 86

PERSONAL AUTHORS Siegman A E

CONTRACT NO F49620 84 C-0041

PROJECT NO 2301

TASK NO A1

MONITOR AFOSR
TP 85 0723

UNCLASSIFIED REPORT

ABSTRACT: (U) This program develops new technologies for exploiting the ultrafast data transmission and measurement capabilities of lasers and applies these new techniques to current scientific problems in physics, chemistry, and ultrafast electronics. Several new techniques are developed for making ultrafast measurements with lasers, both using ultrashort light pulses in combination with novel detection mechanisms to make ultrafast measurements in the time domain, and also using a novel tunable laser induced grating method for making ultrafast measurements without pulses working in the frequency domain. Using the latter approach, femtosecond resolution frequency domain lifetime measurements are made on chemical systems, including the important optical Kerr material CS. The first picosecond pulse time domain measurements are demonstrated using photoacoustic detection as a sensitive and flexible bulk and surface detection mechanism in liquids and solids and flexible, noncontracting method for making picosecond and femtosecond measurements on a very wide variety of surfaces. A number of lifetime and damage studies are made semiconductor surfaces and the formation of spontaneous surface ripples on stimulated Wood's anomalies are explored picosecond laser pulses. An entirely new ultrafast photodetector concept is invented based on ultrafast diffusion driven charge transport. Its experimental demonstration are being pursued

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DESCRIPTORS: (U) *EXPERIMENTAL DESIGN, *LASER APPLICATIONS, LIGHT PULSES, PULSED LASERS SHUTTERS/OPTICS, KERR MAGNETOOPTICAL EFFECT, SHORT PULSES, LASER COMMUNICATIONS, DATA RATE, HIGH RATE, DATA LINKS, TIME DOMAIN, TUNABLE LASERS, GRATINGS/SPECTRA, PHOTOTHERMAL PROPERTIES, ACOUSTOOPTICS, CHARGE TRANSFER

IDENTIFIERS: (U) Picosecond Time, Femtosecond Time, Frequency Domain, PEG1102F, WUAFO5R2301A1

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OPTIC REPORT BIBLIOGRAPHY

SEARCH CONTROL NO EVN546

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WISCONSIN UNIV MADISON DEPT OF PHYSICS

FLORIDA UNIV GAINESVILLE SPACE ASTRONOMY LAB

U Experimental Research on Optogalactic Effects

U Interplanetary Dust and the Visible/Infrared Sky Background Radiation.

DESCRIPTIVE NOTE Rept for 1 Aug 84 1 Jul 85

DESCRIPTIVE NOTE Final rept 1 Apr 83-30 Sep 84

JUN 86 SP

JUL 86 21P

PERSONAL AUTHORS Lawler J E

PERSONAL AUTHORS Weinberg Jerry L

CONTRACT NO AFOSR 84 029A

CONTRACT NO AFOSR-83 0107

PROJECT NO 2401

PROJECT NO 2311

TASK NO A

TASK NO A1

MONITOR AFOSR

MONITOR AFOSR

TR 86 0512

TR 86-0687

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

ABSTRACT U Three pieces of capital equipment which were acquired under this grant are briefly described. All are being used in ongoing experimental research on optogalactic effects. Changes in the conductivity of a gas discharge caused by illumination with radiation at a wavelength corresponding to an atomic or molecular transition are being studied. These effects in order to produce a more quantitative understanding of discharges and of their discharge rate. It is expected that a better understanding of these discharges will lead to the development of a more controlled reaction in optogalactic reactions for the study of the effects of ionizing radiation on the atmosphere and on the ionosphere.

ABSTRACT U A multidisciplinary approach is developed to provide information on the optical and physical properties of interplanetary dust, its location in space, its origin and dynamics, and its contribution to the astronomical background radiation in the infrared. This approach makes use of ground-based, earth orbital, and deep space probe observations of zodiacal light. Development and use of inversion techniques to derive information on particle properties and distribution from zodiacal light observations, analysis of comet tail observations, theoretical calculations and laboratory measurements of scattering by spheroids, cylinders and irregular particles, studies of interplanetary dust dynamics.

DESCRIPTORS COSMIC DUST, INTERPLANETARY SPACE, OPTICAL PROPERTIES, BACKGROUND RADIATION, ZODIACAL LIGHT, SKY BRIGHTNESS, INFRARED SPECTRA, COMETS, DUST CLOUDS

DESCRIPTORS U COSMIC DUST, INTERPLANETARY SPACE, OPTICAL PROPERTIES, BACKGROUND RADIATION, ZODIACAL LIGHT, SKY BRIGHTNESS, INFRARED SPECTRA, COMETS, DUST CLOUDS

IDENTIFIERS U Schubert dust arcs WUAFOSR2311A1
PC61107

AD A111 935

THEORETICAL ANALYSIS OF THE PROBLEM OF THE

EXISTENCE OF POSITIVE SOLUTIONS FOR SIMULTANEOUS
EQUATIONS OF THE TYPE $u_i = f_i(x, u)$

26 1

PERSONAL AUTHOR: GILBERT JOSEPH

CONTRACT NO AFOSR-85-0130 NSF DMS83 1P204

PROJECT NO 2001

TASK NO A5

MONITOR AFOSR
TR 85-0500

UNCLASSIFIED REPORT

ABSTRACT (U) Conditions are formulated which guarantee the existence of positive solutions for simultaneous systems on an open domain with each constant is a positive measure. The main tools used are probabilistic potential theory, Markov processes, and an iterative scheme which is not a generalization of the one used for quasi-monotone systems. Quasi-monotonicity is not assumed and new results are obtained.

DESCRIPTORS (U) MARKOV PROCESSES; SIMULTANEOUS EQUATIONS; POTENTIAL THEORY; DIFFERENTIAL EQUATIONS; ELLIPSES; ITERATIONS; PROBABILITY; EIGENVALUES

IDENTIFIERS (U) ELLIPTIC DIFFERENTIAL EQUATIONS; DIRICHLET PROBLEM WUAFOSR2304A5 FE61102F

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NOBLE CAROLINA UNIV AT ORFEE HILL DEPT OF STATISTICS

DIAGNOSTICS AND ROBUST ESTIMATION WHEN TRANSFORMING
THE REGRESSION MODEL AND THE RESPONSES

DESCRIPTIVE NOTE Technical rept. Aug 85 Aug 86

OCT 85 44P

PERSONAL AUTHORS Carroll, R J ; Ruppert, David ;

REPORT NO MMS-1592

CONTRACT NO F49620-85-C-0144 NSF-DMS84-00602

PROJECT NO 2403

TASK NO A5

MONITOR AFOSR
TR-86-0682

UNCLASSIFIED REPORT

ABSTRACT (U) In regression analysis, the response is often transformed to remove heteroscedasticity and/or skewness. When a model already exists for the untransformed response, then it can be preserved by transforming both the model and the response with the same transformation. This methodology, is called transform both sides has been applied in several recent papers, and appears highly useful in practice. When a parametric transformation family such as power transformations is used, then the transformation can be estimated by maximum likelihood. The MLE however is very sensitive to outliers. This article proposes diagnostics which indicate cases influential for the transformation regression parameters. We also propose a robust bounded influence estimator similar to the Krasker-Weisch regression estimate. Both diagnostics and the robust estimator can be implemented on standard software (Author)

DESCRIPTORS (U) TRANSFORMATIONS; MATHEMATICS; ESTIMATES; REGRESSION ANALYSIS; MATHEMATICAL MODELS; RESPONSE PARAMETERS; DIAGNOSIS; GENERAL; MAXIMUM LIKELIHOOD ESTIMATION

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IDENTIFIERS
PES1102F

CALIFORNIA UNIV LIVERMORE DEPT OF APPLIED SCIENCE
Fundamental Study of Dense Fluid-Detonation

DESCRIPTIVE NOTE: Annual rept. 1 Apr 83-31 Mar 84.

MAR 84 10P

PERSONAL AUTHORS: Hoover, William G.

CONTRACT NO. F45620 81 C 0050, ARPA Order 4077

PROJECT NO. 2305

TASK NO. B2

MONITOR: AFOSR
TR 85-05.6

UNCLASSIFIED REPORT

ABSTRACT: The atomistic pair distribution function is determined for planar crystals undergoing both uniaxial and hydrostatic compression. These distributions are compared to the predictions of the Percus-Yevick-Jacobs model. Simulated molecular collisions of triatomic and hexatomic planar molecules with hexatriene in liquid benzene are used to model the behavior of the pair distribution function and the deformation of the pair distribution function to study a model of solid hexamethylene.

DESCRIPTORS: BENZENE; CRYSTAL STRUCTURE; HEXAMETHYLENE; ENERGY TRANSFER; MOLECULAR ROTATION; MOLECULAR VIBRATION; PARTICLE COLLISIONS; MATHEMATICAL MODELS; OPTIC PROPERTIES; RAY WAVE; DEFORMATION

IDENTIFIERS: AFOSR; BENZENE; DEFORMATION; PERCUS-YEVICK-JACOBS MODEL; NORMAL MODES

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AD A171 935
 CORNELL UNIV ITHACA NY SCHOOL OF APPLIED AND ENGINEERING
 PHYSICS

U Wavelength Independent Optical Lithography
 DESCRIPTIVE NOTE Annual rept 1 Sep 84-31 Aug 85

JUN 86 81P

PERSONAL AUTHORS: Lewis, Aaron

CONTRACT NO. AFOSR-84-0314

PROJECT NO. 2306

TASK NO. B2

MONITOR: AFOSR
 TR-86-0558

UNCLASSIFIED REPORT

Availability: Document partially illegible

ABSTRACT: (U) (Near-Field Diffraction by a Slit: Implications for Super-Resolution Microscopy)--The transmission of light through an infinite slit in a thick, perfectly conducting screen is investigated. The spatial distribution of the near-field energy flux is determined through the formulation of four coupled integral equations, which are solved numerically. Transmission coefficients calculated by this method are in agreement with those determined by an alternative formulation. (Near-Field Scanning Optical Microscopy (NSOM)--A new method for high resolution imaging, near field scanning optical microscopy (NSOM), has been developed. The concepts governing this method are discussed, and the technical challenges encountered in constructing a working NSOM instrument are described. Two distinct methods are presented for the fabrication of well characterized, highly reproducible, sub-wavelength apertures. (Author)

DESCRIPTORS: (U) *LIGHT TRANSMISSION, *MICROSCOPY, APERTURES, ENERGY, FLUX, RATE, DIFFRACTION, OPTICAL SCANNING, OPTICAL IMAGES, HIGH RESOLUTION, FLUORESCENCE, NEAR FIELD

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AD A171 935
 CORNELL UNIV ITHACA NY SCHOOL OF APPLIED AND ENGINEERING
 PHYSICS

U Fundamental Studies of Dense Fluid Deformation
 DESCRIPTIVE NOTE Annual rept 1 Sep 84-31 Mar 85

MAR 85

PERSONAL AUTHORS: Hoover, William G

CONTRACT NO. D10620-81-C-0050 ARPA Order 4075

PROJECT NO. 2306

TASK NO. B2

MONITOR: AFOSR
 TR-85-0684

UNCLASSIFIED REPORT

ABSTRACT: (U) Deformation wave profiles are obtained using a realistic dense fluid equation of state. These profiles are compared to the predictions of the simplified Zeldovich for Neumann Deering model. Methods are developed for simulating the rapid uniaxial compression of solids suited to molecular dynamics simulation. The interatomic distribution function are formulated in solids, for comparison with atomistic simulations and use in kinetic reaction models. The next two years will concentrate on reaction initiation and intramolecular energy transfers in reacting molecules in the solid phase.

