

# REPORT DOCUMENTATION PAGE

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<b>1. REPORT DATE (DD-MM-YYYY)</b> 071601		<b>2. REPORT TYPE</b> Final Technical		01/01/00 - 11/30/00	
<b>4. TITLE AND SUBTITLE</b> Support of Scientific Symposium "Organic Thin Films for Photonic Applications"				<b>5a. CONTRACT NUMBER</b>	
				<b>5b. GRANT NUMBER</b> F49620-00-1-0276	
				<b>5c. PROGRAM ELEMENT NUMBER</b> 62173C	
Robert J. Twieg (PI)				<b>5d. PROJECT NUMBER</b> 1657-05	
				<b>5e. TASK NUMBER</b>	
				<b>5f. WORK UNIT NUMBER</b>	
<b>7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)</b> Kent State University Research & Graduate Studies PO Box 5190 Kent, OH 44242-0001				<b>8. PERFORMING ORGANIZATION REPORT NUMBER</b> 444718	
AFOSR/NL 801 N. Randolph St. Room 732 Arlington, VA 22203-1977				<b>10. SPONSOR/MONITOR'S ACRONYM(S)</b>	
				<b>11. SPONSOR/MONITOR'S REPORT NUMBER(S)</b>	
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<p style="margin: 0;"><b>AIR FORCE OFFICE OF SCIENTIFIC RESEARCH (AFOSR)</b>  <b>NOTICE OF TRANSMITTAL DTIC. THIS TECHNICAL REPORT</b>  <b>HAS BEEN REVIEWED AND IS APPROVED FOR PUBLIC RELEASE</b>  <b>LAW AFR 190-12. DISTRIBUTION IS UNLIMITED.</b></p>					
<b>13. SUPPLEMENTARY NOTES</b>					
<b>14. ABSTRACT</b> The proposal to the AFOSR "Support of Scientific Symposium: Organic Thin Films for Photonic Applications" was prepared by Robert Twieg. The symposium transpired during the American Chemical Society National meeting in Washington DC the week of August 20-25, 2000. Symposium events were held in the JW Marriott Hotel from Sunday August 20 to Wednesday August 23. Robert Twieg was the principle organizer of this symposium. There were three co-organizers for the symposium but none of them were immediately involved in the preparation of this proposal or its execution. These individuals were: Dr. Robert Norwood (Photon-X, Inc., co-General Chair), Prof. Alex Jen (University of Washington, Program Chair), Prof. Randy Heflin (Virginia Tech, co-Program Chair). AFOSR support was used for the partial reimbursement of travel and registration expenses for participants who completed a form at the meeting requesting compensation and explaining their role in the symposium. Such support to participants is critical to draw accomplished participants from overseas, to support new faculty careers and also to support student participation in the meeting.					
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a. REPORT	b. ABSTRACT	c. THIS PAGE			Robert J. Twieg
				10	<b>19b. TELEPHONE NUMBER (include area code)</b> (330) 672-2791

## 1. Participants

### *People*

Robert Twieg wrote the proposal to the AFOSR "Support of Scientific Symposium: Organic Thin Films for Photonic Applications." The Chemistry Department Business Manager Ms. Diana Skok assisted with the internal paperwork and especially the disbursement of AFOSR support to participants in the meeting that was completed in spring 2001 after receipt of complete documentation from participants. AFOSR support was used for the partial reimbursement of travel and registration expenses for participants who completed a form at the meeting requesting compensation and explaining their role in the symposium. Such support to participants is critical to draw accomplished participants from overseas, to support new faculty careers and also to support student participation in the meeting.

The symposium transpired during the American Chemical Society National meeting in Washington DC the week of August 20-25, 2000. Symposium events were held in the JW Marriott Hotel from Sunday August 20 to Wednesday August 23. Robert Twieg was the principle organizer of this symposium. There were three co-organizers for the symposium but none of them were immediately involved in the preparation of this proposal or its execution. These individuals were: Dr. Robert Norwood (Photon-X, Inc., co-General Chair), Prof. Alex Jen (University of Washington, Program Chair), Prof. Randy Heflin (Virginia Tech, co-Program Chair).

### *Organizations / Partners*

The proposal to the AFOSR was submitted through the Kent State Research and Graduate Studies Office. The meeting was jointly sponsored by the American Chemical Society (ACS) and the Optical Society of America (OSA). The ACS Division of Polymer Materials Science and Engineering (PMSE) was the immediate ACS division involved with this symposium. In addition to the AFOSR support both the National Science Foundation (NSF) and the Office of Naval Research (ONR) also provided financial support for the symposium.

### *Collaborators and Contacts*

A large mailing list (over 300 entries) was created to announce and to circulate information about the symposium. The mailing list was compiled from already existing personal entries, a list from a previous ICONO (International Conference on Nonlinear Optics) symposium and a related E-MRS (Materials Research Society - Europe) meeting. The symposium advisory board with members in Europe and Asia also participated in circulating the information by email and with flyers at other meetings. The announcement for the meeting was posted on both the OSA and ACS web pages.

## 2. Activities and Findings:

### *Research Activities*

There were no research activities, per se. However, and obviously, the meeting is intended to foster scientific communication and collaboration leading to successful research.

### *Research Findings*

As before, there are no specific research findings that result from this symposium.

### *Research Training*

There is no specific research training involved outside the typical information exchange that is conducive to enhancement of research success.

### *Educational and Outreach Activities*

The symposium was attended by students and their participation as part of the audience or especially their active participation in the presentation of a paper or poster was an important educational experience. In the meeting organization a wide participation was sought of domestic and foreign scientists and established practitioners in this area as well as newcomers.

