



2012 **ONR Naval S&T Partnership Conference & ASNE Expo**

SEA WARFARE AND WEAPONS
ONR CODE 33

Dr. Rich Carlin
Oct 2012



O F F I C E O F N A V A L R E S E A R C H

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE OCT 2012		2. REPORT TYPE		3. DATES COVERED 00-00-2012 to 00-00-2012	
4. TITLE AND SUBTITLE Sea Warfare and Weapons				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Office of Naval Research, ONR Code 33, 875 N. Randolph Street, Suite 1425, Arlington, VA, 22203-1995				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES Presented at the ONR 2012 Naval Science and Technology (S&T) Partnership Conference and ASNE Expo on Oct. 22-24, 2012, Arlington, VA.					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 6	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			



Naval Power & Energy S&T

Vision: Increase Naval forces' freedom of action through energy security and efficient power systems. Increase combat capability through high energy and pulsed power systems. Provide the desired power where and when needed at the manned and unmanned platform, system and personal levels.

Objectives

Energy Security:

- Alternative and renewable energy sources
- Future alternative fuels
- Resilient power networks and systems for platforms and infrastructure

Efficient Power and Energy Systems:

- Materials, devices and architectures to increase efficiency and power density on platforms, and reduce weight for personal power
- Efficient power conversion, switching, distribution, control and thermal management
- Efficient power generation equipment, including engines, generators, motors, and actuators
- Electrochemical, thermal and kinetic energy storage

High Energy & Pulse Power:

- Energy storage, switching & control systems
- Pulsed power architectures



Key Research Topics

Advanced Naval Power Systems
Air Platform Power & Propulsion
Power Electronics
Personal Power
Bio-derived Materials, Sensors,
Systems & Processes
Manufacturing Science
Advanced Naval Materials



Energy Systems Technology Evaluation Program



*Education & Training
Opportunities for Current & Future
Naval Energy Workforce*

SPAWAR
Program Management
Info/Network Security Expertise
Technical & Business Training

*Technology Demonstrations at
Naval Facilities to Reduce Energy
Costs & Increase Energy Security*

- **Command Personnel**
- **NPS* Energy Students**
- **SDSU** Veterans & Wounded Warrior Outreach Pilot**

**ONR Oversight &
Funding**



NPS*
Energy ROI Research
Student Project Participation
Technical & Business Education

NAVFAC/NFESC
Project Management
Facility Expertise
Technical & Business Training

As we recover from this recession, the transition to clean energy has the potential to grow our economy and create millions of jobs - but only if we accelerate that transition. Only if we seize the moment."

President Barack Obama (White House Website, 29 Jan 2012)

*NPS: Naval Postgraduate School

**SDSU: San Diego State University

Platform Design and Survivability



Vision: Develop agile, fuel efficient and flexible platforms capable of operating in required environments. Enable manned and unmanned Naval platforms and forces to operate in hostile environments while avoiding, defeating and surviving attacks.

Objectives

Advance Mobility:

- Advanced platform design focused on efficiency, agility and affordability
- Autonomous and unmanned vehicle mobility
- Platform survivability and signature reduction
- Survivable platforms

Reliable, Efficient Long-Range, High-Speed Platforms with Optimized Payload Capabilities:

- Modeling and simulation tools
- Efficient ship design analysis tools
- Modular platforms

At-Sea Sustainment:

- Payload and weapons movement
- Integrated comms

Affordable Fleet/Force Modernization:

- Technology upgrades during midlife overhauls
- Technology opportunities proven through Fleet demonstrations



Key Research Topics

Advanced Sea Platforms

Hydromechanics

Signature Reduction

Advanced Naval Materials

Naval Engineering/Naval Architecture

Unmanned Vehicle Technologies

Intelligent & Autonomous Systems

Expeditionary Maneuver

Design and Integration Tools

Flexible and responsive delivery systems



Other Program Officers You Should Meet

Name	Program	ONR Code	Room
Anderson, Dr. Michele	Electrochemical Materials	33	Roosevelt
Beermann-Curtin, Sharon	P&E S&T Technical Lead	33	Roosevelt
Cho, Dr. Peter	Power Systems and Control	33	Roosevelt
Coombe, Dr. Scott	Electromagnetic Conversion, Solid State Devices	33	Roosevelt
Hess, Dr. Paul	Structural Reliability and Vulnerability	33	Roosevelt
Hoffman, Donald	Power Generation Systems	33	Roosevelt
Joslin, Dr. Ron	Sub-Surface Hydromechanics	33	Roosevelt
Kabacoff, Dr. Larry	Processing and Mechanical Behavior of Bulk Nano-structured Materials	33	Roosevelt
Medeiros, Maria	Autonomous Vehicle Power Systems	33	Roosevelt
Mullins, Dr. William	Structural Metallic Materials	33	Roosevelt
Perez, Dr. Airan	Corrosion Control Technologies	33	Roosevelt
Purtell, Dr. Patrick	Hydromechanics	33	Roosevelt



Other Program Officers You Should Meet

Name	Program	ONR Code	Room
Seman, Anthony	Platform Automation	33	Roosevelt
Shifler, Dr. David	Flight Deck Thermal Management	33	Roosevelt
Smith, Dr. Wallace	Acoustic Transduction Materials	33	Roosevelt
Spector, Dr. Mark	Metamaterials, Thermal Management	33	Roosevelt
Stimak, George	Electro-Mechanical Signatures	33	Roosevelt

Questions?