DESCRIPTORS: (U) *DEFORMATION WAVES, *MATHEMATICAL MODELS, *HIGH EXPLOSIVES, *HYDROTHERMIC REACTIONS, RELAXATION TIME, VIBRATION, EQUATIONS OF STATE, CONTINUUM MECHANIC, ENERGY TRANSFER, SOLID PHASES, COMPUTERIZED SIMULATION

IDENTIFIERS: (U) Leonard Jones potential, Zeldovich Von Neumann Deering model, Hugoniot curves, WUAI-DSR2306B2, PFB1102F

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AD A171 933 CONTINUED SEARCH CONTROL NO. EVN54B

AD A171 933

IDENTIFIERS: U.S. AIR FORCE, NSOM Near Field Scanning
Optical Microscopy, WJAF05R2306B2, 06K1021

AD A171 933 9/5 9/1 20/12

ILLINOIS UNIV AT URBANA COORDINATED SCIENCE LAB

(U) Modeling of GaAs/AlGaAs MODFET Inverters and Ring
Oscillators.

JUL 85 5P

PERSONAL AUTHORS: Ketterson, A.; Moloney, M.; Morkoc, H.;

CONTRACT NO. F49620-83-K-0021

PROJECT NO. 2305

TASK NO. C1

MONITOR AFOSR
TR 85 0536

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in IEEE Electron Device Letters,
VEDL 6, 07, p359-362, Jul 85

ABSTRACT (U) Detailed understanding of the MODFET inverter chains is lacking and present designs are based on ground rules developed by trial and error. We developed a simple and straightforward model for the current voltage characteristics using results from numerical solutions of the quantum mechanical problem. This model agrees very well with experimental results obtained in our laboratory. High frequency gate capacitance voltage characteristics for a wide gate voltage range was modeled for the first time in a similar fashion. These models were used to simulate a chain of inverters at 77 and 300 K for a wide range of supply voltage and load current. The maximum device speed is obtained for small supply voltages less than or equal to 1 V both at 300 and 77 K where the effects of transconductance degradation and large gate capacitance are minimized. The devices exhibit under 10 ps switching times both at 300 and 77 K with 77 K logic swing being much larger. The results are in qualitative agreement with the reported experimental results (Author).

DESCRIPTORS (U) INVERTER CIRCUITS; OSCILLATORS;
FIELD EFFECT TRANSISTORS; GALLIUM ARSENIDES; ALUMINUM
GALLIUM ARSENIDE; MODELS; HETEROJUNCTIONS; DOPING;
SEMICONDUCTORS; LOW NOISE AMPLIFIERS; REPRINTS

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UNCLASSIFIED

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AD A171 905

IDENTIFIER: CONNECTICUT UNIV STORRS DEPT OF ELECTRICAL ENGINEERING
AND COMPUTER SCIENCE

AD A171 905

17 2

CONNECTICUT UNIV STORRS DEPT OF ELECTRICAL ENGINEERING
AND COMPUTER SCIENCE

(U) Stability Analysis of Interconnected Random Access
Networks

DESCRIPTIVE NOTE: Interim technical rept 1 Jul 85-30 Jun
85.

APR 86 46P

PERSONAL AUTHORS: Merakos, L.; Georgiadis, L.; Bisdikian, C.

REPORT NO: UCT/DEECS/TR-86-6

CONTRACT NO: AFOSR-83-0229; NSF-ECS85-06916

PROJECT NO: 2304

TASK NO: A5

MONITOR: AFOSR
TR-86-0552

UNCLASSIFIED REPORT

ABSTRACT (U) This document considers the interconnection of two multiple-access/broadcast networks, each of which connects a large population of bursty users via packet-switched, random-access channel. In each network a station, called bridge node, receives internetwork packets from the local users and forwards them to the bridge node of the destination network via a point-to-point link; the bridge node of the destination network places these internetwork packets in its queue for subsequent broadcasting to the local users. Considered are two ways of multiplexing the local traffic and the internetwork traffic: contention multiplexing and channel division multiplexing. Under contention multiplexing, the bridge node uses the same random-access channel that the local users use, and therefore it participates in the contention. Under channel division multiplexing, the channel in each of the two networks is subdivided into a node subchannel, used exclusively by the bridge node, and a random access channel, used by the local users.

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DTIC REPORT BIBLIOGRAPHY

SEARCH CONTROL NO. EVN54B

AD-A171 905 CONTINUED

DESCRIPTORS (U) NETWORK ANALYSIS (management),
MULTIPLE ACCESS, MULTIPLEXING, RANDOM ACCESS, COMPUTER
STORAGE, BURST TRANSMISSION, QUEUEING THEORY, STABILITY

IDENTIFIERS (U) Packet switching, Internetworks,
PE61102F WUAFOSR2304A5

AD-A171 904 7/4 7/5

NORTHWESTERN UNIV EVANSTON IL DEPT OF CHEMISTRY

(U) The Spectroscopy and Reaction Kinetics of Transient
Species.

DESCRIPTIVE NOTE: Final rept. 1 Jan-31 Dec 85.

JUN 86 9P

PERSONAL AUTHORS: Weitz, Eric

CONTRACT NO. AFOSR 85-0099

PROJECT NO. 2917

TASK NO. A3

MONITOR: AFOSR
TR 86-0557

UNCLASSIFIED REPORT

Availability: Document partially illegible.

ABSTRACT: (U) A diode laser system has been acquired through the DoD University Research Program. This diode laser system will be employed in an apparatus which will be used for studying transient gas phase species via IR spectroscopy. The apparatus has a time response of 35 nsec and a sensitivity of 10 to the 10th power molecules/cc. The apparatus is capable of providing information on the structure, rates of reaction and rates of relaxation of transient species. It is currently being used to study reactions of vinyl radicals and energy disposition in CO's photojected from metal carbonyl molecules.

DESCRIPTORS (U) INFRARED SPECTROSCOPY, REACTION KINETICS, VAPOR PHASES, LASER APPLICATIONS, PHASE STUDIES, DIODES, TRANSIENTS, VINYL RADICALS, ENERGY, DEPOSITION, ORGANOMETALLIC COMPOUNDS, CARBONYL COMPOUNDS, RELAXATION, RATES, PHOTOLYSIS, ABSORPTION SPECTRA

IDENTIFIERS (U) PE61102F WUAFOSR2917A3

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AD A171 904

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EVN543

AD A171 900 21 2 20 4 14 1 AD A171 900 CONTINUED

STANDARD LINE: A HIGH TEMPERATURE GASDYNAMICS LAB

(U) Advanced Diagnostics for Reacting Flows

DESCRIPTIVE NOTE Annual scientific rept 1 Oct 84 30 Sep 85

OCT 85 53P

PERSONAL AUTHORS Hanson, R K

CONTRACT NO F49620-83 K-0004

PROJECT NO 2303

TASK NO A3

MONITOR AFOSR
TR 86 0633

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Original contains color plates. All DTIC and NTIS reproductions will be in black and white.

ABSTRACT. (U) Progress is reported for the past year of an interdisciplinary program to innovate modern diagnostic techniques applicable to combustion and plasma flows. Research topics include: (1) digital flowfield imaging, including temporally and spatially resolved species and temperature imaging using planar laser induced fluorescence (PLIF); (2) quantitative particle imaging in spray flames using planar Mie scattering (PMS); (3) quantitative velocity and pressure imaging using variations of PLIF; (4) advanced solid state camera/computer systems for high speed and high resolution recording, processing and display of flow image data; (5) fiber optic absorption/fluorescence sensors employing tunable UV, visible and IR laser sources for species measurements; (6) laser wavelength modulation spectroscopy using rapid-scanning UV, visible and IR laser sources for absorption and fluorescence measurements of species; temperature and absorption lineshapes; (7) plasma diagnostics utilizing laser induced fluorescence and wavelength modulation techniques; (8) laser interactions with plasmas and combustion gases; and (9) investigation of other new diagnostic concepts.

DESCRIPTORS (U) PLASMA DIAGNOSTICS, COMBUSTION, FLOW VISUALIZATION, LASER INDUCED FLUORESCENCE, MIE SCATTERING, FLOW FIELDS, DIGITAL SYSTEMS, LASER APPLICATIONS, FLAME SPRAYING, FIBER OPTICS, TUNABLE LASERS, INFRARED LASERS, ULTRAVIOLET LASERS, VISIBLE SPECTRA, THERMAL PROPERTIES, RADIATION ABSORPTION, MODULATION

IDENTIFIERS (U) PE61102F, WUAFOSR2308A3

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DIC REPORT BIBLIOGRAPHY

SEARCH CONTROL NO. EVN54B

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AD-A171 897 11/6 20/12 20/11 20/2

MICHIGAN UNIV ANN ARBOR SUPERCOMPUTER ALGORITHM RESEARCH LAB

OHIO STATE UNIV RESEARCH FOUNDATION COLUMBUS

(U) Block-Oriented, Local-Memory Linear Equation Solution on the CRAY-2, Part 1 Uniprocessor Algorithms

(U) Strength and Structure of Ga_{1-x}In_x as Alloys.

DESCRIPTIVE NOTE Interim rept

DESCRIPTIVE NOTE: Quarterly rept no. 2, 1 Jan-31 Mar 86.

APR 86 33P

DEC 85 32P

PERSONAL AUTHORS Calahan, D A ;

PERSONAL AUTHORS: Faber, Katherine T.; Hirth, John P. ;

REPORT NO SARL 9

CONTRACT NO AFOSR 84 Q096

CONTRACT NO. F49620-85-C-0129, ARPA Order-5526

PROJECT NO 2304

PROJECT NO 5526

TASK NO A5

TASK NO. DO

MONITOR AFOSR

MONITOR: AFOSR
TR-86-0639

TR 85 0681

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Presented at the SIAM Conference on Scientific and Parallel Computing (2nd) Held at Norfolk, VA on 18 Nov 85

ABSTRACT (U) The strengthening effect of GaAs by indium additions is under examination. Solid solution strengthening by InAs₄ solute units has been predicted and is studied via mechanical measurements complemented by electron microscopy. In this second quarterly report, hardness measurements for three Ga_{1-x}In_xAs compositions from R T to 900 C are complete and the second stage of the experimental work, compression testing, as a function of temperature and strain rate is underway.