## 3. Publications and Products

All the oral presentations and posters were accompanied by the publication of a 1-2 page preprint collected in the Vol 83 of the PMSE Preprints (ISBN 0-8412-3750-6, ISSN 074-0515). Attention should be paid to pp 159-294 where the papers for this symposium are concentrated. A hard copy of this volume can be obtained from PMSE. Membership preprints are handled at [rdmart@bellatlantic.com](mailto:rdmart@bellatlantic.com)

Complete information about participants, titles and abstract for this symposium can be obtained from this online source:

<http://membership.acs.org/P/PMSE/services/preprints.html>

All the abstracts from the meeting are still available on line archived on these pages:

[http://schedule.acs.org/cgi-bin/ACS/pS.exe?FNC=papersInSymposium\\_AsymposiaSearchResults\\_html\\_28574](http://schedule.acs.org/cgi-bin/ACS/pS.exe?FNC=papersInSymposium_AsymposiaSearchResults_html_28574)

[http://schedule.acs.org/cgi-bin/ACS/pS.exe?FNC=papersInSymposium\\_AsymposiaSearchResults\\_html\\_28575](http://schedule.acs.org/cgi-bin/ACS/pS.exe?FNC=papersInSymposium_AsymposiaSearchResults_html_28575)

[http://schedule.acs.org/cgi-bin/ACS/pS.exe?FNC=papersInSymposium\\_AsymposiaSearchResults\\_html\\_28576](http://schedule.acs.org/cgi-bin/ACS/pS.exe?FNC=papersInSymposium_AsymposiaSearchResults_html_28576)

[http://schedule.acs.org/cgi-bin/ACS/pS.exe?FNC=papersInSymposium\\_AsymposiaSearchResults\\_html\\_28577](http://schedule.acs.org/cgi-bin/ACS/pS.exe?FNC=papersInSymposium_AsymposiaSearchResults_html_28577)

[http://schedule.acs.org/cgi-bin/ACS/pS.exe?FNC=papersInSymposium\\_AsymposiaSearchResults\\_html\\_28578](http://schedule.acs.org/cgi-bin/ACS/pS.exe?FNC=papersInSymposium_AsymposiaSearchResults_html_28578)

[http://schedule.acs.org/cgi-bin/ACS/pS.exe?FNC=papersInSymposium\\_AsymposiaSearchResults\\_html\\_28579](http://schedule.acs.org/cgi-bin/ACS/pS.exe?FNC=papersInSymposium_AsymposiaSearchResults_html_28579)

[http://schedule.acs.org/cgi-bin/ACS/pS.exe?FNC=papersInSymposium\\_AsymposiaSearchResults\\_html\\_28580](http://schedule.acs.org/cgi-bin/ACS/pS.exe?FNC=papersInSymposium_AsymposiaSearchResults_html_28580)

[http://schedule.acs.org/cgi-bin/ACS/pS.exe?FNC=papersInSymposium\\_AsymposiaSearchResults\\_html\\_28571](http://schedule.acs.org/cgi-bin/ACS/pS.exe?FNC=papersInSymposium_AsymposiaSearchResults_html_28571)

Each page represents a session (Sun morning, Sun afternoon, Mon morning, Mon afternoon, Tues morning, Tues afternoon, Wed morning; Tues evening posters). So, there were a total of seven oral sessions and a single poster session (joint with other symposia). There were a total of 59 oral presentations and 24 poster presentations. If difficulty is encountered downloading the online information the contents of these pages is reproduced below in section 5.

AFOSR support for this symposium is acknowledged on page XVI of Volume 83 of Proceedings of the American Chemical Society Division of Polymeric Materials: Science and Engineering

The citations of symposia abstracts from the meeting can be also be readily accessed by a variety of search engines. For example, the abstract from ISI (Institute of Scientific Information) for my (Twieg's) own talk is as follows:

Charge transport heterocyclic liquid crystals for organic light emitting diode applications.

Twieg RJ, Gu SH, Semyonov A, Sukhomlinova L, Malliaras GG, Fan R, Singer KD, Ostroverkhova O, Shiyonovskaya I

ABSTRACTS OF PAPERS OF THE AMERICAN CHEMICAL SOCIETY

220: 108-PMSE , Part 2 AUG 20 2000

Document type: Meeting Abstract Language: English Cited References: 0 Times Cited: 0

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Kent State Univ, Dept Chem, Kent, OH 44242 USA.

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Case Western Reserve Univ, Dept Phys, Cleveland, OH 44106 USA.

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#### 4. Contributions

*Development of own / other disciplines*

The really special feature of this symposium is its highly interdisciplinary nature. The presentations covered a wide range of topics and disciplines. For example, some talks involved the preparation of optically or electronically active organic and polymeric materials, others involved the physical characterization of the materials while others discussed applications of materials. Participants came from a number of backgrounds in organic and polymer chemistry, physics and engineering.

### *Education and Development of Human Resources*

Everyone at the meeting went home with new ideas and new contacts. Again, this is perhaps especially important for the younger scientists who participated in the meeting.

### *Contributions to Physical, Institutional and Information Resources*

Nothing of particular significance here.

### *Contributions to General Public Welfare beyond science and technology*

The technologies that will arise from the science discussed in the symposium will undoubtedly impact the general public. One obvious example is found in information technology. The optoelectronic materials and devices discussed in the symposium will eventually turn up in some embodiment of communications technology. High-speed internet operation such as noted above (used to locate the symposium contents) is expedited by such technology and as a result will be much more common and convenient in the future. Materials science and the optoelectronic devices that result from their implementation are clearly of interest to AFOSR programs.

## 5. Full List of Contributions

see: [http://schedule.acs.org/cgi-bin/ACS/pS.exe?FNC=DivList\\_\\_AsearchTechnicalProgram\\_html](http://schedule.acs.org/cgi-bin/ACS/pS.exe?FNC=DivList__AsearchTechnicalProgram_html)

\*\*\* Sunday Morning Aug 20

Select Day Time Event Location Sponsor Event Type

Sunday Morning 8:00 AM Paper 21: Perspective in the evolution of polymers for photonic applications.

K.J. Wynne JW Marriott Grand Ballroom, Salon III PMSE Paper

Sunday Morning 8:30 AM Paper 22: Layer-by-layer self-assembly of large-response molecular electro-optic materials by a desilylation strategy.

M.E. vanderBoom, A.G. Richter, J.E. Malinsky, P. Dutta, T.J. Marks, P.A. Lee, N.R. Armstrong JW Marriott Grand Ballroom, Salon III PMSE Paper

Sunday Morning 8:50 AM Paper 23: Second-order nonlinear optical properties of ionically self-assembled films containing dianionic chromophores.

