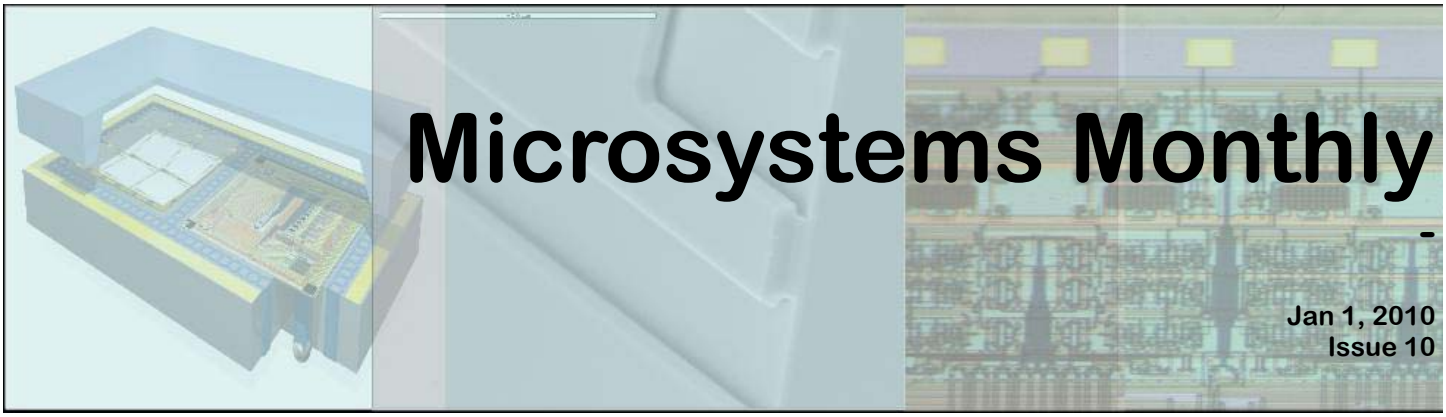

Microsystems Monthly

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Mid-Atlantic MEMS Alliance Mission Statement: To network expertise, capabilities, and research to facilitate the development of new applications and commercialization of miniaturization technologies.

The 9th PowerMEMS a Success in Silver Spring

The 9th International Workshop on Micro and Nanotechnology for Power Generation and Energy Conversion Applications (PowerMEMS 2009) was held in Washington, DC, December 1-4, 2009. http://www.powermems.org/ The meeting had the highest number of abstracts and attendance since its inception. PowerMEMS is held at various places in Europe, Asia, and the U.S., and the Maryland meeting was the second time the meeting was held in the United States. Not only was there a strong showing of U.S. constituents, but there were presenters and participants from universities and labs in Japan, Korea, France, Germany, and Great Britain.

The 280 participants could choose to attend 46 oral presentations in 12 categories and a poster session that included 112 posters in 11 categories in addition to four invited presentations and one plenary talk. Part of the conference schedule included tours of University of Maryland labs such as: The Advanced Fuel Cell and Battery Lab, Center of Fuel Cell Research, MEMS Sensors and Actuators Lab, Micro Reacting Flow Lab, Nano-Bio Systems Lab, and Maryland NanoCenter FabLab.

The venue was the restored 1938 historic Silver theater in downtown Silver Spring, MD, just over the DC line, which now houses the American Film Institute. (As a nod to the original intent of the venue, a viewing of *The Fantastic Voyage* was a scheduled event!)

