

FY2011 MULTIDISCIPLINARY UNIVERSITY RESEARCH INITIATIVE (MURI) – SELECTED PROJECTS

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MURI Topic: Controlling the Abiotic/Biotic Interface to Enable Bio-Nanostructures with Unique Functionality				
ARO	Understanding the Interaction of Peptides and Proteins with Abiotic Surfaces: Towards Water-Free Biologics	University of Michigan University of Wisconsin University of South Carolina	Zhan Chen	MI WI SC
MURI Topic: Quantum Stochastics and Control				
ARO	Control of Quantum Systems: Theory and Experiments	University of Southern California Iowa State University University of Massachusetts, Boston University of California, Riverside Princeton University Griffith University (Australia) ²	Daniel Lidar	CA IA MA CA NJ
MURI Topic: Qubit-Enabled Imaging, Sensing & Metrology				
ARO	Multi-Qubit Enhanced Sensing and Metrology	Massachusetts Institute of Technology Harvard University University of Connecticut National Institute of Standards & Technology ³	Paola Cappellaro	MA MA CT MD
MURI Topic: Flex-Activated Materials				
ARO	Stress-Controlled Catalysis via Engineering Nanostructures	Brown University California State University, Northridge	William Curtin	RI CA

1. Team member institutions are those included in the lead institution's research proposal. They are subject to change at the discretion of the lead institution (e.g., if the final negotiated amount of the award is less than the amount proposed).
2. A non-US team member institution is identified in the lead institution's proposal. No MURI funding will be provided to the non-US institution.
3. A government laboratory team member is identified in the lead institution's proposal. No MURI funding will be provided to the government laboratory.

MURI Topic: Game Theory for Adversarial Behavior				
ARO	Scalable, Stochastic and Spatiotemporal Game Theory for Real-World Human Adversarial Behavior	University of Southern California Duke University California State University, Northridge University of California, Irvine Stanford University University of California, Los Angeles	Milind Tambe	CA NC CA CA CA CA
MURI Topic: Light Filamentation				
ARO	Light Filamentation Science	University of Central Florida University of New Mexico Southern Methodist University University of North Carolina, Charlotte Ottawa University (Canada) ² University at Buffalo, State University of New York	Martin Richardson	FL NM TX NC NY
MURI Topic: Novel Free-Standing 2D Crystalline Materials (Oxides/Nitrides)				
ARO	Atomic Layers of Nitrides, Oxides, and Sulfides	Rice University Pennsylvania State University Florida State University Southern Illinois University	Pulickel Ajayan	TX PA FL IL
MURI Topic: Value of Information for Distributed Data Fusion				
ARO	Value-centered Information Theory for Adaptive Learning, Inference, Tracking and Exploitation	University of Michigan Massachusetts Institute of Technology Ohio State University University of California, Berkeley University of California, Los Angeles Arizona State University	Alfred Hero	MI MA OH CA CA AZ

MURI Topic: Nanofabrication of Tunable 3D Nanotube Architectures				
AFOSR	Synthesis and Characterization of 3D Carbon Nanotube Solid Networks	William Marshall Rice University Pennsylvania State University University of Delaware University of Texas, Dallas	Pulickel Ajayan	TX PA DE TX
AFOSR	Nanofabrication of Tunable 3D Nanotube Architectures	Case Western Reserve University Purdue University Georgia Institute of Technology University of Akron Kent State University	Liming Dai	OH IN GA OH OH
MURI Topic: Quantum Memories and Light-Matter Interfaces				
AFOSR	Quantum Memories in Photon-Atomic Solid State Systems	University of California, Santa Barbara California Institute of Technology Harvard University University of Iowa Iowa State University	David Awschalom	CA CA MA IA IA
AFOSR	Multi-functional light-matter interfaces based on neutral atoms and solids.	Georgia Institute of Technology Harvard University University of Wisconsin, Madison University of Michigan Columbia University Stanford University Massachusetts Institute of Technology	Alexander Kuzmich	GA MA WI MI NY CA MA
MURI Topic: Biomolecule-Directed Assembly of Nanostructures				
AFOSR	BioProgrammable One-, Two-, and Three-Dimensional Materials	Northwestern University California Institute of Technology University of Pittsburgh	C. Mirkin	IL CA PA