P.J. Neyman, M.T. Guzy, S. Shah, H. Wang, H.W. Gibson, K.E. VanCott, R.M. Davis, C. Figura, J.R. Heflin JW Marriott Grand Ballroom, Salon III PMSE Paper

Sunday Morning 9:10 AM Paper 24: Orientation of chromophores in layer-by-layer films.

D.M. DeWitt, P.T. Hammond JW Marriott Grand Ballroom, Salon III PMSE Paper

Sunday Morning 9:50 AM Paper 25: Novel perfluorocyclobutane-containing thermoset polymers and dendrimers for electro-optic devices.

H. Ma, B. Chen, L.R. Dalton, A.K.-Y. Jen JW Marriott Grand Ballroom, Salon III PMSE Paper

Sunday Morning 10:10 AM Paper 26: Recent progress in fabricating wideband polymer electro-optic modulators for space applications.

R.R. Barto, S.E. Ermer, W.W. Anderson, D.G. Girton, L.J. Dries, R.E. Taylor, T.E. VanEck, W.D. Eades, A.S. Moss, G.S. Mendenilla JW Marriott Grand Ballroom, Salon III PMSE Paper

Sunday Morning 10:30 AM Paper 27: Electro-optic modulation (40 MHz) in transmission and reflection using single-crystal thin films of DAST.

A.K. Bhowmik, S. Tan, A.C. Ahyi, A. Mishra, M. Thakur JW Marriott Grand Ballroom, Salon III PMSE Paper

Sunday Morning 10:50 AM Paper 28: New cross-linkable polyesters for photonic applications.

S. Sun, S. Maaref, E. Alam, J. Saulter, S. Waytt JW Marriott Grand Ballroom, Salon III PMSE Paper

Sunday Morning 11:10 AM Paper 29: Design and synthesis of noncentrosymmetric organic thin films with hydrogen-bonded main-chain polymers.

C. Landorf, J. Simpson, J. Jacobsen, D.J. Dyer JW Marriott Grand Ballroom, Salon III PMSE Paper

\*\*\* Sunday Afternoon Aug 20

Select Day Time Event Location Sponsor Event Type

Sunday Afternoon 1:30 PM Paper 50: Photonic band gap properties of thin films patterned with 3-D periodic structures.

Y. Xia, B.D. Gates JW Marriott Grand Ballroom, Salon III PMSE Paper

Sunday Afternoon 2:00 PM Paper 51: Novel polymer matrices for encapsulation of crystalline colloidal arrays for photonic band gap applications.

S.H. Foulger, S. Kotha, B. Sweryda-Krawiec, T.W. Baughman, P. Jiang, J.M. Ballato, D.W. Smith Jr. JW Marriott Grand Ballroom, Salon III PMSE Paper

Sunday Afternoon 2:20 PM Paper 52: Colloidal crystalline films of poly(styrene-co-hydroxyethyl methacrylate) latices.

Y. Chen, W.T. Ford JW Marriott Grand Ballroom, Salon III PMSE Paper

Sunday Afternoon 2:40 PM Paper 53: Fabrication of subwavelength diffractive elements and photonic waveguides using perfluorocyclobutyl polyaryl ethers.

H.V. Shah, P.C. Deguzman, G.P. Nordin, J.M. Ballato, S.H. Foulger, D.W. Smith Jr. JW Marriott Grand Ballroom, Salon III PMSE Paper

Sunday Afternoon 3:20 PM Paper 54: Applications of electron-poor and electron-rich compounds for photonics.

S.R. Marder, V. Alain, J-L. Brédas, J.K. Cammack, C. Grasso, M. Halik, S.M. Kuebler, J.W. Perry, M. Rumi, F. Stellacci, W. Wenseleers, Y. Zhang JW Marriott Grand Ballroom, Salon III PMSE Paper

Sunday Afternoon 3:50 PM Paper 55: Two-photon fabrication of 3-D microstructures using a femtosecond laser.

S. Kawata, T. Tanaka JW Marriott Grand Ballroom, Salon III PMSE Paper

Sunday Afternoon 4:20 PM Paper 56: Patterned fluorescence images by photoacid-induced fluorescence quenching in polymer film.

K-D. Ahn, J-M. Kim, K.H. Park, D.K. Han JW Marriott Grand Ballroom, Salon III PMSE Paper

\*\*\* Monday Morning Aug 21

Select Day Time Event Location Sponsor Event Type

Monday Morning 8:30 AM Paper 77: Optimization of molecular and supramolecular properties of merocyanine dyes for photorefractive organic glasses.

F. Würthner, S. Yao, R. Wortmann JW Marriott Grand Ballroom, Salon III PMSE Paper

Monday Morning 9:00 AM Paper 78: Photoconductive mechanisms in the dynamic photorefractive response in polymer composites.

O. Ostroverkhova, K.D. Singer, L. Sukhomlinova, R.J. Twieg JW Marriott Grand Ballroom, Salon III PMSE Paper

Monday Morning 9:20 AM Paper 79: Photoconductive fatigue studies in fast photorefractive polymers.

J.A. Herlocker, K.B. Ferrio, E. Hendrickx, Y. Zhang, J-F. Wang, E. Mash, N. Peyghambarian, B. Kippelen JW Marriott Grand Ballroom, Salon III PMSE Paper

Monday Morning 9:40 AM Paper 80: Charge-carrier mobility studies of potential photorefractive dendrimers.

J.M. Takacs, S. Ducharme, A.P. Leonov, L. Liu JW Marriott Grand Ballroom, Salon III PMSE Paper

Monday Morning 10:30 AM Paper 81: Quantified photoorientation of photoisomerizable chromophores.

Z. Sekkat, H. Ishitobi, D. Yasumatsu, S. Kawata JW Marriott Grand Ballroom, Salon III PMSE Paper

Monday Morning 10:50 AM Paper 82: Interdependence of the nonlinear response mechanisms of pTS.