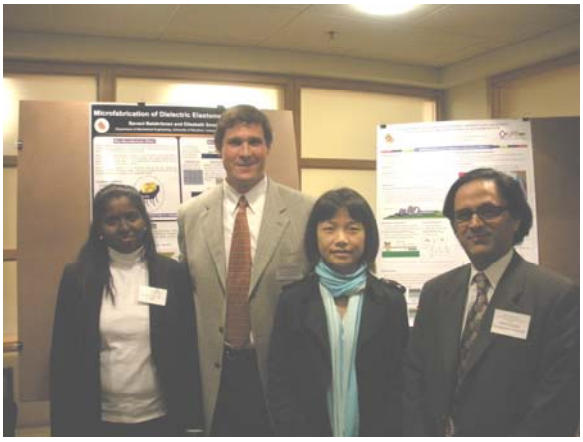
Participants were able to get a taste of the history of the area as the banquet was held at George Washington's Mt. Vernon Estate and Gardens. The conference was chaired by Dr. Reza Ghodssi, Institute for Systems Research and the Department of Electrical and Computer Engineering at the UMD. The Technical Program Committee Co-Chairs were Dr. David Arnold of the University of Florida and Dr. Carol Livermore of MIT. The International Steering Committee and the Technical Program Committee were staffed by individuals from Japan, Germany, Korea, Switzerland, Netherlands, Cyprus, Belgium, France, and the United States.

The support of the University of Maryland was essential to the success of this conference. The departments who helped with this success include: *Department of Electrical and Computer Engineering, The Institute for Systems Research, Division of Research Energy Research Center, Maryland Nanocenter and the Office of the Senor Vice President for Academic Affairs.*

The conference also received support from: *Transducers Research Foundation, National Science Foundation, EEE Journal of Microelectromechanical Systems, Journal of Micromechanics and Microengineering, MEMS Investor Journal, MEMS and Nano Technology Exchange, Tousimis and Springer*

Photos of the event may be seen at: http://www.powermems.org/welcome/photos.html

Looking Back/Looking Forward



Best Student Poster award winners Bavani Balakrisnan (University of Maryland, College Park) at left and Jianyun Zhou (Georgetown), second from right, with conference organizer Mak Paranjape (far right) and Steering Committee Chair Brian Jamieson.

It was a pleasure to see everyone on November 30th at the 2009 MEMS Alliance Symposium. We had a great day, with over 80 attendees and a record number of poster presentations. Keynote speakers Dr. Pradeep Haldar and Dr. Frank Tittel offered unique perspectives on the past and future role of micro and nanotechnology in energy and environmental sensing, respectively. We had a full agenda of technical talks (Dr. Todd Stievater, Dr. Jerry Fitzpatrick, Dr. William Heaps and Dr. Will Brinkerhoff) and two great panel discussions led by Dr. Samara Firebaugh (Environment) and Mr. Todd King and Dr. Stephanie Getty (Energy.) The award for the best student poster was shared this year by Ms. Bavani Balakrisnan (UMCP) and Ms. Jianyun Zhou (Georgetown), with Dr. Alaealdeen Al-Halhouli (Technische Universität Braunschweig) winning the category for best overall poster.

The Steering Committee would like to extend its sincere thanks to Professor Mak Paranjape of Georgetown for all his work organizing the symposium, and to the Georgetown Physics department and offices of the Dean of both Georgetown College and of the School of Graduate Studies for their financial support.

Planning has already begun for next year's Symposium, and we are very interested to hear your ideas for potential venues, invited speakers, and special topics. As always, please feel free to direct any suggestions or questions to me personally (brianj@sbmicrosystems.us) or to any of the other Steering Committee members who can be reached via the web site (http://www.mems-alliance.org/contact/members.htm.)

We made a lot of progress over the past year, having instituted some fundamental changes to the way the MEMS Alliance is organized and structured, launched this newsletter, and ushered in an infusion of "new blood" among the Steering Committee. We are looking to continue moving forward in 2010, and we encourage you to check these pages for some exciting news in the coming months.