ABSTRACT (U) Experience with the CRAY 2 on the effects of common memory speed and loading on performance indicate that local memory-based algorithms have potentially a large advantage. The performance of a number of common and local-memory algorithms are compared for the LU factorization of a dense system of equations on the CRAY 2. Results for both Fortran and assembly language implementation are given. Authors

DESCRIPTORS: (U) GALLIUM ALLOYS, INDIUM, ARSENIDES, STRENGTH-MECHANICS, MOLECULAR STRUCTURE, SOLID SOLUTIONS, HARDENING, HARDNESS, MEASUREMENT, WAFERS, DOPING, SINGLE CRYSTALS, YIELD STRENGTH, SHEAR STRESSES, THERMAL STRESSES, CRYSTAL GROWTH, HIGH TEMPERATURE, CRYSTALLINE CRYSTALS, COMPRESSIVE PROPERTIES, TEST METHODS

DESCRIPTORS: (U) ALGORITHMS, COMPUTATIONS, LINEAR ALGEBRAIC EQUATIONS, SOLUTIONS, GENERAL, COMPUTER ARCHITECTURE, FORTRAN, ASSEMBLY LANGUAGES

IDENTIFIERS: (U) PEG1102F, WUAFUSRS526D0, LPN-05JRF-754977/17636

IDENTIFIERS: (U) CRAY 2 Computers, Uniprocessor Algorithms

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EVN510

AD A171 886

ILLUMINATED BY ALUMINUM COORDINATED SCIENCE LAB

Low-Temperature Optical Absorption in Al_xGa_{1-x}As
Grown by Molecular Beam Epitaxy

SEP 85 8P

PERSONAL AUTHORS Pearson P J, Masselink W T, Klem J
Henderson T, Morkoc H

CONTRACT NO F49620-83 K 0021

PROJECT NO 2305

TASK NO C1

MONITOR AFOSR
TR 86-0535

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Physical Review B, v32 n6
p3857-3862 15 Sep 85

ABSTRACT: (U) A detailed study of optical absorption in the Al_xGa_{1-x}As alloy system is undertaken using optical transmission and photoluminescence data obtained at 3 K from molecular-beam epitaxial layers. Absorption coefficient spectra are calculated for the entire alloy composition range 0 ≤ x ≤ 1. The first experimental data concerning AlAs in the region of the Gamma₁ sub 15/2-Gamma₁ sub 1c1 band gap are presented. The compositional dependence of threshold values of the absorption coefficient agrees with current theoretical predictions. Detailed exciton structure is observed for the first time in the absorption spectra of Al_xGa_{1-x}As epilayers with x ≤ 0.43. From this structure, free exciton binding energies are determined. These energies display an x dependence qualitatively similar to that observed in donor activation energies in n-type Al_xGa_{1-x}As.

DESCRIPTORS: (U) ALUMINUM GALLIUM ARSENIDE, ALUMINUM ARSENIDES, OPTICAL PROPERTIES, PHOTOLUMINESCENCE, ABSORPTION COEFFICIENTS, ABSORPTION SPECTRA, EXCITONS, EPITAXIAL GROWTH, MOLECULAR BEAMS, CRYOGENICS, REPRINTS

IDENTIFIERS: (U) Excitonic Structure, Optical Absorption.

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SECTION CONTROL NO EVN548

AD A171 886 CONTINUED

Molecular Beam Epitaxy Binding Energies, WUAFOSR23035C1, PEG1102f

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AD A171 885 20 5 7 4 D110 REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN548

AD A171 885 20 5 7 4 OLAHOMA UNIV NOPMAN DEPT OF PHYSICS AND ASTRONOMY VIRGINIA UNIV CHARLOTTESVILLE DEPT OF MATERIALS SCIENCE

U. Laser Based Studies of Molecular Ion Dynamics in the Earth's Atmosphere

DESCRIPTIVE NOTE Final rept 16 Jan 85 15 Jan 85

JUN 86 6P

PERSONAL AUTHORS Miller Thomas M

CONTRACT NO AFOSR 85 0128

PROJECT NO 2317

TASK NO. A2

MONITOR AFOSR TR 86 0659

UNCLASSIFIED REPORT

ABSTRACT U. This report lists the laser equipment purchased which consists primarily of an argon ion laser and a ring dye laser. It describes how this equipment is being set up in conjunction with a flowing afterflow apparatus to study the photodissociation of positive and negative molecular ions and the photodetachment of negative ions. Future uses of the equipment are outlined.

DESCRIPTORS LASERS PHOTOIONIZATION MOLECULAR IONS AFTERGLOWS ARGON LASERS RING LASERS DYE LASERS

IDENTIFIERS U. photodetachment of ions. AFOSR2917A2 061102F

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EVN548

U. The Use of Novel Processing Procedures for Improving Overall Fatigue Resistance of High Strength Aluminum Alloys.

DESCRIPTIVE NOTE Annual rept. 1 Jan 81 Dec 84.

MAY 84 61P

PERSONAL AUTHORS: Starke, Edgar A., Jr.

REPORT NO. UVA/525643/MS85-101

CONTRACT NO. AFOSR-83 0061

PROJECT NO. 2306

TASK NO. A1

MONITOR: AFOSR TR-86-0627

UNCLASSIFIED REPORT

ABSTRACT U. Recent studies by the Air Force have shown that 50% of all material failures in aircraft are a result of fatigue (1). This high incidence of failures prompted the new safe-crack-growth approach for the design of new aerospace structural systems. However, accurate calculations require a knowledge of fatigue crack growth behavior under a wide variety of load and environmental conditions. Consequently, understanding the mechanisms involved in the initiation and propagation of fatigue cracks in metals is one of the key factors in designing aircraft that are safe, efficient, and economical. Since fatigue crack initiation is a surface phenomenon and fatigue crack propagation is a bulk phenomenon, the fatigue properties may be optimized by production processes that develop the desired microstructures for FCI resistance on the surface and the desired microstructure for FCP resistance throughout the bulk. The objective of this program is to optimize the microstructure of high strength aluminum alloys for overall fatigue resistance, i.e., resistance to both FCI and FCP, through the use of new primary processing methods. Specifically, this research will identify those microstructural features that control the different

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ALUMINUM

aspects of fatigue and edited for methods for incorporating these features in a finished product

DESCRIPTORS: U ALUMINUM ALLOYS CRACK PROPAGATION
HIGH STRENGTH FATIGUE MECHANICS GROWTH GENERAL
AIRCRAFT RESISTANCE MICROSTRUCTURE BURNISH CRACKS
METALS

IDENTIFIERS: U 7475 ALUMINUM ALLOYS

SEARCH CONTROL NO EVN54B

AD A171 880 7 4 20 9 20 5

BEN-GURION UNIV OF THE NEGEV BEERSHEBA (ISRAEL) DEPT OF
PHYSICS

U: Optically Controlled Opening Switches

DESCRIPTIVE NOTE: Final rept 15 Aug 83-14 Aug 84

AUG 84 22P

PERSONAL AUTHORS Shuker, Reuben

CONTRACT NO. AFOSR-84-0157

PROJECT NO. 2301

TASK NO. A7

MONITOR: AFOSR
TR-86-0686

UNCLASSIFIED REPORT

ABSTRACT: (U) Preliminary investigation of applying nonlinear optical effects in conjunction with the optogalvanic effect to achieve laser controlled opening switch was proposed in the low cost grant. It should be mentioned at the onset that this work was limited by the budget and that its purpose was mainly to define the problems and establish feasibilities. A crucial step is a match of mutual virtual level. Within the budget limitation, a few important steps were made: a) Detailed study of the plasma processes taking a major role in the opto-galvanic effect such as Penning ionization and direct electron impact ionization and their relative importance; b) the use of dye lasers according to the Raman scheme; c) Penning ionization in Hg/Ne and Sr/Ne(3) has been studied within the grant. A recent investigation the role of direct electron multistep ionization. The consequences are that although Penning ionization is an important process in the discharge it does not control it sustaining the discharge. In investigating the nonlinear effect little progress was made other than formalizing and defining the problems. (Author)

DESCRIPTORS: (U) OPTICAL SWITCHING, IONIZATION
PLASMA GENERATORS, QUENCHING, LASER BEAMS, PULSED
LASERS, DYE LASERS, METAL VAPORS, DYE LASERS, MERCURY,
ATOMIC ENERGY LEVELS, NEON, SWITCHES, STRONTIUM

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OPTIC REPORT BIBLIOGRAPHY

SEARCH CONTROL NO. EVN548

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AD A171 860 12/1

OPENING PROCESS: NITROGEN

PITTSBURGH UNIV PA CENTER FOR MULTIVARIATE ANALYSIS

IDENTIFIERS: U. Opening switches. Nonlinear optics.
Optogalvanic effect. Penning ionization. Virtual states.
Metastable states. Optical ground state. Nitrogen lasers.
Relaxation. PE61102F WUHF05R2301A7

(U) Likelihood Principle and Maximum Likelihood Estimator
of Location Parameter for Cauchy Distribution.

DESCRIPTIVE NOTE: Technical report.

MAY 86 20P

PERSONAL AUTHORS: BAYLZ D. (Fu J. C.)

REPORT NO. TR 86-13

CONTRACT NO. F49620-85-C-0000

PROJECT NO. 2304

TASK NO. A5

MONITOR: AFOSR
TR-86-0602

UNCLASSIFIED REPORT

ABSTRACT: (U) In the literature of point estimation, Cauchy distribution with location parameters was often cited as an example for the failure of maximum likelihood method and hence the failure of likelihood principle in general. Contrary to the above notion, we proved even in this case that the likelihood equation has multiple roots, that the maximum likelihood estimator (the global maximum) remains as an asymptotically optimal estimator in the Bahadur sense. (Author)

DESCRIPTORS: (U) MAXIMUM LIKELIHOOD ESTIMATION.
ASYMPTOTIC NORMALITY. INEQUALITIES. CAUCHY PROBLEM.
RANDOM VARIABLES. MULTIVARIATE ANALYSIS. NORMAL DENSITY
FUNCTIONS.

IDENTIFIERS: (U) WUHF05R2304A5, PE61102F

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AD A171 859

CALIFORNIA STATE UNIVERSITY OF CALIFORNIA

U 110 Representations for the Bivariate Product Limit Estimators and the Bootstrap Versions

DESCRIPTIVE NOTE Technical rept

SEP 85 35P

PERSONAL AUTHORS Lo Shaw-Hwa (Wang Jane Ling)

REPORT NO UCJL STATISTICS 69

CONTRACT NO AFOSR 85-0268

PROJECT NO 2304

TASK NO A5

MONITOR AFOSR
TR 85-0689

UNCLASSIFIED REPORT

ABSTRACT U It is the purpose of this paper to further investigate the path dependent bivariate (multivariate) PL-estimator of (Cox, 1982), (Horvath, 1983). For simplicity, we shall focus on the bivariate case. The multivariate case can be dealt with similarly. Two path-dependent PL estimators are introduced in Section 2 of (Cox, 1982). We shall consider only one of them in this paper as the other can be treated with symmetric argument while this paper deals only with the multivariate random censoring model. It is possible to extend the results to the multivariate competing risk models.

DESCRIPTORS U BIVARIATE ANALYSIS, ESTIMATES, PATHS, WEAK CONVERGENCE, MULTIVARIATE ANALYSIS, MATHEMATICAL MODELS, RISK CENSORSHIP

IDENTIFIERS U Product limit estimators, Bootstrap method, Survival functions, WUAFOSR2304A5, PEG1102F

AD A171 859

UNCLASSIFIED

FLORIDA STATE UNIVERSITY GAINESVILLE DEPT OF MATHEMATICS

AD A171 856 12 1

U Constructing Markov Processes with Random Times of Birth and Death

86 35P

PERSONAL AUTHORS Getoor, R. V. (Glover, Joseph)

CONTRACT NO AFOSR-85-0330, NSF-DMS84-19377

PROJECT NO 2304

TASK NO A5

MONITOR AFOSR
TR-86-0678

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Sponsored in part by Grant NSF-DMS83-18204.