S.R. Flom, J.R. Lindle, F.J. Bartoli, M. Liu, G.I. Stegeman JW Marriott Grand Ballroom, Salon III PMSE Paper

Monday Morning 11:10 AM Paper 83: Optical anisotropic study of optically poled azobenzene polymers.

N. Tsutsumi, M. Imamura, J. Yamamoto, W. Sakai JW Marriott Grand Ballroom, Salon III PMSE Paper

Monday Morning 11:30 AM Paper 84: Nanocomposite derived from layered aluminosilicate intercalated with organic laser dye.

D.W. Kim, A. Blumstein, M. Downey, J. Kumar, S.K. Tripathy JW Marriott Grand Ballroom, Salon III PMSE Paper

\*\*\* Monday Afternoon Aug 21

Select Day Time Event Location Sponsor Event Type

Monday Afternoon 1:30 PM Paper 103: Electrophosphorescent organic light-emitting diodes.

M.E. Thompson, S.A. Lamansky, P.I. Djurovich, D.L. Murphy, F. Abdel-Razzaq, S.R. Forrest, M.A. Baldo, P.E. Burrows JW Marriott Grand Ballroom, Salon III PMSE Paper

Monday Afternoon 2:00 PM Paper 104: Efficient light-emitting devices with polyfluorene emitting layer and thermally polymerized amine-containing hole transporting layer.

X.Z. Jiang, S. Liu, H. Ma, L.X. Zheng, M.S. Liu, A.K-Y. Jen JW Marriott Grand Ballroom, Salon III PMSE Paper

Monday Afternoon 2:20 PM Paper 105: Photoemission study of frontier orbital evolution as a function of conjugation length in oligothiophene derivatives.

A.J. Mäkinen, I.G. Hill, T. Noda, Y. Shirota, Z.H. Kafafi JW Marriott Grand Ballroom, Salon III PMSE Paper

Monday Afternoon 2:40 PM Paper 106: Multicolor emission and tunable electroluminescence from blends of conjugated polymers.

K. Meeker, L. Lu, S.A. Jenekhe JW Marriott Grand Ballroom, Salon III PMSE Paper

Monday Afternoon 3:20 PM Paper 107: Recent techniques in the fabrication and optimization of organic light-emitting devices.

G.E. Jabbour, D. Pardo, N. Peyghambarian JW Marriott Grand Ballroom, Salon III PMSE Paper

Monday Afternoon 3:50 PM Paper 108: Charge transport heterocyclic liquid crystals for organic light-emitting-diode applications.

R.J. Twieg, S. Gu, A. Semyonov, L. Sukhomlinova, G.G. Malliaras, R. Fan, K.D. Singer, O. Ostroverkhova, I. Shiyonovskaya JW Marriott Grand Ballroom, Salon III PMSE Paper

Monday Afternoon 4:10 PM Paper 109: High-resolution organic light-emitting-diode pixels fabricated by high-temperature microcontact printing.

Y. Koide, T.J. Marks JW Marriott Grand Ballroom, Salon III PMSE Paper

Monday Afternoon 4:30 PM Paper 110: Electrochemically synthesized MEH-PPV and the light-emitting-diode applications.

X. Wang, R.V. Gregory JW Marriott Grand Ballroom, Salon III PMSE Paper

Monday Afternoon 4:50 PM Paper 111: Molecular engineering for improving spectral stability and tuning electronic properties of blue electroluminescent polymers.

W-L. Yu, W. Huang, B. Liu, Y-H. Lai JW Marriott Grand Ballroom, Salon III PMSE Paper

\*\*\* Tuesday Morning Aug 22

Select Day Time Event Location Sponsor Event Type

Tuesday Morning 8:30 AM Paper 134: Molecular considerations for optimizing the second-order nonlinear optical response in chiral media.

K.D. Singer, V. Ostroverkhov, O. Ostroverkhova, R.G. Petschek, L. Sukhomlinova, R.J. Twieg, X-Y. Wang, L-C. Chien JW Marriott Grand Ballroom, Salon III PMSE Paper

Tuesday Morning 9:00 AM Paper 135: Spontaneous formation of polar multilayer in complementary H-bond systems.

D. Li JW Marriott Grand Ballroom, Salon III PMSE Paper

Tuesday Morning 9:20 AM Paper 136: In situ second harmonic generation measurements of the growth of nonlinear optical ionically self-assembled monolayers.

C. Brands, P.J. Neyman, M.T. Guzy, S. Shah, H. Wang, H.W. Gibson, K.E. VanCott, R.M. Davis, C. Figura, J.R. Heflin JW Marriott Grand Ballroom, Salon III PMSE Paper

Tuesday Morning 9:40 AM Paper 137: Fabrication of optical thin-film chemical sensors employing electrostatic layer-by-layer self-assembly: Ferric ion sensor.

S-H. Lee, K.G. Chittibabu, J. Kumar, S.K. Tripathy JW Marriott Grand Ballroom, Salon III PMSE Paper

Tuesday Morning 10:20 AM Paper 138: Time-dependent and angular-resolved, second-order, nonlinear light scattering in random media.

K. Clays, S. VanElshocht, A. Persoons JW Marriott Grand Ballroom, Salon III PMSE Paper

Tuesday Morning 10:50 AM Paper 139: Nonlinear optical properties of a new, pure-liquid phthalocyanine.

S.R. Flom, J.S. Shirk, R.G.S. Pong, A.W. Snow, E.M. Maya JW Marriott Grand Ballroom, Salon III PMSE Paper

Tuesday Morning 11:10 AM Paper 140: Is there an upper limit to nonlinear susceptibilities?

M.G. Kuzyk JW Marriott Grand Ballroom, Salon III PMSE Paper

Tuesday Morning 11:30 AM Paper 141: Measurements of first hyperpolarizability in the Kleinman-disallowed regime by means of hyper-Rayleigh scattering.

V. Ostroverkhov, R.G. Petschek, K.D. Singer JW Marriott Grand Ballroom, Salon III PMSE Paper

Tuesday Morning 11:50 AM Paper 142: Measurement of the first molecular hyperpolarizability of charge-transfer chromophores using hyper-Rayleigh scattering at multiple IR wavelengths.