Best Regards,

Brian Jamieson

Good news for small businesses– 2010 SBIR/STTR

SBIR/STTR Reauthorization Moving Forward - Senate Staff report that progress is being made passing a bill to reauthorize the SBIR and STTR programs. Both the House and Senate have passed versions of the reauthorization bill, but the two versions are not identical. Leaders from both Chambers are meeting this week to iron out their differences. A compromise bill is expected shortly. Once produced, the bill should pass quickly. The Small Business Innovation Research (SBIR) program awards grants to small businesses to help with R&D expenses. The Small Business technology Transfer Program (STTR) helps small businesses enter into join research programs with the national labs. Information on both programs can be found at

http://www.sbir.gov/index.html

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PROCUREMENT/PROPOSAL OPPORTUNITIES

https://www.fbo.gov/?s=opportunity&mode=form&id=32987b7a442b74dee836ccc378389c86&tab=core&_cview=0

ONRBAA10-007 Electronic Warfare Technologies

Notice Type:

Presolicitation

Synopsis:

Added: Dec 01, 2009 3:42 pm

The goal of Electronic Warfare (EW) is to control the ElectroMagnetic Spectrum (EMS) by exploiting, deceiving, or denying enemy use of the spectrum while ensuring its use by friendly forces. To that end, ONR's EW Discovery and Invention (D&I) program invests in Science and Technology (S&T) initiatives that will provide naval forces (including Navy and Marine Corps) with improved threat warning systems; Electronic warfare Support (ES); decoys and countermeasures against weapon tracking, and guidance systems; Electronic Attack (EA) against adversary Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR); and Electronic Protection (EP) of our own weapons and C4ISR from intentional and unintentional interference. ONR 312 Electronic Warfare (312EW) seeks proposals for efforts that shall develop and demonstrate technologies for the next generation components and systems in electronic warfare.

PROCUREMENT/PROPOSAL OPPORTUNITIES continued on Page 5

Upcoming Events

Hilton Head Workshop 2010 Hilton Head Island, South Carolina
The thirteenth in the series of Hilton Head Workshops on the science and technology of solid-state sensors, actuators, and microsystems will be held on June 6-10, 2010. Previous Workshops have provided a highly interactive forum for researchers to present and discuss recent advances in microfabrication technologies for sensing and actuation devices and microsystems for physical, chemical, and biological applications.
Attendance will be limited to 450 participants, with preference given to authors. As with previous Hilton Head Workshops, all prospective participants - accepted presenting authors, all previous attendees of any Hilton Head Workshop, and New Potential Applicants should complete an application on this website. For more information: http://www.hh2010.org/

Save the Date

PROCUREMENT/PROPOSAL OPPORTUNITIES

Fiscal Year 2010 Office of Naval Research Young Investigator Program (YIP)

Go to the ONR website at http://www.onr.navy.mil/Contracts-Grants/Funding-Opportunities/Broad-Agency-Announcements.aspx. **-**Office of Naval Research **2. Research Opportunity Title –**Fiscal Year 2010 Office of Naval Research Young Investigator Program (YIP) **3. Program Name –** Office of Naval Research (ONR) Young Investigator Program (YIP) **4. Research Opportunity Number –** ONR BAA 10-011 **5. Response Date –** Full Proposals: 4:00 PM, Eastern Standard Time (EST), on Friday, 29 January 2010

Call for Nominations-Maryland Outstanding Young Scientist / Outstanding Young Engineer

Sponsored by the Maryland Academy of Sciences and conferred by the Maryland Science Center, the Outstanding Young Scientist (OYS) and Outstanding Young Engineer (OYE) awards annually recognize significant achievements and contributions in the fields of science and engineering. Recipients receive the Allan C. Davis Medal and $2,500.The Outstanding Young Scientist Award was established in 1959; the Engineer Award followed in 1988. Allan C. Davis (1896 – 1985) was a Baltimore native and a graduate of Johns Hopkins University. He was a businessman, inventor by avocation, and holder of several patents. In 1925 he began an affiliation with the Maryland Academy of Sciences that spanned more than fifty years. Serving as President of the Academy and Chairman of the Board, Mr. Davis guided construction of the Maryland Science Center, funded the Center's Davis Planetarium, and along with his wife, Dorothy, endowed the Outstanding Young Scientist awards to recognize exceptional scientific achievement.