ABSTRACT U Given a time inhomogeneous Markov transition semigroup $P(s/t, x, dy)$ and an entrance rule $m_s(m, sub t)$ satisfying $m, sub s, P(s/t) \leq m, sub t$, Kuznetsov constructed a measure $Q, sub m$ on path space P that the coordinate maps are Markovian with semigroup $P(s/t)$ and so that the process is born according to the entrance rule m . Kuznetsov's approach was a Kolmogorov type construction. The authors give a new approach based on standard Markov process theory and a new analytic proof of the decomposition of $m, sub t = v, infinity/t + integral from 0 to infinity of (s/t) p(ds)$, where p is a finite measure on R_+ and for each s, v superscript $s = (v, s/t)$ is an entrance law at s .

DESCRIPTORS U MARKOV PROCESSES, OPERATORS/MATHEMATICS, MEASURE THEORY, LIFE TESTS

IDENTIFIERS U Existence theorems, Uniqueness theorems, Birth and Death processes, Lebesgue measure, PEG1102F, WUAFOSR2304A5

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NEW YORK UNIV N Y

(U) The Perception of the Higher Order Features of Visual Motion

DESCRIPTIVE NOTE Interim rept no 1 31 Dec 61 Dec 80

JUN 66 278

PERSONAL AUTHOR Kaufman Lloyd W (Researcher) (U)

CONTRACT NO AFOSR 62 0050

PROJECT NO 1012

TASK NO 05

MONITOR AFOSR
15 05 0514

UNCLASSIFIED REPORT

Abstract (U) Document partially available

ABSTRACT This report describes experimental work conducted in the early stages of this research effort and gives a brief review of the literature studied during that time. In particular, it reviews work on velocity perception thresholds, saccadic suppression, and the concept of the fundamental component of velocities at different times accounts for the observed effects to the uniform motion of the target. The frontal plane of acceleration, this component is persistent with the target. When motion is in the vertical plane, the target is found to be sensitive to speed in space, acceleration, and none of the target is found to respond to acceleration rates of change of speed. As models of the perception include predictions for detecting either a change in speed or change in direction. Direct velocity acceleration, change in speed, hence, we design a novel stimulus composed of sine wave gratings that drift at an average speed and in the display. The speed is sinusoidally modulated, thus introducing acceleration and jerk. The target for the study is also a sine wave, spatial frequency modulated, and a sinusoidal contrast. The experiment is designed to test the hypothesis that the target is sensitive to the target's acceleration.

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SEARCH CONTROL NO EVN54B

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SOCIETY FOR THEORETICAL AND APPLIED MATHEMATICS
PHILADELPHIA, PA

Symposium on Emerging Areas in Applied Mathematics
Held in Pittsburgh, Pennsylvania on 24-26 June 1985

DESCRIPTIVE NOTE Final rept

DEC 85 4P

PERSONAL AUTHORS BLOCK I E

CONTRACT NO AFOSR 85 0122

PROJECT NO 2303

TASK NO A2 A3

MONITOR AFOSR
TR 86 0636

UNCLASSIFIED REPORT

ABSTRACT (U) This project approved the Symposium on Emerging Areas in Applied Mathematics held in conjunction with the SIAM 1985 Summer Meeting, June 24-26 in Pittsburgh, Pennsylvania. Eight invited speakers gave talks in four broad areas of applied mathematics: robotics, nonlinear partial differential equations and applications, scientific computing, and optimization. The meeting was very successful, with a total attendance of more than 100, including representatives of 8 nations.
Author

DESCRIPTORS (U) APPLIED MATHEMATICS, SYMPOSIA,
ROBOTICS, NONLINEAR DIFFERENTIAL EQUATIONS, PARTIAL
DIFFERENTIAL EQUATIONS, COMPUTATIONS, OPTIMIZATION

IDENTIFIERS (U) WUAFOSR2304A3, WUAFOSR2304A2, PE51102F

AD A171 851

UNCLASSIFIED

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EVN54B

KOZIN BOGDANOFF AND ASSOCIATES INC

(U) B. Model Approach to Fatigue, Fatigue Crack Growth, and
Wear for Durability Assessment.

DESCRIPTIVE NOTE Final technical rept 1 Mar 82-28 Feb
85

JUL 85 10P

PERSONAL AUTHORS Bogdanoff, John L.; Kozin, Frank

CONTRACT NO F49620-82-C-0036

PROJECT NO 2303

TASK NO B2

MONITOR AFOSR
TR-86-0861

UNCLASSIFIED REPORT

ABSTRACT (U) Based upon available data, a detailed statistical analysis has been made of the fatigue crack growth process. Much has been learned about this process including its history dependence, and the class of acceptable cumulative distribution functions of the time for a crack to increase a specified amount. Two potential probabilistic models have been suggested and an initial investigation has been carried out. A methodology has been suggested for adaptive updating of a model of cumulative damage based upon service information to improve the accuracy of maintenance procedures to achieve a prescribed reliability. Based on the data, the effect of increase in length on the fatigue life was investigated. It was found that the weakest link idea was not applicable as a model and an acceptable model was proposed. (Author)

DESCRIPTORS (U) CRACK PROPAGATION, FATIGUE LIFE,
STATISTICAL ANALYSIS, MATHEMATICAL MODELS, WEAR, MARKOV
PROCESSES, PROBABILITY DISTRIBUTION FUNCTIONS

IDENTIFIERS (U) B models, PE51102F, WUAFOSR2302B2

UNCLASSIFIED

SEARCH CONTROL NO EVN548

AD A171 836 7.4 7.5 7.3

COLUMBIA UNIV NEW YORK DRPT OF CHEMISTRY

AB Picosecond Laser Studies of the Effects of Reactants on Intramolecular Energy Relaxation of Diphenylcarbene. Reaction of Diphenylcarbene with Alcohols.

NAV 84 8P

PERSONAL AUTHOR(S) SIZIMAN, E. V. Langan, J. G. (Eisenthal, P. B.)

CONTRACT NO AFOSR 84 0013

PROJECT NO 2303

TASK NO 82

MONITOR AFOSR TR 55 0073

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE PUB in Chemical Physics Letters, 112 12 111 116 30 No. 84

ABSTRACT (U) Picosecond laser induced fluorescence measurements provide for the first time the direct measurement of the intramolecular and intermolecular energy decay dynamics of singlet diphenylcarbene (DPD) in the presence of reactive molecules. As exemplified by the reaction of DPD with alcohols it is found that reactive molecules provide a pathway with not only a chemical energy channel but also an intramolecular decay channel which is due to a solvent polarity effect. These chemical and physical effects can act in opposite directions leading to net results such as a significant increase in the singlet state lifetime upon addition of reacting molecules. The absolute reaction rate constants of DPD with alcohols in different solvents, obtained by direct measurements are also reported.

DESCRIPTORS (U) LASER INDUCED FLUORESCENCE; PHOTOCHEMICAL STATES; RELAXATION; CARBENE; PHENYL RADICALS; REACTION KINETICS; REACTANTS; CHEMISTRY; ALCOHOLS; ENERGY DECAY; DYNAMICS; MOLECULE MOLECULE INTERACTIONS; SOLVENTS; POLARITY; REPRINTS

DESCRIPTORS (U) Singlet State; Molecular Relaxation

AD A171 836

UNCLASSIFIED

ATMOSPHERIC PHYSICS GEOPHYSICAL INST

Theoretical and Observational Studies of Gravity Wave
Excitation, Propagation and Dissipation

DESCRIPTION NO. E Final rept Apr 82-May 86

MAY 86 23P

PERSONAL AUTHORS Fritts David C

CONTRACT NO AFOSR-82-0125

PROJECT NO 2310

TASK NO A1

MONITOR AFOSR
TR-86-0583

UNCLASSIFIED REPORT

ABSTRACT U Research under this grant focussed on several aspects of gravity wave excitation, propagation, and dissipation that are expected to be important in the atmosphere. Initial studies addressed the excitation of propagating waves by unstable shear layers and found that the non-linear interaction of evanescent unstable modes is an efficient source of such motion. Other numerical studies examined the consequences of gravity wave propagation and saturation in the middle atmosphere. Important findings include an amplitude limit imposed by wave field instabilities, the self-accelerations of large amplitude motions which may greatly expand the phase speed distribution of mesospheric wave motions, and the field instability. Observational studies revealed wave instability theory with turbulence produces at that site in the wave field where the motion is most unstable. Wave amplitudes were seen to be near saturation value and easily described by a simple saturation model of the evolving gravity wave spectrum throughout the atmosphere. Additional theoretical studies addressed the turbulent transport of heat and constituents and the induced mean vertical motions to vertically propagating gravity waves, contributing to our understanding of apparent differences between observations and modeling results.

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AD A171 833 CONTINUED BIBLIOGRAPHY SEARCH CONTROL NO EVN548

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DESCRIPTIONS OF PROBABILITY WAVES IN ATMOSPHERE, TURBULENCE, ATMOSPHERIC MOTION, SCATTER PROPERTIES, TRANSMISSION, TRANSMISSION, TRANSMISSION PROPERTIES, TRANSMISSION TRANSFER, ENERGY TRANSFER

DESCRIPTIONS OF PROBABILITY WAVES IN ATMOSPHERE, TURBULENCE, ATMOSPHERIC MOTION, SCATTER PROPERTIES, TRANSMISSION, TRANSMISSION, TRANSMISSION PROPERTIES, TRANSMISSION TRANSFER, ENERGY TRANSFER

AD A171 833 12 1

NORTHWESTERN UNIV EVANSTON IL
RANDOM CIRCLES AND FIELDS ON CIRCLES

DISCUPTIVE NOTE Technical report

MAY 86 479

PERSONAL AUTHORS Gintar, Erhan Wang, G. G.

PROJECT NO 22004

TASK NO 35

MONITOR AFOSR
TR 86-085*

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Prepared in cooperation with
Princeton Univ Dept of Civil Engineering

ABSTRACT The aim is to describe the exact shapes of objects that were meant to be circles or cylinders. The shapes are modeled as random fields whose parameter spaces are the intended shapes. A specific random field on a true circle is introduced via exponential smoothing of a random noise on the circle with stationary and independent increments. The result is a stationary, piecewise continuous random field. When the noise is taken to be noise, the result is the unique continuous stationary Gaussian random field on the circle. A similar definition for cylinders yields infinite dimensional Ornstein-Uhlenbeck processes.

