News Release

Defense Advanced Research Projects Agency

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DARPA ANNOUNCES 2008 YOUNG FACULTY AWARDS FOR UNIVERSITY MICROSYSTEMS RESEARCH

The Defense Advanced Research Projects Agency (DARPA) has identified 39 rising stars in university microsystems research to receive Young Faculty Awards.

The researchers are on the faculty of 27 universities located in 17 different states. Subject to negotiation, each will receive a grant of approximately $150,000 to be used to further develop and validate their research idea during the coming year. The list of selected researchers is attached below.

DARPA's Young Faculty Award program, now in its second year, is designed to seek out ideas from non-tenured faculty in order to identify the next generation of researchers working in microsystems technology. The funded researchers will focus on concepts that are innovative, speculative, and high-risk. DARPA expects that the innovations researched under the Young Faculty Award program will assist in identifying new areas of research that are sufficiently important and challenging to warrant additional DARPA programs. DARPA's Microsystems Technology Office sponsors the Young Faculty Award program.

"This year's Young Faculty Award competition produced more than 250 exciting ideas from the best and brightest young faculty in the US. The quality of these ideas and the talent of the applicant pool made this a valuable event for us, and we're especially excited to work with the awardees in the next year and, hopefully, throughout their careers," noted Dr. Thomas Kenny, DARPA's program manager for the initiative.

The 39 researchers to be funded were selected through a three-stage, competitive process. DARPA initially received brief abstracts from 277 young faculty applicants from universities all over the country. Following a review of the abstracts, DARPA invited 59 abstract authors to attend a DARPA Microsystems Technology Office Workshop, discuss their ideas with DARPA program managers, and learn more about the Agency. For the final selection stage, DARPA invited all 59 researchers to submit proposals explaining their program idea in more detail and identifying the key technical challenges to be overcome. The 39 rising stars were selected based on DARPA's review of 57 submitted proposals.

The mission of DARPA's Microsystems Technology Office is to exploit breakthroughs in materials, devices, circuits, and mathematics to develop components that are more advanced than today's leading-edge devices and that have revolutionary performance and functionality to enable new capabilities for the Department of Defense. The office seeks out innovations enabling revolutionary advances in physics, materials, and devices in electronics, photonics,

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microelectromechanical systems, microsystems architectures, and/or algorithms. These areas form the foundation for developing integrated microsystems with revolutionary capabilities, low power consumption, and small form-factors.

The 39 researchers selected for grant negotiations are:

Researcher	Institution	City	State	Project Title
Abbasour-Tamijani, Abbas	Arizona State University	Tempe	Arizona	Programmable Acoustic Filters Based on Silicon Microstructures
Afshari, Ehsan	Cornell University	Ithaca	New York	Optotronics: Optically Inspired Electronics
Averitt, Richard	Boston University	Boston	Massachusetts	Metamaterial Enhanced MEMS for Terahertz Technology
Bank, Seth	University of Texas at Austin	Austin	Texas	Compact, High-Efficiency, Mid-Infrared Dilute-Nitride Diode Lasers
Bergbreiter, Sarah	University of Maryland, College Park	College Park	Maryland	Silicon/Elastomer Components for Autonomous Jumping Microrobots
Bhave, Sunil	Cornell University	Ithaca	New York	Silicon Opto-Acoustic Oscillator
Buehler, Markus J.	MIT	Cambridge	Massachusetts	Bio-Inspired Nano-Engineered Hierarchical Structures for Adaptive Thermal Management
Bunch, Joseph	University of Colorado, Boulder	Boulder	Colorado	Graphene Membrane
Cloutier, Sylvain	University of Delaware	Newark	Delaware	Low-Cost Chip-Integrated Small Form-Factor Random Lasers for Advanced High-Speed Opto-Electronic Hybrid Circuits
Drndic, Marija	University of Pennsylvania	Philadelphia	Pennsylvania	Electrical Multiple Exciton Generation (MEG) Detection in Semiconductor Nanocrystals and the Development of Efficient and Tunable Single-Nanocrystal Photodectors
Hart, A. John	University of Michigan	Ann Arbor	Michigan	Hybrid Nanostructure Arrays for Micro- and Nano-scale Energy Conversion and Storage
Hashemi, Hossein	University of Southern California	Los Angeles	California	Silicon-based Ultra Wideband Camera for Spatial and Spectral Awareness
Her, Tsinghua	University of North Carolina, Charlotte	Charlotte	North Carolina	Gain-Guiding in Photonic Bandgap Fibers: A New Paltform for Ultra High-Power Lasers and Amplifiers
Hidrovo, Carlos	University of Texas at Austin	Austin	Texas	High Speed Droplet Flows: Microscale Total Analysis and Thermal Management Systems Applications
Jiang, Hongrui	University of Wisconsin, Madison	Madison	Wisconsin	Super Artificial Eyes (SAE)
Jovanovic, Igor	Purdue University	West Lafayette	Indiana	Direct Temporal Pulse Shaping Via Phase-Sensitive Three-Wave Mixing
Keiko Luscombe, Christine	University of Washington	Seattle	Washington	Nanostructures for Optimal Energy Harvesting
Leuenberger, Michael	University of Central Florida	Orlando	Florida	High-Temperature Electrially Driven Mbps Single-Photon Source at Telecom Wavelengths
Li, Yifei	University of Massachusetts, Dartmouth	Dartmouth	Massachusetts	Integrated Photonic Frequency Mixer