J.N. Woodford, C.H. Wang, C. Zhang, L.R. Dalton JW Marriott Grand Ballroom, Salon III PMSE Paper

\*\*\* Tuesday Afternoon Aug 22

Select Day Time Event Location Sponsor Event Type

Tuesday Afternoon 1:30 PM Paper 165: Thermally actuated polymeric photonic componentry.

L. Eldada JW Marriott Grand Ballroom, Salon III PMSE Paper

Tuesday Afternoon 2:00 PM Paper 166: Optical waveguides and modulators based on low-loss, index-tunable EO polymers.

P.R. Ashley, G.A. Lindsay, W.N. Herman, J.S. Cites JW Marriott Grand Ballroom, Salon III PMSE Paper

Tuesday Afternoon 2:20 PM Paper 167: Highly efficient organic dye-doped graded-index polymer optical fiber lasers.

K. Kuriki, T. Tamura, S. Nishihara, Y. Nishizawa, A. Tagaya, Y. Koike, Y. Okamoto JW Marriott Grand Ballroom, Salon III PMSE Paper

Tuesday Afternoon 2:40 PM Paper 168: Temperature dependence of the threshold for laser emission in polymer microlasers.

G. Ramos-Ortiz, C. Spiegelberg, N. Peyghambarian, B. Kippelen JW Marriott Grand Ballroom, Salon III PMSE Paper

Tuesday Afternoon 3:20 PM Paper 169: Improved device performance of [Ru(bpy)<sub>3</sub>](PF<sub>6</sub>)<sub>2</sub> light-emitting devices.

H. Rudmann, L. Kaplan, H. Sevia, M.F. Rubner JW Marriott Grand Ballroom, Salon III PMSE Paper

Tuesday Afternoon 3:40 PM Paper 170: Erbium-doped polysilsesquioxane molecular composite systems.

R.E. Taylor-Smith, K.M. Choi JW Marriott Grand Ballroom, Salon III PMSE Paper

Tuesday Afternoon 4:00 PM Paper 171: Covalent self-assembly approach to improvement of interfacial organic light-emitting diode anode/hole transport layer contacts.

J. Cui, Q. Wang, T.J. Marks JW Marriott Grand Ballroom, Salon III PMSE Paper

Tuesday Afternoon 4:20 PM Paper 172: Morphology-dependent switching of polymer-stabilized cholesteric gratings.

L-C. Chien, S.N. Lee, S. Sprunt JW Marriott Grand Ballroom, Salon III PMSE Paper

Tuesday Afternoon 4:40 PM Paper 173: Carbazole-based methacrylates and dimethacrylates.

J.E. McGrath, L. Rasmussen, H. Shobha, M. Sankarapandian, K.E. Uhrich JW Marriott Grand Ballroom, Salon III PMSE Paper

\*\*\* Tuesday Evening (Posters NOTE: Joint Session with POLY/PMSE Symposia) Aug 22

Select Day Time Event Location Sponsor Event Type

Tuesday Evening 6:00 EVE Paper 174: Polycaprolactone as compatibilizer for polyblends of bisphenol polycarbonate with styrene-acrylonitrile copolymer.

R.D. Deanin, T. Vale Convention Center Exhibit Hall D PMSE Paper

Tuesday Evening 6:00 EVE Paper 175: Complexation between hydrogensulfated fullerene and poly[2-(dimethylamino)ethyl methacrylate].

