

**HOT SEE PAGE 2**  
**STIMULUS**  
**35 MILLION**  
*Available but you*  
*only have 30 days*

# Microsystems Monthly

## DARPA MTO highlights in this issue!!!!

April 1, 2009  
 Issue 2

### Mid-Atlantic MEMS Alliance Mission Statement:

To network expertise, capabilities, and research to facilitate the development of new applications and commercialization of miniaturization technologies.

## DARPA –Microsystems Technology Office (MTO) Directions and Focus

3-DIC	CAD-QT	DUVAP	HOTMWR	MORPH	PHOR-FRONT	TFAST
3-D MERFS	CERA	ECHIPPS	ISIS	MX	POPS	TGP
ADHEL5	ChaSER	EMIL	MACE	NACHOS	RHBD	TRUST
ADRT	CHEMS	EMPIRe	MCC	Nanowriter	RIEDAR	UNIC
AFPA	CLASS	EPIC	MEMS/NEMS	NEMS	RIFL	UPR
AMTP	COCHISE	FCRP	MGA	NGIMG	SAIL	VIGIL
APPLE	COSMOS	FLARE	MIATA	NLMMSM	SHEDS	WBGS-HPE
APS	CSAC	HARDI	MINT	NTI	SMART	WBGS-RF
ASP	DESA	HERMIT	MIPS	PCAR	STAPBOY	YFA
A-to-I	DMT	HiFIVE	MISI	PhASER	STEEP	
C2OI	DOD-N	HI-MEMS	MONTAGE	PHOBIAC	TBN	

- DARPA MTO 1
- Chairperson's note 2
- Stimulus News 2
- Local Interest ISR Open House 3
- Upcoming Events 4
- Local Interest 4
- Positions 5
- Proposal Opportunities 5
- Local Interest 6

### Intro to DARPA Microsystems Office (MTO)

If the above List of Acronyms makes any sense to you then you are definitely a follower of the DARPA MTO Office. MTO currently has their major BAA call out and is soliciting concepts in a wide range of areas...(See page 3) MTO is leading pioneering research in Integrated Microsystems as "platforms-on-a-chip" to enable revolutionary performance and functionality for future DoD systems. The core functionality of an Integrated Microsystems is the ability to sense, process, and act on data in the battlespace in order to give the US warfighter an asymmetric advantage. In an effort to develop such Integrated Microsystems while satisfying demanding DoD requirements, MTO programs address numerous technical challenges including chemical, biological, and electromagnetic spectrum detection from DC-to-optical, signal processing at both the sensor front-end and at the back-end of analog, digital, and mixed-signal circuits, data communication through novel devices and circuits, and power production and conversion matched to system needs. MTO programs span five core technology areas, while many of the most revolutionary capabilities result from technical synergies at the interfaces of these categories. <http://www.darpa.mil/MTO/about/index.html> Best point of entry is use the home page and find the Program Manager whose interest resonate with your proposal and set up an appointment to review your concepts. Also as an aside...DARPA is always looking for Program Managers...currently they are especially interested in the areas of Networking and Communication. There is a section on the home page that will link you to application materials. A. Darrin 3/19/2009

One of the things that makes the Mid-Atlantic region so interesting for MEMS, Microsystems, and Nanotechnology is the varied mix of universities, government laboratories, funding agencies, and private companies, each with different emphases and approaches. Since its inception, the Mid-Atlantic MEMS Alliance has recognized that we can play an important role in fostering collaborations between these institutions. Often this has been an informal process, as researchers meeting at our Symposia and workshops have developed collaborations that have blossomed into long-term partnerships. Students graduating from member Universities have a interned or been hired at MEMS Alliance member organizations, and we have seen at least one local startup spun out of a member organization.

In the coming year, we are going to be doing more to encourage this cross-fertilization. First of all, we will enlarge last year's successful "Stone Soup" session at the Fall Symposium. This session is intended to connect potential users of miniaturization & micro-technology to technology providers. The session does not consist of traditional conference presentations, but is instead a working "white board" session in which problems in need of a solution are presented, and the audience is encouraged to participate in understanding the problem and framing potential approaches to a Research & Development solution. The theme this year will be "Micro- and Nano- technology in the Green Revolution: Approaches to Energy Conservation and Environmental Monitoring."