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Ma, Zhenqiang (Jack)	University of Wisconsin, Madison	Madison	Wisconsin	Toward 3D Si Photonics: DBR-Free VCSELs on Si Enabled with Manufacturable Nanomembrane Stacking
Oldham, Kenn	University of Michigan	Ann Arbor	Michigan	Energy Efficient Piezoelectric Servo Control for Micro-Robotics
Palacios, Tomás	MIT	Cambridge	Massachusetts	On-Wafer Integration of Nitride and Silicon CMOS Electronics
Park, Harold	University of Colorado, Boulder	Boulder	Colorado	Novel Multiscale CAE Tools for Surface-Dominated NEMS
Pennathur, Sumita	University of California, SB	Santa Barbara	California	Portable, Efficient Electrokinetic Energy Generation using a Novel Graphene based Nanofluidic Device
Pop, Eric	University of Illinois Urbana-Champaign	Urbana	Illinois	Femto-Joule Atomic-Scale Reversible Switch
Rana, Farhan	Cornell University	Ithaca	New York	Terahertz Plasmon Oscillators: Lasers for Circuits
Reano, Ronald	Ohio State University	Columbus	Ohio	All-Dielectric Doubly Resonant RF/Optical Degenerate Band-Edge Crystal Antenna
Ricketts, David	Carnegie Mellon University	Pittsburgh	Pennsylvania	Spin-torque Oscillators for Spectrum-agile RF
Sharping, Jay	University of California - Merced	Merced	California	Wideband Quantum Frequency Conversion in Optical Fibers: Enabling Transparent Quantum Information Processing
Tan, Wei	University of Colorado, Boulder	Boulder	Colorado	Highly Selective, Stable and Manufacturable Nano-Bio-Sensor
Tutuc, Emanuel	University of Texas at Austin	Austin	Texas	Germanium Nanowire Gate All Around Tunneling Field Effect Transistors
Vasilyev, Michael	University of Texas at Arlington	Arlington	Texas	Coherent Nonlinear-Optical Image Processing in Plasmonic Metamaterial
Vuckovic, Jelena	Stanford University	Stanford	California	Ultrafast Optical Switches Controlled at a Single Photon Level
Wakin, Michael B.	University of Michigan	Ann Arbor	Michigan	Geometric Methods for Compressive Multi-Signal Processing
Wang, Chunlei	Florida International University	Miami	Florida	Fabrication of Nano Fractal Electrodes for On-Chip Supercapacitor Application
Wang, Evelyn N.	MIT	Cambridge	Massachusetts	Tunable Nanostructured Arrays for Stable High-Flux Microchannel Heat Sinks
Williams, Benjamin	University of California, Los Angeles	Los Angeles	California	Nanowire Heterostructure Intersublevel Optoelectronics
Yang, Ronggui	University of Colorado, Boulder	Boulder	Colorado	Surface-Plasmon Enabled High Efficiency Thermoelectric Devices
Zheng, Xiaolin	Stanford University	Stanford	California	Cell Motion-Based Toxin Detector Using Nanowires

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