- X.D. Huang, S.H. Goh, S.Y. Lee Convention Center Exhibit Hall D PMSE Paper  
Tuesday Evening 6:00 EVE Paper 176: QUV accelerated weathering of PVC capstock formulations: A FTIR microspectroscopy mapping study.
- D. Garcia, J. Black Convention Center Exhibit Hall D PMSE Paper  
Tuesday Evening 6:00 EVE Paper 177: New insight into origin of multiple melting peaks of poly(ethylene terephthalate) by modulated DSC and FTIR analysis.
- Y. Wang, J. Lu, D. Shen Convention Center Exhibit Hall D PMSE Paper  
Tuesday Evening 6:00 EVE Paper 178: 1-D and 2-D electron spin resonance imaging of HAS-derived nitroxides in ABS copolymers: Effect of irradiation wavelength.
- M.V. Motyakin, S. Schlick Convention Center Exhibit Hall D PMSE Paper  
Tuesday Evening 6:00 EVE Paper 179: Conformational dynamics of chymotrypsin inhibitor 2 in free and complex forms.
- N. Kurt, T. Haliloglu Convention Center Exhibit Hall D PMSE Paper  
Tuesday Evening 6:00 EVE Paper 180: Anchoring effect of silane coupling agents with a variable alkyl chain length on surface of magnetic particle.
- T. Woo, J.-Y. Huh, D.E. Nikles Convention Center Exhibit Hall D PMSE Paper  
Tuesday Evening 6:00 EVE Paper 181: Physical properties of highly oriented polyvinyl alcohol fiber.
- B.C. Kim, S.G. Kim, D.W. Chae, H.G. Chae Convention Center Exhibit Hall D PMSE Paper  
Tuesday Evening 6:00 EVE Paper 182: Semifluorinated epoxy thermoplastics containing the  $\alpha$ -methyl stilbene linkage.
- E.J. Nelson, S.H. Foulger, D.W. Smith Jr. Convention Center Exhibit Hall D PMSE Paper  
Tuesday Evening 6:00 EVE Paper 183: Synthesis of organotin-containing polymers derived from the synthetic amino acids p-aminobenzoic acid and ampicillin.
- C.E. Carraher Jr., F. Li Convention Center Exhibit Hall D PMSE Paper  
Tuesday Evening 6:00 EVE Paper 184: Structural identification of the organotin polymers derived from p-aminobenzoic acid and ampicillin.
- C.E. Carraher Jr., F. Li Convention Center Exhibit Hall D PMSE Paper  
Tuesday Evening 6:00 EVE Paper 185: Synthesis and structural characterization of poly(3,4-dicyanophenoxyethylene) and 4-hexadecanoyloxyphthalonitrile.
- D.M. Baird, Y. Jiang, C.E. Carraher Jr. Convention Center Exhibit Hall D PMSE Paper  
Tuesday Evening 6:00 EVE Paper 186: Surface modification of silica fillers formed in situ for the reinforcement of polydimethylsiloxane networks.
- B.T. Vu, J.E. Mark, D.W. Schaefer Convention Center Exhibit Hall D PMSE Paper  
Tuesday Evening 6:00 EVE Paper 187: Surface treatment of magnetic particles for solventless, electron-beam-cured acrylate formulation for magnetic tape manufacture.
- J.-Y. Huh, T. Woo, S. Hait, D.E. Nikles Convention Center Exhibit Hall D PMSE Paper  
Tuesday Evening 6:00 EVE Paper 188: Synthesis and characterization of epoxynorbormane linseed oil using hydrogen peroxide.
- J. Chen, M.D. Soucek Convention Center Exhibit Hall D PMSE Paper  
Tuesday Evening 6:00 EVE Paper 189: Preparation of polypropylene-clay intercalation composites modified with polyethylene glycol.
- S. Lee, J.S. Park, H. Lee Convention Center Exhibit Hall D PMSE Paper  
Tuesday Evening 6:00 EVE Paper 190: Coarse-grained simulations on the stability of thin films.
- P. Doruker, W.L. Mattice Convention Center Exhibit Hall D PMSE Paper  
Tuesday Evening 6:00 EVE Paper 191: Linear and star-branched polybutadiene-blend networks: Curing, swelling, and dynamic mechanical behavior.
- H. Konyalı, Ý. Bahar, N. Nugay Convention Center Exhibit Hall D PMSE Paper  
Tuesday Evening 6:00 EVE Paper 192: Surface-modified polyvinyl alcohol membranes for water/ethanol separation via pervaporation.
- T. Nugay, P. Akçora, Ö. Hortaçsu Convention Center Exhibit Hall D PMSE Paper  
Tuesday Evening 6:00 EVE Paper 193: Effect of surface of hybrid filler systems on curing characteristics of polyesters.
- S. Sen, N. Nugay Convention Center Exhibit Hall D PMSE Paper  
Tuesday Evening 6:00 EVE Paper 194: Diffusion of alcohols through sulfonated PS/PIB/PS block copolymers using FTIR-ATR.
- E.G. Napadensky, J.M. Sloan, N. BeckTan, D.M. Crawford, D.A. Mountz, K.A. Mauritz Convention Center Exhibit Hall D PMSE Paper  
Tuesday Evening 6:00 EVE Paper 195: Surface and interface behavior of semifluorinated liquid-crystalline block copolymers.
- X. Li, M. Xiang, C.K. Ober, E. Sivaniah, E.J. Kramer, J. Genzer, D. Fisher Convention Center Exhibit Hall D PMSE Paper  
Tuesday Evening 6:00 EVE Paper 196: Stable free-radical polymerization of liquid-crystalline monomers: Effect of preordering.
- P. Gopalan, X. Li, C.K. Ober, C.J. Hawker Convention Center Exhibit Hall D PMSE Paper  
Tuesday Evening 6:00 EVE Paper 197: Sustained release implants of triamcinolone acetonide for use in rat models of experimental uveitis and neovascularization.
- P. Yuan, B.A. King, M.P. Miller, M.R. Robinson, G.J. Grimes, C.E. Daniels, G.K. Potti Convention Center Exhibit Hall D PMSE Paper  
Tuesday Evening 6:00 EVE Paper 198: Synthesis of poly(cinnam-4'-yl methyl methacrylate) derivatives and their thermal stability as LCD photoalignment layer.
- J. Lee, H. Kim, H. Kim Convention Center Exhibit Hall D PMSE Paper