We are making a concerted effort to expand our communications, not only through this newsletter, but through an increased web presence. We hope that a revamped web site with more useful content will function as an area for members to stay abreast of upcoming proposals and conferences, to look for potential collaborators, to post and search for job vacancies and even to share technical information. We will also be expanding our print advertisements and our reach into existing conferences and professional meetings.

Needless to say, all of these initiatives cost money. However, we feel that fostering active and vibrant research and development programs in the mid-Atlantic area, whether they are carried out in academia, government, or industry, is a fantastic investment in the regional economy. To this end, we are actively seeking partners such as regional economic development councils and other organizations concerned with economic growth, in the hope that they will provide some investment to seed these initiatives. We will keep you informed of the progress we make in this effort, and welcome your suggestions on further steps that might be taken.

Best regards,



Brian Jamieson

Mid-Atlantic MEMS Alliance Steering Committee  
Chair

## 30 Days 35 Million

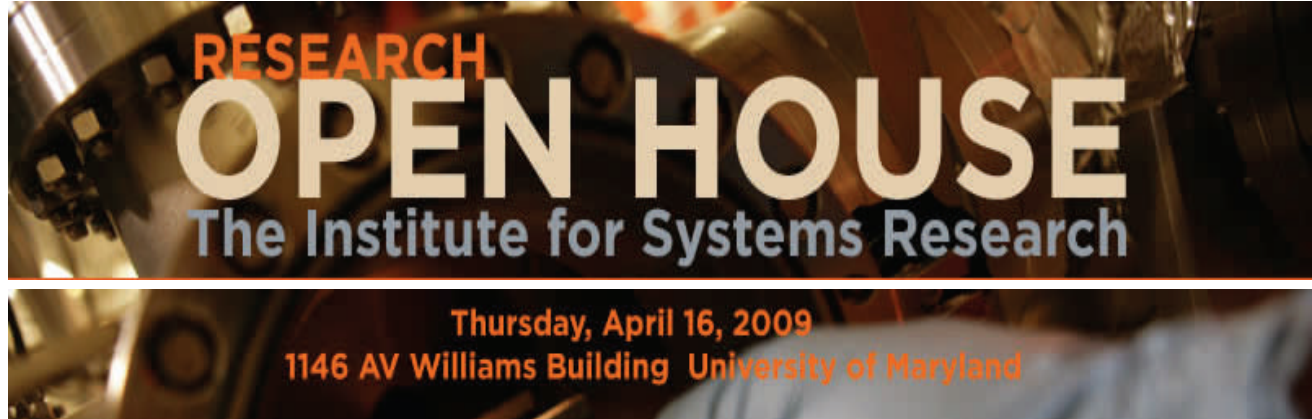
### American Recovery and Reinvestment Act

Recovery Act Measurement Science and Engineering Research Grants Program: Providing the Technology Infrastructure to Address National Priorities.

The U.S. Department of Commerce, National Institute of Standards and Technology, announces the availability of up to \$35 million to award approximately 20-60 grants and cooperative agreements in support of measurement science and engineering research as part of NIST's activities through the American Recovery and Reinvestment Act of 2009 (Recovery Act).

Proposals will be considered that address measurement science and engineering research needs in areas of national importance.

These areas of national importance are energy, environment and climate change, information technology/cybersecurity, biosciences/healthcare, manufacturing, and physical infrastructure. These grants will support NIST's mission to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our quality of life. Watch the web site if interested. **Currently only the synopsis is posted but once the full announcement is posted you will only have 30 days...so PLAN NOW** <http://www07.grants.gov/search/search.do?&mode=VIEW&flag2006=false&opId=46063>



Institute for Systems Research Open House, which will be held on Thursday, April 16, from 9am to 4pm, on the campus of the University of Maryland, College Park, MD. The event's goal is to stimulate opportunities for collaborations between our faculty researchers and external organizations.

Many ISR faculty (including Prof. Ghodssi) and their students will be available to discuss their research through posters and demonstrations. This will be a superb opportunity to learn much more about the breadth and depth of faculty expertise, and identify topics for collaborations which would be mutually beneficial. I request your assistance to distribute this to your colleagues who may also have interest to attend.

