

ONR NEPTUNE Program Review at MIT

May 9-11, 2017

Wiesner Building (E15-070 / Bartos Theater)

Start	Dur	Tuesday, May 9
8:30 AM	30	Check-in & Breakfast
9:00 AM	30	Opening Remarks (Rich Carlin and Bob Armstrong)
9:30 AM		Microgrid
9:30 AM	15	Microgrid Optimization (NPS)
9:45 AM	15	Model Predictive Control and Moving Horizon Estimation for Microgrids (NPS)
10:00 AM	20	Cyberphysical Simulation and Control of Interconnected Self-Organizing Microgrids (ASU / P.I. - Nathan Johnson)
10:20 AM	15	Break
10:35 AM		Data-to-Decision
10:35 AM	20	Text and Data Mining for the Improvement of Energy Disaster Response (ASU / P.I. - Michael Simeone)
10:55 AM	20	Simulating Military Base Vulnerability and Resilience to Climate Change Stressors (ASU / P.I. - Mikhail Chester, Nathan Johnson)
11:15 AM	20	Plug in Electric Vehicle Decision Making Data Based Tools (UC Davis)
11:35 AM	75	11:45am - Lunch
12:50 PM		Data-to-Decision + Cyber Security
12:50 PM	20	Portfolio-level Energy Auditing and Decision-making Methodology & Tool (UC Davis)
1:10 PM	20	HETAI: Hacker Energy Threat Actor Identification (ASU / P.I. - Paulo Shakarian)
1:30 PM	20	Towards vetted sensing and control system firmware and software (Purdue)
1:50 PM	15	Break
2:05 PM		Measurement & Control
2:05 PM	20	Combat Power Monitor (MIT)
2:25 PM	20	Doppler Lidar for Wind Farm Control & Development (ASU / P.I. - Ronald Calhoun)
2:45 PM	20	Underwater Optical Communications on a Real-time Sensor Mooring Deployed in Tempe Town Lake (ASU / P.I. - Cody Youngbull, Ronald Calhoun)
3:05 PM	15	Break
3:20 PM		Batteries + Power Electronics
3:20 PM	20	Unlocking the chemistry of the amine-thiol universal solvent system for solutions processed, flexible electronic devices (Purdue)
3:40 PM	20	GaN interface engineering for naval RF power electronics applications via atomic layer epitaxy (Purdue)
4:00 PM	20	Development of low-cost, high-performance electrode materials for Na-ion batteries (Purdue)
4:20 PM	20	Exploiting Oxygen Anion Redox for High-energy Rechargeable Lithium Batteries (MIT)
4:40 PM		End of Program Day

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Start	Dur	Wednesday, May 10
8:30 AM	30	Check-in & Breakfast
9:00 AM		Fuels + Measurement & Control
9:00 AM	20	Occupancy Sensing for Lighting Controls in Outdoor Applications (UC Davis)
9:20 AM	20	Low cost catalyst for portable hydrogen generation and on-demand power (Purdue)
9:40 AM	20	Fundamental studies on composition/performance correlations for aviation fuels (Purdue)
10:00 AM	15	Break
10:15 AM		Fuels
10:15 AM	20	Determination of the Impact of Chemical Composition on Measured and Predicted Fuel Properties and on Combustion in Military Diesel Engines #1 (Naval Academy)
10:35 AM	20	Determination of the Impact of Chemical Composition on Measured and Predicted Fuel Properties and on Combustion in Military Diesel Engines #2 (Naval Academy)
10:55 AM	30	NEPTUNE Program Criteria and Student Challenge Summit
11:25 AM	125	Lunch & Poster Session
1:30 PM	30	Guest Speaker - Professor Robert Langer
2:00 PM	30	Break / Organize for Tours
2:30 PM	15	Transit Time to Tour 1
2:45 PM	75	Tour 1 (Duration 1:15)
4:00 PM	15	Transit Time to Tour 2
4:15 PM	75	Tour 2 (Duration 1:15)
5:30 PM	15	Transit Time to Dinner
5:45 PM		Group Dinner (optional)

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Start	Dur	Thursday, May 11
8:30 AM	30	Breakfast
9:00 AM		Thermal Systems
9:00 AM	20	Thermal Management Technologies for Low-Temperature Undersea Dive Persistence: a Novel Arctic Diving Suit (MIT)
9:20 AM	15	Microsphere-Based Passive Thermal Insulation Material for Low Temperature Diving Suits (NPS)
9:35 AM	15	Harvesting Waste Thermal Energy from Ship Equipment (NPS)
9:50 AM	15	Break
10:05 AM		Thermal Systems
10:05 AM	20	Heterogeneous surface wettability for manipulation of dryout hydrodynamics bubble departure during high heat flux boiling processes (Purdue)
10:25 AM	20	High Performance Recuperator for Waste Heat Recovery Cycles (UC Davis)
10:45 AM	15	An Assured Power Distribution System - The Ultra-Secure Micro-Grid Powered by Small Modular Reactors [SMRs] (NPS)
11:00 AM	30	Closing Remarks (Rich Carlin and Bob Armstrong)
11:30 AM	60	Lunch
12:30 PM		End of Program