- Tuesday Evening 6:00 EVE Paper 199: Investigation on the copolymerization behavior of  $\alpha$ -trifluoromethyl vinylacetate.  
D. Schmaljohann, C.K. Ober Convention Center Exhibit Hall D PMSE Paper
- Tuesday Evening 6:00 EVE Paper 200: Band shifts in the dynamic IR spectra of oriented isotactic polypropylene.  
S. Frisk, R.M. Ikeda, J.F. Rabolt, D.B. Chase Convention Center Exhibit Hall D PMSE Paper
- Tuesday Evening 6:00 EVE Paper 201: Dendrimers as stationary phases in capillary electrochromatography.  
H. Chao, J.E. Hanson Convention Center Exhibit Hall D PMSE Paper
- Tuesday Evening 6:00 EVE Paper 202: Real-time mid-IR monitoring of metathesis polymerizations.  
M. Hoffman, J.E. Puskas, K. Weiss Convention Center Exhibit Hall D PMSE Paper
- Tuesday Evening 6:00 EVE Paper 203: Quantitative relationships between parameters of thermal degradation of plasticized polyvinyl chloride and halochromism.  
S.R. Deshmukh, F. Lai Convention Center Exhibit Hall D PMSE Paper
- Tuesday Evening 6:00 EVE Paper 204: Photosensitized reaction of polymer films caused by electron transfer.  
W. Sakai, N. Tsutsumi Convention Center Exhibit Hall D PMSE Paper
- Tuesday Evening 6:00 EVE Paper 205: Porous, thermoresponsive hydrogels: Theory and applications.  
S. Rajagopalan, X.X. Zhu Convention Center Exhibit Hall D PMSE Paper
- Tuesday Evening 6:00 EVE Paper 206: Transgenic plants: A new source of biodegradable plastics.  
B-H. Zhang Convention Center Exhibit Hall D PMSE Paper
- Tuesday Evening 6:00 EVE Paper 207: Propylene polymerization with half-titanocene/MAO catalyst: Synthesis of high molecular weight atactic polypropylene.  
Q. Wu, B. Xie, J. He Convention Center Exhibit Hall D PMSE Paper
- Tuesday Evening 6:00 EVE Paper 208: New sulfonimide acid-containing perfluorocyclobutane aromatic polyethers for potential use in fuel cell applications.  
L.A. Ford, D.W. Smith Jr., D.D. DesMarteau Convention Center Exhibit Hall D PMSE Paper
- Tuesday Evening 6:00 EVE Paper 209: Polymeric thin-film thermo-optic beam deflector.  
X. Han, B. Li, J. Ni, S. Tang Convention Center Exhibit Hall D PMSE Paper
- Tuesday Evening 6:00 EVE Paper 210: Compact EO polymer vibration sensor utilizing ridge and slab-mode waveguides.  
A. Yacoubian, W. Lin, D. Olson, J. Bechtel Convention Center Exhibit Hall D PMSE Paper
- Tuesday Evening 6:00 EVE Paper 211: Adsorption and X-ray-induced polymerization of condensed 3-hexylthiophene on polycrystalline aluminum.  
J.E. Hernandez, J.E. Whitten Convention Center Exhibit Hall D PMSE Paper
- Tuesday Evening 6:00 EVE Paper 212: Derivatization of high and low molecular weight polyepichlorohydrins with stilbazolium side-chain chromophores for alternating polyelectrolyte deposition.  
G.A. Lindsay, P. Zarras, R.A. Hollins, A.P. Chafin, S. Fallis, L.H. Merwin, M.J. Roberts, K.J. Wynne Convention Center Exhibit Hall D PMSE Paper
- Tuesday Evening 6:00 EVE Paper 213: Dual-use chromophores for photorefractive and irreversible photochromic applications.  
R. Ayachitula, K.D. Harris, S.J. Strutz, L.M. Hayden, R.J. Twieg Convention Center Exhibit Hall D PMSE Paper
- Tuesday Evening 6:00 EVE Paper 214: Electroluminescent block copolymers: Synthesis and optical properties.  
A.M. Sarker, E.E. Gürel, M. Zheng, P.M. Lahti, F.E. Karasz Convention Center Exhibit Hall D PMSE Paper
- Tuesday Evening 6:00 EVE Paper 215: Fabrication of optical thin-film chemical sensors employing electrostatic layer-by-layer self-assembly: pH Sensor.  
S-H. Lee, K.G. Chittibabu, J. Kim, J. Kumar, S.K. Tripathy Convention Center Exhibit Hall D PMSE Paper
- Tuesday Evening 6:00 EVE Paper 216: Femtosecond pulse generation in sandwichlike organic thin film structures with nonlinear and dispersion management.  
V.M. Chapela, J. Percino, V.N. Serkin Convention Center Exhibit Hall D PMSE Paper
- Tuesday Evening 6:00 EVE Paper 217: Molecular organic light-emitting devices utilizing end-capped oligothiophene oligoheterocycles as light-emission centers.  
G. Kushto, U. Mitschke, P. Bäuerle, Z. Kafafi Convention Center Exhibit Hall D PMSE Paper
- Tuesday Evening 6:00 EVE Paper 218: New NLO chromophores based on 2-amino-1,1,3-tricyano-1-propene acceptor.  
G.K. Todorova, J. Chen, L.R. Dalton Convention Center Exhibit Hall D PMSE Paper
- Tuesday Evening 6:00 EVE Paper 219: New *o*- and *p*-methacryloylaminophenylarsonic monomers for second-order, nonlinear optical materials.  
J. Percino, V.M. Chapela, R. Ortega-Martínez, A. Rodríguez Convention Center Exhibit Hall D PMSE Paper
- Tuesday Evening 6:00 EVE Paper 220: Novel deposition techniques for self-assembled, nonlinear optic thin films.  
M.T. Guzy, S. Shah, R.M. Davis, K.E. VanCott, J.R. Heflin, H. Wang, H.W. Gibson Convention Center Exhibit Hall D PMSE Paper
- Tuesday Evening 6:00 EVE Paper 221: Novel second-order, nonlinear optical material with amphiphilic side chains.  
G. Liu, G.L. Baker Convention Center Exhibit Hall D PMSE Paper
- Tuesday Evening 6:00 EVE Paper 222: Photohole generation in calamitic liquid-crystalline photoconductor, 2-phenyl-naphthalene derivatives.  
H. Zhang, J-I. Hanna Convention Center Exhibit Hall D PMSE Paper
- Tuesday Evening 6:00 EVE Paper 223: Optical, electrochemical, and thermal properties in light-emitting polymers.  
M. Zheng, A.M. Sarker, E.E. Gürel, P.M. Lahti, F.E. Karasz Convention Center Exhibit Hall D PMSE Paper
- Tuesday Evening 6:00 EVE Paper 224: Direct and sensitized photolysis of phosphine oxide photoinitiators in the presence and in the absence of acrylate: Time-resolved EPR, cure monitor, and photoDSC study.