DESCRIPTION OF MATHEMATICAL ANALYSIS CIRCLES
MEASURE THEORY, CLEARANCES, PRECISION, SPHERES,
CYLINDRICAL BODIES, SHAPE VARIATIONS, SEPARATION SET
THEORY, MARKOV PROCESSES

IDENTIFIERS UN Ornstein-Uhlenbeck Processes, Levy
Measure, REG1102 WUAFOSR2304A5

AD A171 833

UNCLASSIFIED

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AD A171 812

TEXAS A&M UNIV STEIN DEPT OF CHEMISTRY

U Mechanism of the 1,2-Addition to Naphthalene Rearrangement

85 4P

PERSONAL AUTHOR: Peter Michael J. Morz Kenneth M. J.

CONTRACT NO. 149620 R3D 0024 NSF CHE82 17948

PROJECT NO. 203

TASK NO. 82

MONITOR: AFOSR
TR-86-514

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of the American Chemical Society 107 6411 6412 1985.

ABSTRACT: According to a recent review, no single mechanism yet proposed can adequately account for the rearrangement of azulene to naphthalene. Here we report a theoretical study, which has provided further insight into the solution of this long-standing mechanistic problem. The calculations were carried out using MNDO for closed-shell species and the spin unrestricted version of MNDO-UMNDO for radical or open shell ones, as implemented in the MOPAC package of computer programs. All geometries were fully optimized, transition states (TS) located, and stationary points characterized, by procedures included in MOPAC. The intermolecular mechanisms that have been suggested are outlined in Schemes I and II. We first calculated the activation energy (E_{act}) for the mechanism reported in Scheme II.

DESCRIPTORS: (U) AZULENES, NAPHTHALENES, CHEMICAL REACTIONS, QUANTUM CHEMISTRY, MOLECULAR STRUCTURE, SPIN STATES, TRANSITIONS, MOLECULE MOLECULE INTERACTIONS, ACTIVATION ENERGY, CLEAVAGE, REPRINTS

IDENTIFIERS: (U) Rearrangement MNDO Modified Neglect of Differential Overlap: PEG1102F WUAFOSR2303B2

AD A171 812

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SEARCHED NIRA NO EVN54R

AD A171 811 12 1

CALIFORNIA UNIV RIVERSIDE DEPT OF STATISTICS

U On a New Graphical Method of Determining the Connectedness in Three Dimensional Designs

DESCRIPTIVE NOTE: Interim rept.

DEC 85 17P

PERSONAL AUTHORS: Ghosh, Subir

REPORT NO. TR-138

CONTRACT NO. AFOSR-86-0048

PROJECT NO. 2304

TASK NO. A5

MONITOR: AFOSR
TR-86-0722

UNCLASSIFIED REPORT

ABSTRACT: (U) In this paper we study the connectedness of 3 dimensional designs by reducing the dimension of designs from three to two. A new graphical method of determining the connectedness of designs is presented. The method is easier and simpler than the earlier known methods of Birkes, Dodge and Seely (1976) and Srivastava and Anderson (1970). A generalization of this method for 4 or higher dimensional designs is also discussed.

DESCRIPTORS: (U) MATHEMATICAL MODELS, GRAPHICS, TWO DIMENSIONAL, CONTRAST, PATHS, ADDITION, CLASSIFICATION, PARAMETRIC ANALYSIS

IDENTIFIERS: (U) Connectedness, Additive Models, Equivalence Classes, WUAFOSR2304A5, PEG1102F

EVN51B

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AD A171 809 DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO EVN54B

AD A171 809 CONTINUED

COLUMBIA UNIV NEW YORK DEPT OF CHEMISTRY

IDENTIFIERS (U) Sulfate:Sodium Dodecyl, PE61102F, WUAFOSR230382

(U) Magnetic Effects on Photoinduced Emulsion Polymerization Effects of Lanthanide Ion Addition.

86 6P

PERSONAL AUTHORS Turro, Nicholas J.; Arora, Kartar S.

CONTRACT NO AFOSR-84-0040

PROJECT NO 2303

TASK NO B2

MONITOR AFOSR
TR-85-0738

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub. in Macromolecules, v19 n1 p42-46
1986

ABSTRACT: (U) Photoinduced emulsion polymerization of styrene with sodium dodecyl sulfate (SDS) as the surfactant and dibenzyl ketone (DBK) as an initiator was significantly prevented at 0 G in the presence of $\text{La}(\text{ClO}_4)_3$, $\text{Gd}(\text{ClO}_4)_3$, or $\text{Mg}(\text{ClO}_4)_2$. At 2000 G good yields of high molecular weight polystyrene were obtained in the presence of $\text{La}(\text{ClO}_4)_3$ or $\text{Mg}(\text{ClO}_4)_2$ but polymerization was significantly prevented in the presence of $\text{Gd}(\text{ClO}_4)_3$. These results are explained on the basis of a combination of salt effects on micellar structure and magnetic effects on the reactions of geminate triplet radicals in micelles. The presence of salts caused an increase in the size of micelles, which in turn resulted in a reduced efficiency of free-radical escape from the micelles, and the effect of magnetic field on photoinduced emulsion polymerization was counteracted by the presence of $\text{Gd}(\text{ClO}_4)_3$. The polymerization of methyl methacrylate was found to be unaffected by the addition of these ions in the absence or presence of external magnetic field.

DESCRIPTORS: (U) POLYMERIZATION, STYRENES, PHOTOCHEMICAL REACTIONS, LANTHANUM EMULSIONS, MAGNETIC FIELDS, ADDITIVES, LANTHANUM COMPOUNDS, MAGNESIUM COMPOUNDS, GADOLINIUM COMPOUNDS, CHLORIDES, SALTS

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SEARCH CONTROL NO. EVN548

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AD-A171 804 7/3 7/4

STATE UNIV OF NEW YORK AT BUFFALO DEPT OF CHEMISTRY

TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY

(U) Theory of Reactions at a Solid Surface.

(U) Potential Energy Surfaces and Tunneling Dynamics of some Jahn-Teller Active Molecules.

85 33P

PERSONAL AUTHORS: George Thomas F. Lee, K. Tung, Murphy William C. Hutchinson, Michael Lee, Hui Kong

85 8P

PERSONAL AUTHORS: Dewar, Michael J., Merz, Kenneth M., Jr.

CONTRACT NO. AFOSR 82-0046 NSF-CHE82-17948

CONTRACT NO. F49620-83-C-0024 NSF-CHE82-17948

PROJECT NO. 2303

PROJECT NO. 2303

TASK NO. B3

TASK NO. B2

MONITOR AFOSR

MONITOR AFOSR

TR-86-0556

TR-86-0612

UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Theory of Chemical Reaction Dynamics 14 p133 154 1985

SUPPLEMENTARY NOTE Pub in Jnl. of Physical Chemistry, v89 n22 p4739-4744 1985

ABSTRACT (U) Theories and computational procedures are reviewed for processes involving bond breaking and formation at a solid surface. These processes include reactive scattering, recombination, adsorption and desorption. The article ends with a discussion of theoretical techniques for describing how some of the above processes are induced or modified by laser radiation.

ABSTRACT (U) Potential energy surfaces and rates of tunneling have been calculated for degenerate rearrangements of cyclopropane radical cation, cyclopropenyl radical, cyclopropenyl anion, and cyclooctatetraene, using MNDO or MNDO/HE/CI. Heavy atom tunneling (HAT) plays an important role.

DESCRIPTORS: U CHEMICAL BONDS, REACTION KINETICS, DESORPTION, ADSORPTION, RECOMBINATION REACTIONS, LASER PUMPING, ELECTRON TRANSFER, QUANTUM THEORY, REPRINTS

DESCRIPTORS: (U) TUNNELING, RATES, CYCLOPROPANES, CYCLOOCTATETRAENE, ISOMERS, POTENTIAL ENERGY, SURFACES, MOLECULAR ISOMERISM, CONVERSION, ORGANIC RADICALS, CATIONS, ANIONS, MOLECULAR ORBITALS, MOLECULAR VIBRATION, MOLECULAR STATES, REPRINTS

IDENTIFIERS: U Reactive Scattering, Jahn-Teller Effect, Molecular Scattering, PE61102F, WUAFOSR2303B3

IDENTIFIERS: (U) HAT-Heavy Atom Tunneling, Jahn Teller effect, Cyclopropenyls, Potential energy surfaces, Interconverting isomers, Bond switching, PE61102F, WUAFOSR2303B2

AD A171 806

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AD-A171 309

AD-A171 309

PRINCETON UNIV. NO DEPT OF ELECTRICAL ENGINEERING AND
COMPUTER SCIENCE

U Improving Resolution for Autoregressive Spectral
Estimation by Decimation.

JUN 83 9P

PERSONAL AUTHORS: Quirk, Maureen P.; Liu, Bede

CONTRACT NO AFOSR-81-0185

PROJECT NO 2304

TASK NO A6

MONITOR: AFOSR
TR-86-0644

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in IEEE Transactions on
Acoustics, Speech, and Signal Processing, VASSP-31 n3
p630-637 Jun 83.

ABSTRACT: (U) This paper presents a method for
efficiently improving the resolution of autoregressive
spectral estimation algorithms. We derive the exact
autoregressive spectrum for K complex sinusoids in
additive white noise. From this equation resolution
boundaries are constructed which give the resolution in
terms of the model order and their signal to noise ratio.
Simulation results are used to compare the resolution
boundaries for decimated and undecimated spectra. Our
results demonstrate that decimation by D with a model
order M yields the same resolution as a model order MD
used with the undecimated signal, and that decimation
reduces the computation.

DESCRIPTORS: (U) *SPECTRUM ANALYSIS, *REGRESSION
ANALYSIS, SIGNAL PROCESSING, WHITE NOISE, SIGNAL TO NOISE
RATIO, ALGORITHMS, POWER SPECTRA, REPRINTS

IDENTIFIERS: (U) Burg Algorithm, Additive Noise,
PE61102F, WJAFOSR2304A6

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AD-A171 309

AD-A171 309

U Convective and Gravitational Instabilities due to Gravity
Wave Motions in the Lower and Middle Atmosphere
Theory and Observations

DEC 83 9P

PERSONAL AUTHORS: Fritts David C.; Bastogi Prabhakar K.

CONTRACT NO AFOSR 82-0125 NSF-ATM83-13153

PROJECT NO 2310

TASK NO A1

MONITOR: AFOSR
TR 85-0671

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Radio Science, v20 n6 p1247-
1277 Nov Dec 85

ABSTRACT: (U) Dynamical and convective instabilities are
two mechanisms that contribute significantly to the
dissipation of larger-scale motions and the generation of
turbulence in the middle atmosphere. The former are
normally due to enhanced velocity shears and/or a local
minimum of the static stability either in the mean flow
or associated with low-frequency wave motions. The most
common dynamical instability is the Kelvin-Helmholtz (KH)
instability which is often manifested in the atmosphere
as a series of KH billows. Convective instabilities occur
where the lapse rate becomes superadiabatic through the
action of gravity waves and appear to predominate for
high frequency wave motions. This paper reviews the
theory and the observational evidence for both types of
instabilities in the lower and middle atmosphere.

