FY2018 MULTIDISCIPLINARY UNIVERSITY RESEARCH INITIATIVE (MURI) – SELECTED PROJECTS

Topic Number	Topic Name	Project Name	Sponsoring Office	Primary University Subaward Universities[1]	University Location (state)	Principal investigator
1	Integrated Quantum Sensing and Control for High Fidelity Qubit Operations	Quantum control based on real-time environment analysis by spectator qubits	ARO	**Duke University** University of Oregon University of California, Berkeley Massachusetts Institute of Technology Louisiana State University Johns Hopkins University Griffith University[2] University of New South Wales[2] University of Technology, Sidney[2]	**NC** OR CA MA LA MD AUS AUS AUS	Kenneth Brown
2	Novel Solid-State Materials and Color Centers for Quantum Science and Engineering	Ab-Initio Solid-State Quantum Materials: Design, Production, and Characterization at the Atomic Scale	ARO	**Massachusetts Institute of Technology** University of Washington Harvard University University of California, Los Angeles	**MA** WA MA CA	Dirk Robert Englund
3	Controlling Protein Function Using Dynamic Chemical Switches to Modulate Structure	Stimuli-Responsive Control of Protein-Based Molecular Structure	ARO	**Northwestern University, Evanston** University of Chicago	**IL** IL	Milan Mrksich
4	Consolidation of Novel Materials and Macrostructures from a Dusty Plasma	New Materials from Dusty Plasmas	ARO	**University of Minnesota** University of Michigan California Institute of Technology University of Iowa Washington University	**MN** MI CA IA MO	Uwe Kortshagen

[1] Team member institutions are subject to change at the discretion of the primary institution.
[2] Member of the US/AUS MURI Collaboration. AUS partners do not receive US MURI funding.

FY2018 MULTIDISCIPLINARY UNIVERSITY RESEARCH INITIATIVE (MURI) – SELECTED PROJECTS

Topic Number	Topic Name	Project Name	Sponsoring Office	Primary University Subaward Universities[1]	University Location (state)	Principal investigator
5	Embodied Learning and Control	Science of Embodied Innovation, Learning and Control	ARO	**University of Pennsylvania** University of California, Berkeley Johns Hopkins University University of Illinois, Urbana-Champaign	**PA** CA MD IL	Daniel Koditschek
6	Coevolution of Neural, Cognitive, & Social Networks: Mind-Body-Community Connections	Multiscale integration of neural, social, and network theory to understand and predict transitions from illness to wellness: a proof of concept with mindfulness, hypnosis and alcohol use disorders	ARO	**University of Pennsylvania** Columbia University University of North Carolina, Chapel Hill	PA NY NC	Emily Falk
7	Network Games	Multiscale Network Games of Collusion and Competition	ARO	**University of Michigan** University of Southern California Vanderbilt University University of California, Los Angele	MI CA TN CA	Mingyan Liu
8	Modeling Interdependence among Natural Systems and Human Population Dynamics	Towards a Multi-Scale Theory on Coupled Human Mobility and Environmental Change	ARO	**University of Florida, Gainesville** Columbia University Eastern Carolina University	**FL** NY NC	Rachata Muneepeerakul
9	Physically Viable Learning for Control of Autonomous Dynamical Systems	Verifiable, Control-Oriented Learning On The Fly	AFOSR	**University of Texas, Austin** Princeton University Northeastern University	**TX** NJ MA	Ufuk Topcu

[1] Team member institutions are subject to change at the discretion of the primary institution.
[2] Member of the US/AUS MURI Collaboration. AUS partners do not receive US MURI funding.

FY2018 MULTIDISCIPLINARY UNIVERSITY RESEARCH INITIATIVE (MURI) – SELECTED PROJECTS

Topic Number	Topic Name	Project Name	Sponsoring Office	Primary University Subaward Universities[1]	University Location (state)	Principal investigator
10	Nanoscular Vacuum Field Effect Transistors	Empty State Electronics	AFOSR	**Massachusetts Institute of Technology** Boise State University Southern Methodist University University of Colorado, Boulder	**MA** ID TX CO	Akintunde Ibatayo (Tayo) Akinwande
11	Molecular-Scale Studies of Liquid-Solid Interfaces in Electrochemical Processes	Molecular Level Studies of Solid-Liquid Interfaces in Electrochemical Processes	AFOSR	**Emory University** Cornell University University of Southern California Yale University University of Pennsylvania Massachusetts Institute of Technology	GA NY CA CT PA MA	Tianquan (Tim) Lian
12	Non-Equilibrium Dynamics	Magnet-Free Non-Reciprocal Metamaterials Based on Spatio-Temporal Modulation	AFOSR	**City University of New York** Stanford University University of Michigan Columbia University	**NY** CA MI NY	Andrea Alu
13	Heterogeneous Interfaces: Route to New Optoelectronic Properties	Hybrid-Materials Valley Optoelectronics for Photon Spin Communication	AFOSR	**Cornell University** University of California, Berkeley Stanford University University of Chicago	**NY** CA CA IL	David Muller
14	Piezoelectric Nanoenergetic Materials with Adaptable and Tailorable Reactivity	Piezoenergetics – Coupled Piezoelectric and Nanoenergetic Materials with Tailorable and Switchable Reactivity	AFOSR	**Purdue University** Pennsylvania State University Case Western Reserve University University of Maryland, College Park Georgia Institute of Technology	**IN** PA OH MD GA	Steven F. Son

[1] Team member institutions are subject to change at the discretion of the primary institution.
[2] Member of the US/AUS MURI Collaboration. AUS partners do not receive US MURI funding.