- R.M. Williams, I.V. Khudyakov, M.B. Purvis, B.J. Overton, N.J. Turro Convention Center Exhibit Hall D PMSE Paper  
 Tuesday Evening 6:00 EVE Paper 225: Organic electroluminescent device based on phenanthrene-containing europium complex.
- D. Huang, X. Jiang, G.D. Phelan, T.M. Londergan, A.K-Y. Jen, L.R. Dalton Convention Center Exhibit Hall D PMSE Paper  
 Tuesday Evening 6:00 EVE Paper 226: Some peculiarities of a new photochromic compound for use in holography without preliminary UV-irradiation.
- I. Chapurin, S. Robu, L. Vlad, C. Lafond, A. Tork, R.A. Lessard Convention Center Exhibit Hall D PMSE Paper  
 Tuesday Evening 6:00 EVE Paper 227: Stable and efficient organic light-emitting devices with saturated red emission.
- L.C. Picciolo, H. Murata, Z.H. Kafafi Convention Center Exhibit Hall D PMSE Paper  
 Tuesday Evening 6:00 EVE Paper 228: Synthesis and characterization of new chiral monomers that can be used in the design of nonlinear optical polymers.
- J. Percino, V.M. Chapela, A. Sosa, R. Ortega-Martínez, A.A. Rodríguez Convention Center Exhibit Hall D PMSE Paper  
 Tuesday Evening 6:00 EVE Paper 229: Synthesis and characterization of aniline derivatives, modified 8-hydroxylquinoline ligands, and their metal complexes.
- S. Cheng, S. Li, A.W. Addison, F. Papadimitrakopoulos, B. Hsieh, Y. Wei Convention Center Exhibit Hall D PMSE Paper  
 Tuesday Evening 6:00 EVE Paper 230: Synthesis and nonlinear optical properties of a new syndioregic, main-chain hydrazone polymer.
- G.A. Lindsay, A.P. Chafin, L.M. Hayden, W-K. Kim Convention Center Exhibit Hall D PMSE Paper  
 Tuesday Evening 6:00 EVE Paper 231: New rodlike polymers with side groups and their applications in aligning liquid crystals.
- M. Ree, S.W. Lee, S.I. Kim, K.H. Lee, J.C. Jung Convention Center Exhibit Hall D PMSE Paper  
 Tuesday Evening 6:00 EVE Paper 232: Thermal stabilization and destabilization of poly(methyl methacrylate) in thin films.
- F. Rodriguez, A. Nady Convention Center Exhibit Hall D PMSE Paper  
 Tuesday Evening 6:00 EVE Paper 233: Cone calorimeter experiments with flame-retardant halogen-free cables.
- G. Beyer, H. Breulet, S. Desmet Convention Center Exhibit Hall D PMSE Paper  
 Tuesday Evening 6:00 EVE Paper 234: Flame-retardant properties of novolac phenolic/bisoxazoline amended with an epoxy-terminated siloxane and clay nanocomposite.
- A. Dekar, H. Stretz, J. Koo Convention Center Exhibit Hall D PMSE Paper  
 Tuesday Evening 6:00 EVE Paper 235: Flame-retardant waterborne polyurethane coatings using halogenated polyester polyols.
- Y-K. Lee, S-Y. Cho, H-S. Park, J-P. Wu Convention Center Exhibit Hall D PMSE Paper  
 Tuesday Evening 6:00 EVE Paper 236: Metal-catalyzed, intumescent flame-retardant systems.
- F.J.W.J. Labuschagné, W.W. Focke, C.A. Strydom Convention Center Exhibit Hall D PMSE Paper  
 Tuesday Evening 6:00 EVE Paper 237: Preparation and physical properties of polyurethane flame-retardant coatings using pyrophosphoric lactone-modified polyesters/IPDI-isocyanurate.
- Y-H. Choi, D-W. Kim, W-B. Im, J-P. Wu, H-S. Park Convention Center Exhibit Hall D PMSE Paper  
 Tuesday Evening 6:00 EVE Paper 238: Use of carbonizing polymers as additives in intumescent polymer blends: A review.
- M. LeBras, S. Bourbigot Convention Center Exhibit Hall D PMSE Paper  
 Tuesday Evening 6:00 EVE Paper 239: Exploitation of a novel artificial muscle for controlled drug delivery.
- M.J. Madou, K. He Convention Center Exhibit Hall D PMSE Paper  
 Tuesday Evening 6:00 EVE Paper 240: Elaboration of conducting polymer nanostructures: Applications as responsive materials in gas sensors and biosensors.
- S.M. Demoustier-Champagne, P-Y. Stavaux, M. Delvaux Convention Center Exhibit Hall D PMSE Paper  
 Tuesday Evening 6:00 EVE Paper 241: Electroresponsive phosphate cellulose suspensions.
- H.J. Choi, S.G. Kim, J.W. Kim, M.S. Jhon Convention Center Exhibit Hall D PMSE Paper  
 Tuesday Evening 6:00 EVE Paper 242: One-step direct immobilization of acid phosphatase in mesoporous silica sol-gel materials.
- Q. Feng, J. Xu, M. Lin, H. Dong, Y. Wei Convention Center Exhibit Hall D PMSE Paper  
 Tuesday Evening 6:00 EVE Paper 243: Simultaneous immobilization of oxidase/peroxidase in the mesoporous sol-gel silicate matrix.
- H. Dong, J. Xu, Q. Feng, Y. Wei Convention Center Exhibit Hall D PMSE Paper

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Select Day Time Event Location Sponsor Event Type

- Wednesday Morning 8:30 AM Paper 257: Photovoltaic devices: Role of interfaces.  
 G. Hadziioannou JW Marriott Grand Ballroom, Salon III PMSE Paper
- Wednesday Morning 9:00 AM Paper 258: Efficient charge generation in conjugated molecules.  
 W. Graupner, T. Piok, C. Brand, P.J. Neyman, A. Erlacher, C. Soman, M.A. Murray, R. Schroeder, J.R. Heflin, D. Marciu, A. Drake, M.B. Miller, H. Wang, H.W. Gibson, H.C. Dorn, G. Leising, M. Guzy, R.M. Davis JW Marriott Grand Ballroom, Salon III PMSE Paper
- Wednesday Morning 9:30 AM Paper 259: LB films with amphiphilic fullerene derivatives for photovoltaic application.  
 J-L. Gallani, J-F. Nierengarten, J-F. Nicoud, J-F. Eckert, D. Felder, P. Carreon, D. Guillon JW Marriott Grand Ballroom, Salon III PMSE Paper
- Wednesday Morning 10:00 AM Paper 261: Molecular ordering through molecular design and surface modification and their electrical and optical devices.  
 Z. Bao, X.L. Chen, A. Lovinger, J. Sapjeta, R. Jakubiak, L. Rothberg JW Marriott Grand Ballroom, Salon III PMSE Paper

Wednesday Morning 10:50 AM Paper 262: a,w -Diperfluorohexylsexithiophene: Synthesis, characterization, and thin-film properties of the first n-type sexithiophene for thin-film transistors.

A. Facchetti, A. Wang, T.J. Marks, H. Sirringhaus, Y. Deng, R.H. Friend JW Marriott Grand Ballroom, Salon III PMSE Paper

Wednesday Morning 11:10 AM Paper 263: Ambipolar carrier transport in self-organizing terthiophene molecular semiconductors.

M. Funahashi, J-I. Hanna JW Marriott Grand Ballroom, Salon III PMSE Paper

Wednesday Morning 11:30 AM Paper 264: Morphology and charge transport in a phenylene vinylene oligomer.

D. Tsamouras, W. Geens, P.F. vanHutten, J. Poortmans, G. Hadziioannou JW Marriott Grand Ballroom, Salon III PMSE Paper