DESCRIPTORS: U *ATMOSPHERIC MOTION, *TURBULENCE,
MESOSPHERE, TROPOSPHERE, GRAVITY WAVES,
CONVECTION, ATMOSPHERIC, THERMAL INSTABILITY, PRANDTL
NUMBER, REPRINTS

IDENTIFIERS: U Kelvin-Helmholtz In Stability,
Richardson Number, PE61102F, WJAFOSR2310A1

AD-A171 309

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SEARCH CONTROL NO. EVN54B

AD A171 787 6 16

YALE UNIV NEW HAVEN CT DEPT OF OPHTHALMOLOGY AND VISUAL SCIENCE

(U) Two Dimensional Sampling by the Partial Lattice

DESCRIPTIVE NOTE Technical rept

SEP 83 19P

PERSONAL AUTHORS Hirsch, Joy (Hylton Ren)

REPORT NO TR 8303

CONTRACT NO 19620 83 C 0026

PROJECT NO 2113

TASK NO A5

MONITOR AFOSR TR 85 0501

UNCLASSIFIED REPORT

Availability: Microfilm copies only Document partially fileable

ABSTRACT (U) A discussion of sampling in two dimensions and its implications for vision is presented. We show that aliasing in two dimensions will change both the apparent frequency and orientation of a grating. Furthermore, we demonstrate that the Nyquist frequency depends on orientation and is higher than the usual estimate of 60 c/sec.

DESCRIPTORS (U) RETINA; VISION; SAMPLING; TWO DIMENSIONAL FREQUENCY ORIENTATION; DIRECTION; GRATINGS; SPECTRA; CRYSTAL LATTICES; BRILLOUIN ZONES; PHOTORECEPTORS

IDENTIFIERS (U) Aliasing, PE61102F WUARDSP2313A5

AD A171 787

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AD-A171 786 7/3 7/2

IOWA UNIV IOWA CITY DEPT OF CHEMISTRY

(U) Preparation of F-Cadmium Reagents Directly from F-Alkyl Iodides and F-Aryl Bromide and Cadmium Metal.

85 5P

PERSONAL AUTHORS: Heinze, Pamela L.; Burton, Donald J.

PROJECT NO. 2302

TASK NO 32

MONITOR: AFOSR TR-86-0654

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub in Jnl of Fluorine Chemistry, v29 p356-261 1985.

ABSTRACT (U) F-alkyl cadmium reagents can be readily prepared via the direct reaction of F-alkyl iodides with cadmium powder in DMF at room temperature. Similar reaction of bromopentafluorobenzene with cadmium powder in DMF at room temperature affords the F-aryl cadmium reagent in excellent yield. This approach provides a rapid, easily scaled up, one-pot procedure to these valuable synthetic reagents from commercially available precursors.

DESCRIPTORS (U) ORGANOMETALLIC COMPOUNDS; FLUORINATED HYDROCARBONS; CADMIUM COMPOUNDS; SYNTHESIS; CHEMISTRY; ALKYL RADICALS; IODIDES; POWDERS; ARYL RADICALS; BROMIDES; ROOM TEMPERATURE; REPRINTS

IDENTIFIERS (U) Cadmium Reagents, DMF (Dimethyl Formamide), Formamide/Dimethyl, PE61102F, WUAFOSR2303B2

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PENNSYLVANIA UNIV PHILADELPHIA

AD A111 784 11 9 20 6

U. Molecular Nonlinear Optics Nonlinear Optical Processes in Organic and Polymer Systems.

DESCRIPTIVE NOTE Sept 1 Oct 80-30 Sep 85

MAR 85

PERSONAL AUTHORS Garito, A. F.

CONTRACT NO AFOSR A1 0047

PROJECT NO 2304

TASK NO A5

MONITOR AFOSR TR 85 0523

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Proceedings of the Conference on Information Sciences and Systems, p172 176 27-29 Mar 85

ABSTRACT U This document presents an easily implemented alternative scheme for image compression which allows exploiting some commonly encountered image characteristics. This approach admits the possibility of improved performance and enhanced compression ratios when compared to block truncation coding. The application of the algorithm is illustrated by various example images, and it is seen that the results also have the surprising consequence that the algorithm can restore certain images with no alteration whatsoever and yet still achieve reasonable compression ratios. (Author)

DESCRIPTORS U DATA COMPRESSION, IMAGE RESTORATION, IMAGE PROCESSING, ALGORITHMS, TRUNCATION, REPRINTS

IDENTIFIERS U F51102F WUAFOSR2304A5

AD A111 784

UNCLASSIFIED

85 4P

PERSONAL AUTHORS Garito, A. F.

CONTRACT NO AFOSR-84-0135

PROJECT NO 2303

TASK NO A3

MONITOR AFOSR TR-85-0607

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub in Plastics 85, Proceedings of the SPE Annual Technical Conference and Exhibition (43rd) p421-423 1985.

ABSTRACT: (U) This review concerns the macroscopic nonlinear optical responses of organic and polymeric structures and the fundamental understanding of the relations and origins of nonlinear processes to the nature of electronic excitations and their interactions. As natural developments in studies of nonlinear optical phenomena, the recent demonstrations of phase conjugated wave generation, optical bistable states and exceptionally large nonlinear optical susceptibilities in organic and polymeric materials have stimulated considerable growth in research and development activities in centers throughout the world. These intriguing phenomena suggest a wide variety of potential applications in future optical telecommunications, image reconstruction, integrated optics, optical signal switching and processing, data storage, and optical memory and logic technologies. We believe the recent advances in nonlinear optical research can be rapidly accelerated and enlarged through fundamental studies of organic and polymer crystals and films.

DESCRIPTORS: (U) ORGANIC MATERIALS, POLYMERS, OPTICS, MOLECULAR STRUCTURE, OPTICAL PROPERTIES, ELECTRONIC STATES, EXCITATION, INTERACTIONS, CRYSTALS, FILMS

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ACETYLENES MONOMERS VINYL PLASTICS LIQUID CRYSTALS
REPRINTS

ULTRASYSTEMS INC IRVINE CA

IDENTIFIERS U PE61102F, WUAFOSR2303A3

(U) Reactions of Perfluoronitriles II Interactions with
Phenylphosphine.

85 19P

PERSONAL AUTHORS: Paciorek, K. J.; Nakahara, J. H.; Kratzer,
R. H.

CONTRACT NO. F49620 82 C-0021

PROJECT NO. 2303

TASK NO. 92

MONITOR AFOSR
TR 85-0616

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Fluorine Chemistry,
v30 p269 287 1985. See also AD-A171 739

ABSTRACT (U) Treatment of perfluoro-n-octanenitrile
with phenylphosphine gave tetraphenyltetraphosphine and a
spectrum of reduction and interaction products. Fifteen
compounds were identified. The imine, $\text{Rf-C(=N)}\text{Rf}$, Rf-CH-NH ,
and the amine, $\text{Rf-CH}_2\text{NH}_2$, were the primary reduction
products. Secondary phosphorus free products, some formed
following ammonia evolution, were the following
 $\text{Rf-CH-NH-CH}_2\text{Rf}$, $\text{Rf-CH}_2\text{CH-NH}_2\text{Rf}$, $\text{Rf-CH-NH-NCRf-NH}_2$,
 $\text{Rf-CH}_2\text{NH-CRf-NH}_2$, Rf-CH-NH_2 , $\text{Rf-CH-NH-NCRf-NH}_2$,
 $\text{Rf-CH}_2\text{N-CRf-NH-CH}_2\text{Rf}$, and $\text{Rf-CH}_2\text{N-CRf-NH-CH}_2\text{Rf}$. Only three
phosphorus containing materials were definitely
identified, $\text{Rf-CH-NH}_2\text{P-C}_6\text{H}_5$, $\text{Rf-CH}_2\text{P-C}_6\text{H}_5$, and
 $\text{Rf-CH-NH-P-C}_6\text{H}_5$. Depending on reaction conditions,
specific phosphorus containing compounds could be
preferentially produced. All the structure assignments
are based solely on mass spectral breakdown patterns
since pure compounds were not isolated.

DESCRIPTORS: (U) NITRILES, FLUORINE COMPOUNDS,
PHOSPHINE, PHENYL RADICALS, CHEMICAL REACTIONS
CHEMICAL DERIVATIVES, IMINES, AMINES, PHOSPHORUS,
ADDITION REACTIONS, SOLVENTS, MOLECULAR STRUCTURE, MASS
SPECTRA, REPRINTS

AD A171 784

AD-A171 783

UNCLASSIFIED

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EVN54B

Comparison of Mesospheric Wind Spectra with a Gravity Wave Model

PERSONAL AUTHORS Smith, Steve A.; Fritts, David C
VanZandt, Thomas E

DEC 85 9P

CONTRACT NO AFOSR 82-0125

PROJECT NO 2310

TASK NO A1

MONITOR AFOSR
TR-86-0666

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Radio Science V20 N6 p1331-1338 Nov-Dec 85

ABSTRACT (U) Radial wave number spectra are presented for wind fluctuations obtained from heights near the mesopause by the Poker Flat, Alaska, mesosphere-stratosphere-troposphere (MSST) radar running in a high spatial resolution mode (300 m). The spectra are of radial wind fluctuations along one vertical and two oblique (15 deg. zenith angle) beams measured at heights of 12-88 km during summer. The oblique wave number spectra have amplitudes that are within a factor of 3 of each other and appear to follow power laws with exponents in the -2 to -2.8 range. In order to infer what portion of the spectral amplitude can be attributed to gravity waves, the ratio of oblique to vertical amplitudes is compared with the ratio predicted by the gravity wave model of VanZandt. The observations are found to be consistent with model suggesting that gravity waves are the dominant motion in the high latitude summer mesosphere.

DESCRIPTORS (U) WIND VELOCITY; MESOSPHERE; GRAVITY WAVES; ARCTIC REGIONS; SUMMER; SPECTRUM ANALYSIS; RADAR SIGNALS; REPRINTS

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PRINCETON UNIV. NO DEPT OF ELECTRICAL ENGINEERING AND
COMPUTER SCIENCE

SRI INTERNATIONAL MENLO PARK CA CHEMICAL KINETICS DEPT

Adaptive Equations Using Finite Bifurcation of Two
Variables

(U) Reaction of CF₃ Radicals on Fused Silica Between 320
and 530 K

AD A171 755

CF₃ 86

9P

PERSONAL AUTHOR: Selamoglu N (Rossi M J) Golden D M

PERSONAL AUTHOR: Selamoglu N (Rossi M J) Golden D M

CONTRACT NO. F45620 85 K-0001

CONTRACT NO. F45620 85 K-0001

PROJECT NO. 2303

PROJECT NO. 2303

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TASK NO. 81

MONITOR AFOSR

MONITOR AFOSR
TR 85-0603

UNCLASSIFIED REPORT

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THESE NOTES ARE FOR THE USE OF THE INTER-UNIVERSITY CONFERENCE
ON THE PHYSICS OF PLASMA AND THE PHYSICS OF THE SOLID STATE
AND THE PHYSICS OF THE SOLID STATE

SUPPLEMENTARY NOTE: Pub in Jnl of Chemical Physics 84
N4 p2400 2407 15 Feb 86

The reaction between CF₃ radicals and
silicon oxide (fused silica) surface was studied in a
Very Low Pressure Photolysis flow reactor (approx. 0.13
mm) as functions of surface temperature (320-530 K),
and CF₃ concentration. The CF₃ radicals were generated
from CF₃I by 202 laser photolysis, and the subsequent gas
phase reaction products were followed by mass
spectroscopy. The surface reaction was found to yield CO
HF, CO₂, CF₂, and SiF₄. It was found that H₂O residing
on the silicon oxide surface was largely responsible for
the oxygen and hydrogen containing products, and that
little etching of the SiO₂ itself occurred under these
conditions. The rates for the irreversible surface loss
of CF₃ and for the formation of CO were both first order
with respect to CF₃. These were found to be temperature
dependent with E_{sub} approx. 0.7 and 7.5 kcal/mol
respectively. The CF₃ surface loss rate indicates that
the sticking coefficient for this radical on quartz is
between 0.014-0.017 for the temperature range of this
study.