MURI Topic: Nanostructural Control of Thermal and Electrical Transport Properties with Organic Hybrid Materials				
AFOSR	Control of Thermal and Electrical Transport in Organic and Composite Materials Through Molecular and Nanoscale Structure	University of California, Berkeley University of California, Santa Barbara University of Illinois, Urbana-Champaign California Institute of Technology	Rachel A. Segalman	CA CA IL CA
MURI Topic: Investigation of 3-D Hybrid Integration of CMOS/Nanoelectronic Circuits				
AFOSR	Investigation of 3-D Hybrid of Integration of CMOS/ Nanoelectronic Circuits	University of California, Santa Barbara Stony Brook University, State University of New York University of Michigan University of Massachusetts, Amherst	Tim Cheng	CA NY MI MA
AFOSR Topic: Science of Cyber Security				
AFOSR	Science of Cyber Security: Modeling, Composition, and Measurement	Stanford University Cornell University Carnegie Mellon University University of California, Berkeley University of Pennsylvania	John C. Mitchell	CA NY PA CA PA
MURI Topic: Large Scale Integrated Hybrid Nanophotonics				
AFOSR	Integrated Hybrid Nanophotonic Circuits	Stanford University University of California, Berkeley California Institute of Technology Harvard University Purdue University	Mark Brongersma	CA CA CA MA IN

MURI Topic: Soil Blast Modeling and Simulation				
ONR	An Integrated Experimental and Computational Multiscale Immersed Particle-Continuum Approach to Modeling and Simulation of Multiphase Soil Failure Mechanics Under Buried Explosive Loading	University of Colorado at Boulder Louisiana State University University of California, Berkeley University of Texas, Dallas University of Utah	Richard A. Regueiro	CO LA CA TX UT
MURI Topic: Knowledge Representation and Reasoning for Decentralized Autonomy				
ONR	Nonparametric Bayesian Models to Represent Knowledge and Uncertainty for Decentralized Planning	Massachusetts Institute of Technology Duke University University of California, Berkeley	Jonathan P. How	MA NC CA
MURI Topic: III-Nitride Terahertz Electronics — Scaling strategies beyond Silicon				
ONR	III-N Devices and Architectures for Terahertz Electronics	University of Notre Dame Ohio State University John Hopkins University Wright State University	Patrick Fay	IN OH MD OH
MURI Topic: Charge Transport in DNA Molecular Wire				
ONR	Conductive DNA Systems and Molecular Devices	Northwestern University Duke University New York University Arizona State University	Mark Ratner	IL NC NY AZ

MURI Topic: Coupled Human-Landscape Interaction in Low-lying Coastal Environments				
ONR	Environmental stress and human migration in a low-lying developing nation: A comparison of co-evolving natural and human landscapes in the physically and culturally diverse context of Bangladesh	Vanderbilt University Columbia University	Steven Goodbred, Jr.	TN NY
MURI Topic: Integrated Oceanographic, Atmospheric, and Acoustic Physics				
ONR	Integrated Modeling and Analysis of Physical Oceanographic and Acoustic Processes	Woods Hole Oceanographic Institution Rutgers University Massachusetts Institute of Technology University of Texas at Austin University of Delaware Florida Institute of Technology Rensselaer Polytechnic Institute Colorado School of Mines Naval Postgraduate School	Timothy F. Duda	MA NJ MA TX DE FL NY CO CA
MURI Topic: Improved Meteorological Modeling in Mountainous Terrain				
ONR	Mountain Terrain Atmospheric Modeling and Observations (MATERHORN) Program	University of Notre Dame Naval Postgraduate School University of California, Berkeley University of Utah University of Virginia	H. J. S. Fernando	IN CA CA UT VA
MURI Topic: Bacterial or Cellular Controllers for Device Autonomy				
ONR	Utilizing Synthetic Biology to Create Programmable Micro-Bio-Robots	Boston University Massachusetts Institute of Technology Harvard University Northeastern University University of Pennsylvania	James Collins	MA MA MA MA PA

MURI Topic: NanoScience-based High-Speed Fabrication of Full Function Hybrid Flexible Electronic Systems				
ONR	Roll-to-Roll High Speed Printing of Multi-functional Distributed Sensor Networks for Enhancing Brain-Machine Interface	University of Minnesota Northwestern University University of Wisconsin-Madison University of Illinois, Urbana-Champaign University of Texas, Austin	C. Daniel Frisbie	MN IL WI IL TX
MURI Topic: Atomic-Scale Interphases: Exploring New Material States				
ONR	Tailoring of Atomic-scale Interphase Complexions for Mechanism-Informed Materials Designs	Lehigh University Carnegie-Mellon University Clemson University University of Illinois, Urbana-Champaign Kutztown University of Pennsylvania	Martin Harmer	PA PA SC IL PA