FY2018 MULTIDISCIPLINARY UNIVERSITY RESEARCH INITIATIVE (MURI) – SELECTED PROJECTS

Topic Number	Topic Name	Project Name	Sponsoring Office	Primary University Subaward Universities[1]	University Location (state)	Principal investigator
15	Advanced Mean-Field Game Theory for Complex Physical & Socio-Economical Systems	Innovations in Mean-Field Game Theory for Scalable Computation and Diverse Applications	AFOSR	**University of California, Los Angeles** University of Maryland, College Park University of Houston Princeton University	**CA** MD TX NJ	Stan Osher
16	β-Ga2O3 as a High-Critical Field Strength Material for Power Systems	Gallium Oxide Materials Science and Engineering - GAME	AFOSR	**University of California, Santa Barbara** Ohio State University Cornell University Georgia Institute of Technology	**CA** OH NY GA	James S. Speck
17	Predicting and Validating Pathways for Chemical Synthesis	Synthesis Planning and Reaction Discovery for Photochemistry and Chemistry in Novel Environments	ONR	**Stanford University** Harvard University University of Southern California Northeastern University	**CA** MA CA MA	Todd J. Martinez
18	Synthetic Microbial Electronics	Livtronics: Living Electronics for Biologically-Enhanced Sensing, Computing, and Signal Transmission	ONR	**University of Southern California** University of Minnesota Massachusetts Institute of Technology Arizona State University Washington University	**CA** MN MA AZ MO	Moh El-Naggar
19	Automated Technical Document Comprehension	Generating Documents that are Consistent with a Knowledge Base	ONR	**George Mason University** Dartmouth College University of Maryland, College Park University of Washington	**VA** NH MD WA	Sushil Jajodia

[1] Team member institutions are subject to change at the discretion of the primary institution.
[2] Member of the US/AUS MURI Collaboration. AUS partners do not receive US MURI funding.

FY2018 MULTIDISCIPLINARY UNIVERSITY RESEARCH INITIATIVE (MURI) – SELECTED PROJECTS

Topic Number	Topic Name	Project Name	Sponsoring Office	Primary University Subaward Universities[1]	University Location (state)	Principal investigator
20	Materials for Smart Multifunctional Superstructures [(MS)2]	Blueprint for design and assembly of multifunctional, adaptive materials using the nanocrystal periodic table	ONR	**University of Pennsylvania** University of Michigan Massachusetts Institute of Technology	**PA** MI MA	Christopher Murray
21	Advanced Optical Materials that Create Force from Light	Photomechanical Material Systems—From Molecules to Devices	ONR	**University of Massachusetts, Amherst** California Institute of Technology Kent State University Stanford University University of California, Riverside University of California, Santa Barbara	**MA** CA OH CA CA CA	Ryan C. Hayward
22	In Situ Microstructural and Defect Evolution Below the Micron Scale in as Deposited Metal Alloys	Rationalization of Liquid/Solid and Solid/Solid Interphase Instabilities During Thermal-Mechanical Transients of Metal Additive Manufacturing	ONR	**The University Of Tennessee, Knoxville** Virginia Polytechnic Institute and State University Ohio State University Iowa State University University of California, Santa Barbara Colorado School of Mines University of Sydney[2]	**TN** VA OH IA CA CO AUS	Sudarsanam Suresh Babu
23	Enhancing Thermal Transport at Material Interfaces	Leveraging a New Theoretical Paradigm to Enhance Interfacial Thermal Transport in Wide Bandgap Power Electronics	ONR	**Georgia Institute of Technology** University of South Carolina, Charleston University of California, Los Angeles University of Virginia University of Notre Dame	**GA** SC CA VA IN	Samuel Graham

[1] Team member institutions are subject to change at the discretion of the primary institution.
[2] Member of the US/AUS MURI Collaboration. AUS partners do not receive US MURI funding.

FY2018 MULTIDISCIPLINARY UNIVERSITY RESEARCH INITIATIVE (MURI) – SELECTED PROJECTS

Topic Number	Topic Name	Project Name	Sponsoring Office	Primary University Subaward Universities[1]	University Location (state)	Principal investigator
24	Self-Assessment of Proficiency for Autonomous and Intelligent Systems	SUCCESS: Self-assessment and Understanding of Competence and Conditions to Ensure System Success	ONR	**Carnegie Mellon University** Brigham Young University Tufts University University of Massachusetts, Lowell	**PA** UT MA MA	Aaron Steinfeld

[1] Team member institutions are subject to change at the discretion of the primary institution.
[2] Member of the US/AUS MURI Collaboration. AUS partners do not receive US MURI funding.