Please go to the event web site

[http://www.isr.umd.edu/2009\\_openhouse/](http://www.isr.umd.edu/2009_openhouse/)

to learn more about the day's activities, including participating faculty (continually being updated), methods for partnerships, and to register for this free event. We would like to set up appointment times for you to meet with faculty of interest.

The Research Open House starting point is ISR's hospitality room, 1146 AV Williams Building. You will be able to enjoy snacks and refreshments throughout the day. ISR will have staff and graduate students available to take attendees to meet with faculty and tour laboratories.

Point of Contact

Jeffrey A. Coriale

Director of External Relations

Institute for Systems Research

University of Maryland

.

### **MEMS Alliance Fall Symposium**

MEMS, Nano and Microsystems in the Green Revolution .....This conference will feature explore the role that micro– and nano– technology will play a role in the development of “green” solutions to environmental and energy issues. A :”Stone Soup” problem solving session will link industry and government needs with technology solutions. There will be a poster session with a student award for best presentation. Washington DC November 30, 2009. [www.mems-alliance.org](http://www.mems-alliance.org)

### **TRANSDUCERS 2009**

#### **2009 International Solid-State Sensors, Actuators and Microsystems Conference**

The conference will feature four days of presentations and posters highlighting the latest and most technically advanced work in mechanical, optical, chemical, and biological devices and systems using micro- and nano-technology. Jun 21-25, 2009 Sheraton Denver Hotel Denver

### **Optical MEMS and Nanophotonics 2009**

Clearwater Beach, Florida | 16-20 August 2009 Abstract deadline: May 1, 2009

<http://www.ieee.org/organizations/society/leos/LEOSCONF/MEMS2009/CO>. [www.transducers09.org](http://www.transducers09.org)

### **PowerMEMS 2009**

The 9th International Workshop on Micro and Nanotechnology for Power Generation and Energy Conversion Applications Washington DC Dec 1-4, 2009 [www.powermems.org](http://www.powermems.org).

**SAMPE in Baltimore this YEAR!!!** <http://www.sampe.org/events/Baltimore09ConferenceProgram.aspx>

## Local Interest

### **NNI Continues:**

House Unanimously Approves Legislation Reauthorizing Nanotech Initiative - The House of Representatives unanimously passed H.R. 554, legislation reauthorizing the National Nanotechnology Initiative (NNI). This multi-agency coordinating body is responsible for overseeing federal nanotechnology research. The bill promotes efforts to bring products using these advanced technologies to the market. Additionally, it aims to foster nanotechnology education partnerships in order to engage and prepare students to pursue education in nanotechnology. The NNI was signed into law in 1993 as PL 108-153.

### **Stimulus Plan:**

Here is a great link if you want to get insight on the Stimulus Plan without reading the whole tome:

[http://www.propublica.org/special/the-stimulus-plan-a-detailed-list-of-spending#stim\\_scitech](http://www.propublica.org/special/the-stimulus-plan-a-detailed-list-of-spending#stim_scitech)



# PROCUREMENT/PROPOSAL OPPORTUNITIES

April 1, 2009

## SBIR Released for Dept of Homeland Security

[Small Business Innovative Research \(SBIR\) Program 9.1 HSHQDC-09-R-00041 A -- Research & Development](#)

Department of Homeland Security Office of the Chief Procurement Officer  
Office of Procurement Operations Mar 16, 2009 Solicitation

## DARPA Microsystems Technology Office-Wide

Broad Agency Announcement **Document Type:** Presolicitation Notice

**Solicitation Number:** BAA09-25 **Posted Date:** February 17, 2009

<http://www.darpa.mil/mto/solicitations/baa09-25/index.html>

### OF NOTE

Dr. Robert F. Leheny was named Acting Director DARPA February 20, 2009. He continues to serve as Deputy Director of DARPA, a position he has occupied since June 2, 2003.(Leheny is in an acting role....it has become Washington's favorite parlor game to guess Tony Tether's successor)

## POSITION OPENINGS IN THE AREA

[Post-Doctoral Research Associate](#) Rutgers, The State University of New Jersey, Piscataway, NJ

[Postdoctoral Research Student](#) DOC/NIST/CNST/Nanofabrication Research Group, Gaithersburg, MD  
20899-6203

[Radar Systems Engineer](#)—Northrup Grumman

<http://careers.northropgrumman.com/ExternalHorizonsWeb/getQuery.do> Drop - Radar Systems Engineer - in the keywords box. Choose MD as the state and Baltimore as the city.