AD A171 755

AD A171 755

DESCRIPTION: (U) FLUORINATED HYDROCARBONS, SURFACE
CHEMISTRY, FUSED SILICA, SURFACE TEMPERATURE
REACTIVITIES, MASS SPECTROSCOPY, FREE RADICALS, REACTION

AD A171 755

UNCLASSIFIED

ENVR 86

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PRINCETON UNIV. NO. DEPT. OF ELECTRICAL ENGINEERING AND
COMPUTER SCIENCE

1. An Iterative Algorithm for Locating the Minimal
Eigenvector of a Symmetric Matrix

64 EP

PERSONAL AUTHORS Fuhrmann Daniel R. Liu, Bede

CONTRACT NO AFOSR 81 018F

PROJECT NO 2304

TASK NO A6

MONITOR AFOSR
TR-86 0842

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in IEEE International Conference
on Acoustics, Speech, and Signal Processing, p45 R 1
through 45 R 4 1984

ABSTRACT (U) A new iterative method of finding the
minimum eigenvalue of a symmetric matrix is described.
This method does not utilize matrix inversions and is
applicable to any matrix R for which the matrix vector
product Rx is rapidly computable. It seeks the minimum
eigenvalue of R by minimizing the quadratic form
x^Ttransposed Rx on the unit hypersphere using a search
technique derived from the conjugate gradient method. The
computational complexity of each step of the algorithm
depends on the speed with which Rx can be computed.

DESCRIPTORS (U) MATRICES MATHEMATICS EIGENVALUES
ITERATIONS SOLUTIONS-GENERAL SYMMETRY REPRINTS

IDENTIFIERS (U) Conjugate gradient method PE51102F
WUAFOSP2304A6

AD A111 141

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SEARCH CONTROL NO EVN54R

AD A17 746 CONTINUED

LEAST SQUARES METHOD EXTRAPOLATION DISCRETE
DISTRIBUTION PERIODS

IDENTIFIERS (U) SVD Singular Value Decomposition
Inverse problems Moore Penrose Inverse matrix

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DEPT OF MATHEMATICS

PRINCETON UNIV NJ DEPT OF ELECTRICAL ENGINEERING AND
COMPUTER SCIENCE

On the Use of Singular Value Decomposition and
Decomposition in Discrete Time Band Limited Signal
Interpolation

On the Use of Singular Value Decomposition and
Decomposition in Discrete Time Band Limited Signal
Interpolation

PERSONAL AUTHOR SUTHERLAND, RICHARD L

DEPT 84 ADP

CONTRACT NO 68-01-0100

PERSONAL AUTHOR SUTHERLAND, RICHARD L

PROJECT NO 2201

TASK NO AG

MONITOR AG

MONITOR AG

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UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE FOR THE TRANSMISSION OF
ACQUISITION, STORAGE, AND SIGNAL PROCESSING, ASSP 12 DE
P1201 1, 2, 000 84

ABSTRACT: This report describes a method for the interpolation of
bandlimited signals in discrete time. The method is based on
the singular value decomposition of the data matrix. The method
is applied to the interpolation of signals in discrete time and
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DEPT OF MATHEMATICS
PRINCETON UNIV NJ DEPT OF ELECTRICAL ENGINEERING AND
COMPUTER SCIENCE

UNCLASSIFIED REPORT
SEARCH CONTROL NO E4N548

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TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY

(11) Photoelectron Spectrum of Benzene.

35 48

PERSONAL AUTHOR

CONTRACT NO. F49620-83-C-0024

PROJECT NO. 2303

TASK NO B2

MONITOR · AFOSR

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of the Chemical Society
Chemical Communications. p1242-1244 1985.

ABSTRACT: The u. v. photoelectron (UPE) spectrum of benzene prepared by flash vacuum thermolysis of phthalic anhydride or indanthrone is reported. Bands corresponding to benzene were not observed in the UPE spectra of the products from pyrolysis of iodobenzene, o-dichlorobenzene or benzoyl bromide.

DESCRIPTORS (U) *UNSATURATED HYDROCARBONS. *CYCLIC COMPOUNDS *PHOTOELECTRON SPECTRA *ULTRAVIOLET SPECTRA THERMOCHEMISTRY PYROLYSIS PHTHALATES ANHYDRIDES. REPRINTS

IDENTIFIERS (U) Benzoyne Indentations WUAF0SR2303B2.
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ANALYSIS REPORT

SEATTLE METRO AIRPORT
COMMERCIAL AVIATION
TYPE Transactions on
15-Jul-75

algorithm. Although this algorithm is frequently regarded as a simple and adequate method for the design of stable minimum mean squared error quantizers, there are two technical problems associated with this iterative scheme: the initialization and the updating of the algorithm. This paper proposes easy and efficient solutions to these problems. A straightforward method for obtaining good initial conditions for the common input quantizer is presented. Also, an efficient technique for adjusting the class widths for a wide class of input distributions is given.

DESCRIPTORS: ALGORITHMS • QUANTIZATION INPUT
DENSITY • EQUATIONS • DEBRINIS • PROBLEM SOLVING

CENT: 1102F
M... algon...
WJAFUSR2304A5 PES1102F

UNCLASSIFIED

01.01.2018 8181 INGRASSIA

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ORGANIZATION, A SYSTEM OF ENGINEERING AND
CONSTRUCTION OF

10. On October 1, 1960, the following information was received from the Department of the Interior, Bureau of Land Management:

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PERSONAL AND CONFIDENTIAL

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THE UNIVERSITY OF CHICAGO

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Figure 1. The effect of the concentration of the *Agrobacterium* suspension on the transformation efficiency of *Agrobacterium* strains. The *Agrobacterium* strains were grown in YEA medium for 24 h at 28°C. The cell concentration of the strains was adjusted to 10⁸ cells/ml. The cell suspension was then diluted to 10⁶, 10⁷, 10⁸, 10⁹, and 10¹⁰ cells/ml. The cell suspension was then inoculated into the plant tissue. The transformation efficiency was determined by the number of transformants per 10⁶ cells. The data were expressed as the mean ± SD of three independent experiments.

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SEARCH CONTROL NO EVN548

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IOWA UNIV IOWA CITY DEPT OF CHEMISTRY

U. A Remarkably Simple Preparation of (Trifluoromethyl)cadmium and -Zinc Reagents Directly from Difluorodichloromethanes

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PERSONAL AUTHORS
Burton, Donald J., Wiemers, Denise M.

CONTRACT NO. AFOSR-85-0009 NSF CHESS 401-3

2303 ON 21019

28. 4501

APR 1968
12-85-0553

UNCLASSIFIED REF ID: A66069

SUPPLEMENTARY NOTE - 2025 IN JUNE OF THE AMERICAN (NATIONAL)
SOCIETY 5015 1985 5014 5014

EXPERIMENTAL The reaction of diisopropylaluminum with activated aluminum or zinc powder in dry tetrahydrofuran (THF) or diethylmethoxyethane (DMF) in the presence of a small amount of lithium chloride or zinc chloride was carried out under a nitrogen atmosphere in the concentration of the dihaloaluminum greater than 10% in THF and 20% in DMF. The formation of the polyfluoropolymer in which the fluorine content of the polymer was 10% or higher was observed by the capture of the fluoropolymer by addition of a subsequent aliquot of the fluoropolymer to the reaction mixture. The aliquots were dried in a vacuum oven at 100°C for 24 h and then analyzed by gas chromatography. This method gave a simple and reproducible high yield results for the fluoropolymer analysis. The polymer which can be employed as a high capacity and low conductivity transfer electrodes was prepared by the following procedure.

HYPERBOLICITY IN THE SYNTHESIS OF POLYMER METALLIC
COMPOUNDS, POLYMERIZED HYDROCARBONS,
POLYMER RADICALS, HALOGENATED HYDROCARBONS, METAL-
POLYMER COMPOUNDS, METHYLATION REACTIONS

U.S. DEPARTMENT OF AGRICULTURE
WASHINGTON, D.C. 20250

NO 10

TEXAS UNIV AT AUSTIN DEPT OF CHEMISTRY

U. Stannylenes An MNDQ Investigation

45 6P

PERSONAL AUTHORS Dewar, Michael U. (Friedhelm, James E.)

Grady Gilbert U.

CONTRACT NO F49620-83-C-0024

PROJECT NO 2303

TASK NO 82

MONITOR AFOSR

TR RB-0610

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in Organometallics 14 n10 p1781

1787 1985

ABSTRACT U While the chemistry of carbon II compounds (carbenes) has been extensively studied references to the organic chemistry of tin II compounds stannylenes remain sparse. While the stable tin II halides have been well characterized and MNDQ studies of them reported, organotin II compounds have remained elusive and most of the early claims for their preparation have been refuted. In recent years, however, clear evidence for the preparation and reactions of stannylenes has emerged. The reactions so far reported include insertion into carbon halogen or tin-halogen bonds, polymerization, and chelotropic cycloadditions. As in the case of divalent carbon, the reactions may take place either via free stannylenes or through stannyleneid intermediates. We have now examined several such processes using the MNDQ SCF MO model. MNDQ parameters for tin have recently become available and extensive studies of tin compounds have led to satisfactory results.

DESCRIPTORS U ORGANOMETALLIC COMPOUNDS, TIN COMPOUNDS, SYNTHESIS, CHEMISTRY, QUANTUM CHEMISTRY, COMPUTATIONS, ADDITION REACTIONS, CHEMICAL BONDS, POLYMERIZATION, METHYL RADICALS, REPRINTS

IDENTIFIERS U MNDQ Modified Neglect of Differential

AD A171 109

UNCLASSIFIED

PAGE 228

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2000

1. *Phragmites australis* (Cav.) Trin. ex Steud.

10. Nonlinear Optical Processes in Organic Media: Large Non-Resonant Third-Order Electronic Responses in High-Performance Liquid-Crystal Polymer Structures

2000

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NVR

PERSONAL AND PROFESSIONAL DEVELOPMENT

PERSONAL AUTHORS Gerito A F ; Teng C C

THE
NATIONAL
ARCHIVES
COLLECTION
OF
THE
UNITED STATES
OF AMERICA

CONTRACT NO F49620 84 C 0110 AFOSR-84-0135

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PROJECT NO. 2303

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TASK NO. 13

COALITION

MONITOR AFOSR IR-85-0602

FIELD OF VISION

UNCLASSIFIED REPORT

SEPTEMBER 4-10, 1993, in IEEE International Conference
 on Acoustics, Speech, and Signal Processing, P1095-1098
 1993.