NOMINATIONS AND ALL REQUIRED DOCUMENTATION MUST BE RECEIVED NO LATER THAN MARCH 19, 2010

Awards will be presented at a dinner to be held at the Maryland Science Center May 20, 2010.

For eligibility information and nomination materials, visit www.marylandsciencecenter.org and click on programsQuestions can be sent to: oysoyeawards@mdsci.org

POSITION OPENINGS IN THE AREA

Microfabrication Engineers and Technicians (truncated version...please go to web site for more details)
MEMS Exchange (Reston, VA)
Requirements Looking for engineers at the BS,MS, and PhD levels with at least 5 years of experience in a wide diversity of microfabrication projects. Successful candidates will have ample relevant experience in performing photolithography, wet and dry etching, DRIE, wafer bonding, thin-film deposition, thermal processes, metrology, etc. It would also be helpful if the candidate has experience in using MEMS design tools such as Cadence, Matlab, L-Edit, AutoCAD, Coventor, etc. . U.S. citizenship is required and the candidate must be able to gain a DoD security clearance. Excellent written & oral communications skills required.
ResponsibilitiesMEMS Exchange engineers and technicians are responsible to perform processing work on MEMS development projects for our customers. These projects range from basic research to full-blown product development programs. The engineers and technicians are required to perform process development work, including debugging processes and process sequences, in order to implement working devices for our customers. Persons must have the ability to handle multiple projects simultaneously and on very tight time schedules.
Application Interested candidates should forward their resumes to Christy Short at jobs@mems-exchange.org. The MEMS Exchange at CNRI is located in the suburban Washington, DC high tech corridor of Reston, VA, and housed in new facilities which include a class 10 clean room. CNRI is an equal opportunity employer, has great benefits and pays at industry competitive rates.

Research in Systems Engineering for Micro and Nano Scale Systems: Synthesis Engineering

A barrier to the infusion of the micro and nano technologies into systems is a lack of insight into how to apply systems engineering principles to the integration of small-scale technologies. Applying systems engineering methodologies that integrate standalone, small-scale technologies and interface them with macro technologies to build useful systems is critical to realizing the potential of micro and nano scale devices. Additionally, these technologies may require the development of new system engineering methodologies. The micro and nano scale of these technologies opens a new realm of engineering complexity that requires a systems engineering approach to integrate heterogeneous, mixed-scale elements together into a "system of systems". Systems engineering focuses on defining customer needs, required functionality, and constraints early in the development cycle, defining requirements, then proceeding with design synthesis and system validation while considering the complete problem. For nonconventional micro and nano scale systems, the systems engineer must also be knowledgeable about the roles of non-conventional disciplines, such as quantum mechanics, quantum chemistry, solid state physics, materials science, and chemistry, in the development of small scale systems.

The objective of the project will be to provide practical guidance for systems engineers in the development of micro and nano technologies, in order to facilitate their integration into operational systems. The results are also targeted toward small scale technology developers who need to take into account systems engineering processes, such as, requirements development, product verification and validation, interface management, and risk management, in the concept phase of technology development to maximize the likelihood of successful, cost-effective micro and nano technology infusion into systems.

The goal of the research is to advance the discipline of systems engineering with special studies in applications to the micro and nano scale realm. The results, in the form of a series of monographs and conference papers, will contribute to the knowledge base for systems engineering principles for non-conventional systems, specifically for micro and nano scale technology integration into systems. The audiences for the findings are systems engineers, scientists, technology developers, and project managers.

For further information on this activity please contact Dr. Robert Osiander at JHUAPL robert.osiander@jhuapl.edu or 240-228-6247.

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If you need to speak to a live person try emailing ann.darrin@jhuapl.edu.