[JHUAPL Microelectronics Packaging / Assembly Engineer](#) [www.jhuapl.edu](http://www.jhuapl.edu)

MEMS Business Development and Marketing Manager

[MEMS and Nanotechnology Exchange](#)

[Microfabrication Engineer / Technician](#) MEMS and Nanotechnology Exchange (Reston, Virginia) Phone: 703-262-5368 Fax: 703-262-5367 <http://mems-exchange.org/>

Couple of outstanding press releases from UMD:

1) Stephan Koev, a Ph.D. student of Herbert Rabin Distinguished Associate Professor [Reza Ghodssi](#) (ECE/ISR), has won a university-wide graduate student research contest and is featured in the February 2009 issue of *Research@Maryland*. Koev is developing a type of MEMS sensor known as the microcantilever. The device contains a tiny beam with length close to the thickness of a human hair. When target analyte molecules such as DNA bind to the selective surface coating of the beam, it is slightly deflected. This effect has been known for years, but the measurement of the nanometer-level beam deflection required complex, bulky experimental setups and the sensor could not be made portable. Koev has developed a method for measuring the beam deflection that eliminates the external setup. The method makes use of integrated optical waveguides placed in line with the microcantilever. The beam deflection modulates the power of transmitted light, which is measured with a compact photodetector. [http://www.ece.umd.edu/News/news\\_story.php?id=3710](http://www.ece.umd.edu/News/news_story.php?id=3710)

2)A paper by [Konstantinos Gerasopoulos](#), **Matthew McCarthy**, **Elizabeth Royston**, [James N. Culver](#) and Associate Professor [Reza Ghodssi](#) (ECE/ISR) has been selected to be part of "Highlights of 2008" by the *Journal of Micromechanics and Microengineering* (JMM). Gerasopoulos is a Ph.D. student in Materials Science and Engineering at the University of Maryland and McCarthy, now a postdoctoral researcher at MIT, was a postdoc in Ghodssi's [MEMS Sensors and Actuators Laboratory](#). Culver is an associate professor and Royston, now with the US Patent and Trademark Office, was his Ph.D. advisee at the [Center for Biosystems Research, University of Maryland Biotechnology Institute](#). The paper, "[Nanostructured nickel electrodes using the Tobacco mosaic virus for microbattery applications](#)," explains how nanostructured nickel–zinc microbatteries can be developed using the *Tobacco mosaic virus* (TMV). The TMV is a high aspect ratio cylindrical plant virus which has been used to increase the active electrode area in MEMS-fabricated batteries. Genetically modifying the virus to display multiple metal binding sites allows for electroless nickel deposition and self-assembly of these nanostructures onto gold surfaces. This paper presents the integration of this biotemplating approach into standard MEMS micromachining for the development of microfabricated batteries. The TMV-modified devices exhibited a six-fold increase in battery capacities compared to devices with planar electrode geometries. Stephan Koev, a Ph.D. student of Herbert Rabin Distinguished Associate Professor [Reza Ghodssi](#) (ECE/ISR), has won a university-wide graduate student research contest and is featured in the February 2009 issue of *Research@Maryland*. [http://www.ece.umd.edu/news/news\\_story.php?id=3765](http://www.ece.umd.edu/news/news_story.php?id=3765)

### **Georgetown Facility with New Name/Management**

The cleanroom facility at Georgetown has a new name and is now under new management. Gone is the "Georgetown Advanced Electronics Lab", or "GAEL", but now, we have the "Georgetown Nanoscience and Microtechnology Lab", or "GN $\mu$ Lab"

To subscribe email: [memsalliancemicdatlantic@jhuapl.edu](mailto:memsalliancemicdatlantic@jhuapl.edu)

Subject: SUBSCRIBE

To unsubscribe email: [memsalliancemicdatlantic@jhuapl.edu](mailto:memsalliancemicdatlantic@jhuapl.edu)

subject UNSUBSCRIBE

If you need to speak to a live person try emailing [ann.darrin@jhuapl.edu](mailto:ann.darrin@jhuapl.edu).