AR model. In a paper presenting an investigation of the applicability of autoregressive AR spectral analysis as an approximation to the Mth order exact spectrum for K complex signals with additive white noise is derived. In order to reduce the resolution to the model order and signal factors, a resolution boundary is defined for two sampling rate ratios. Empirical formulas are given relating resolution to the factors affecting it.

[illegible]

NEW LINES • Analogous • Add Five Noise

DESCRIPTORS: •U. •POLYMERS •LIQUID CRYSTALS.
•ELECTRONIC STATES. •OPTICS OPTICAL PROPERTIES
NONLINEAR SYSTEMS. EXCITATION HARMONICS NEODYMIUM
LASERS YAG LASERS POLYBENZIMIDAZOLE OPTICAL EQUIPMENT

IDENTIFIERS (U) Polycyanoisothiazole PEG1102F
WUAF0SR2302A3

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11/11/2019 14:55

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SUPPLEMENTARY NOTE Presented at SPIE OF LASER '85, Los Angeles, CA, Jan 86

ABSTRACT: (U) Organic and polymer structures exhibit unusually large ultrafast second and third order nonlinear optical properties in a large number of structures, phases, and states. Rapid advances in the field can be achieved through further development of stable, high performance polymer structures having outstanding secondary properties as demonstrated for example, by high performance liquid crystal polymers. For two such polymer systems, PBI and PBT, third harmonic generation measurements show that they possess large, nonresonant third order optical susceptibilities whose origin resides in ultrafast, lossless excitations of highly charge correlated electron states.

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PERCENTAGE OF TOTAL BASKETBALL REVENUE

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Accession No. 0011556734

SUPPLEMENTARY MATERIAL: See the Text Translations on
Accounting, Speech, and Signal Processing, VOSSP, at
01365-1234-5678.

As stated in the introduction, a general scheme for changing sampling rates is described and a method of designing recursive filters for use in this general scheme is presented. If these requirements are ignored, then this scheme provides a computationally efficient means of computing over nonrecursive filters. The use of recursive filters with appropriately chosen quantizers also led to a performance better than that of using nonrecursive filters. The quantization effects in these schemes are minimal.

DESCRIPTION OF THE FILTERS, DIGITAL FILTERS
SAMPLING AND PROCESSING INTERPOLATION RATES
REFERENCE SIGNALS

IDENTIFIERS APPROVED FOR RELEASE DOCUMENT
 DATES FORWARDED 0161102F WJAFGR2304Ab

INC. 100-111111

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1. *Chlorophyll a* (Chl *a*)

ILLIAC SYSTEMS INC. (RVINE, CA)

1) Reactions of Perfluorocarboxylic Di-Interactions with Diphenylphosphine

58

PERSONAL AUTHORS
R H
PACIORELLI, J.; Nakahara, J. H.; Pratzner
J. H.

CONTRACT NO F43620 32 C 0021

PROJECT NO. 2303

TASK NO. B2

MONITOR AFOSD
TP 85-081

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Fluorine Chemistry, v30 p289-295 1985

ABSTRACT: (U) Reaction of perfluoro-n-octanitrile with diphenylphosphine gave two products, a primary adduct, C7F15O-P(Ph)2 and the reduced adduct, C7F15CH2NH2. p-C6H5-2. Presence of water prevented the formation of the reduced compound, the latter was not produced by reduction of the primary adduct. Operative mechanisms are postulated. Infrared and mass spectra are discussed.

DESCRIPTORS: (U) NITRILES PHOSPHINE, FLUORINE
COMPOUNDS, CHEMICAL REACTIONS, INFRARED SPECTRA, MASS
SPECTRA, PHENYL RADICALS, REPRINTS

IDENTIFIERS (U) -PERFLUORONITRILES, DIPHENYLPHOSPHINE
PHOSPHINE, DIPHENYL OCTANONITRILE, PERFLUORON, PEG1002F,
WUAFOSP2303B2

FVN54B

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[illegible]

Figure 1 consists of two panels, (A) and (B), each showing a Western blot and a corresponding bar graph. Panel (A) shows p38 phosphorylation in cells treated with 100 nM LPS for 15 minutes. The Western blot shows bands for p38 and actin. The bar graph shows the ratio of p38 phosphorylation to actin, with values approximately 0.15 for control, 0.25 for LPS, and 0.20 for LPS + SB. Panel (B) shows p38 phosphorylation in cells treated with 100 nM LPS for 15 minutes and 100 nM SB for 15 minutes. The Western blot shows bands for p38 and actin. The bar graph shows the ratio of p38 phosphorylation to actin, with values approximately 0.15 for control, 0.25 for LPS, and 0.15 for LPS + SB.

of the system, only a few of the components are available in the form of a single unit. The components are available in the form of a single unit, and the system is available in the form of a single unit.

DISCUSSION NOTE RECEIVED 1 APR 01 DUE 25

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PERSONNEL AUTHORS Vangelova, Ralva

REPORT NO. 130338
140-4637

WCCW-TRAC, No. 200014-05-0-0131

MONITOR
AFOSR
TR 88-022

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2016-2017

James O. H. Thompson, President of the National Association of Manufacturers, has been elected to the position of President of the National Association of Manufacturers, a position of honor and trust. He has been elected to the position of President of the National Association of Manufacturers, a position of honor and trust.

CLUSTERING OF THE DATA INTO TWO CLUSTERS, THE FIRST CLUSTER CONTAINS THE DATA POINTS THAT ARE CLOSE TO THE ORIGIN, AND THE SECOND CLUSTER CONTAINS THE DATA POINTS THAT ARE FAR FROM THE ORIGIN. THE CLUSTERING IS DONE BY USING THE K-MEANS ALGORITHM.

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DESCRIPTORS: SURFACE CHEMISTRY; CATALYSIS; WETTING; ELECTRONIC STATES; ELECTRON SCANNERS; TUNNELING ELECTRONICS; ELECTRON MICROSCOPY; EMISSION SPECTROSCOPY; PHOTOELECTRON SPECTRA; SPIN STATES; ALUMINUM OXIDE; MOLYBDENUM COMPOUNDS; ELECTRON SCATTERING; ELASTIC SCATTERING; ELASTIC SCATTERING

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UNCLASSIFIED

AD A171 441 CONTINUED SEARCH CONTROL NO EVN548

AD A171 441 9 4

TEXAS A AND M UNIV COLLEGE STATION

AD Memoryless Detection of Time Varying Deterministic Signals in Dependent Non Gaussian Noise

DESCRIPTIVE NOTE Rept. for 23 May 85 22 May 86

JAN 86 6P

PERSONAL AUTHORS Bleker J P Halverson Don R

PROJECT NO 2 241

ISSUE NO 48

MONTH JAN 86

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE Pub in IEEE Transactions on Information Theory, IT 32 (1) p130 Jan 86

ABSTRACT U Memoryless discrete time detection of a known time varying signal in dependent non Gaussian noise is considered. Optimal detectors are specified for cases where the detector realizability is limited by input and output signal rate performance constraints. Results are given for a particular case.

1986 INDEXED IN ABSTRACTS OF NONLINEAR SYSTEMS
MATHEMATICAL MODELS OF TIME-VARYING GAUSSIAN NOISE (TM)
CITATIONS U Memoryless Detection of Time Varying Deterministic Signals in Dependent Non Gaussian Noise
Keywords: 6P11; 6P12; 6P13; 6P14; 6P15; 6P16; 6P17; 6P18; 6P19; 6P20; 6P21; 6P22; 6P23; 6P24; 6P25; 6P26; 6P27; 6P28; 6P29; 6P30; 6P31; 6P32; 6P33; 6P34; 6P35; 6P36; 6P37; 6P38; 6P39; 6P40; 6P41; 6P42; 6P43; 6P44; 6P45; 6P46; 6P47; 6P48; 6P49; 6P50; 6P51; 6P52; 6P53; 6P54; 6P55; 6P56; 6P57; 6P58; 6P59; 6P60; 6P61; 6P62; 6P63; 6P64; 6P65; 6P66; 6P67; 6P68; 6P69; 6P70; 6P71; 6P72; 6P73; 6P74; 6P75; 6P76; 6P77; 6P78; 6P79; 6P80; 6P81; 6P82; 6P83; 6P84; 6P85; 6P86; 6P87; 6P88; 6P89; 6P90; 6P91; 6P92; 6P93; 6P94; 6P95; 6P96; 6P97; 6P98; 6P99; 6P100; 6P101; 6P102; 6P103; 6P104; 6P105; 6P106; 6P107; 6P108; 6P109; 6P110; 6P111; 6P112; 6P113; 6P114; 6P115; 6P116; 6P117; 6P118; 6P119; 6P120; 6P121; 6P122; 6P123; 6P124; 6P125; 6P126; 6P127; 6P128; 6P129; 6P130; 6P131; 6P132; 6P133; 6P134; 6P135; 6P136; 6P137; 6P138; 6P139; 6P140; 6P141; 6P142; 6P143; 6P144; 6P145; 6P146; 6P147; 6P148; 6P149; 6P150; 6P151; 6P152; 6P153; 6P154; 6P155; 6P156; 6P157; 6P158; 6P159; 6P160; 6P161; 6P162; 6P163; 6P164; 6P165; 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(U) Adaptive Refinement Methods for Non-Linear Parabolic Partial Differential Equations.

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UNCLASSIFIED REPORT

ABSTRACT U The objective of this research program is to develop the theoretical models, design methodology, and technology needed for optimum application of near field electromagnetic sensor arrays in nondestructive evaluation (NDE) and robot control. To aid in understanding how best to analyze and control the spatial frequency content in the field configuration generated by an array, most of this year's effort focused on obtaining experimental measurements of the relative spatial distributions defined by the perimeters of inductive eddy current reflection probes to surface steps and surface breaking rectangular slots in aluminum plates. In particular, a commercial reflective probe, Model SPQ 2065 and an SPI constructed from gallium core reflection probe have been used in interrogating such surface discontinuities. The data obtained using the firm coil probe compare favorably with the results of the de-veloped theory.

DESCRIPTORS U PROBES-ELECTROMAGNETIC DETECTORS AUTOMATION ROBOTICS NONDESTRUCTIVE TESTING TEST EQUIPMENT EXPERIMENTAL DESIGN THIN FILMS MAGNETIC HEADS MAGNETORESISTANCE

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ABSTRACT (U) This document considers two adaptive finite element techniques for parabolic partial differential equations (PDEs) that are based on using error estimates to control mesh refinement. The technique is a method of lines (MOL) approach that uses a Galerkin method to discretize the PDEs in space and implicit multistep integration in time. Spatial elements are added and deleted in regions of high and low error and are all advanced with the same sequence of varying time steps. The second technique is a local refinement method (LRM) that uses Galerkin approximations in both space and time. Fine grids of space time elements are added to regions of high error and the problem is subsequently solved in regions of high error.

DESCRIPTORS U FINITE ELEMENT ANALYSIS PROGRAMS DIFFERENTIAL EQUATIONS SPATIAL DIFFERENTIAL EQUATIONS ERROR ANALYSIS ESTIMATES HIGH APPROXIMATION MATHEMATICS REPRINTS

IDENTIFIERS U Galerkin Method MOL Method of Lines Local Refinement Method