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A Newsletter of the Materials Research Society
Advancing materials. Improving the quality of life.

September 2011
Volume 11 • Issue 18

In this Issue!

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November 28 - December 2, 2011
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Registration for this meeting is now OPEN. Register before 5 pm (ET) on November 11, 2011 to take advantage of discounted preregistration rates.

2012 MRS Spring Meeting and Exhibit
April 9 - April 13, 2012
San Francisco, California

CALL FOR PAPERS
Abstract Submission Site Opens - October 1, 2011
Abstract Deadline - November 1, 2011

In an era when "multidisciplinary" research is touted as essential to innovation, the 2012 MRS Spring Meeting and Exhibit, planned for April 9-13 in San Francisco, will serve as a key forum for you to present your research to a uniquely interdisciplinary and international audience.

The program features 54 technical symposia (11 co-sponsored by the Japan Society of Applied Physics). For the most up-to-date information on the 2012 MRS Spring Meeting, including the full list of technical symposia, visit www.mrs.org/spring2012.

Influence the Future of Your Society by Electing MRS Officers and Directors

The 2011 MRS election of officers and directors is open online! Candidate bios and statements, and information about proposed changes to the Articles of Incorporation and the MRS Constitution, are available now on the MRS website at http://www.mrs.org/elections/.

The election, conducted by an independent service provider, will be open until 11:59 pm Eastern Time on October 19, 2011. If you prefer to cast a paper ballot, please contact Kathy D'Biagio, dbiagio@mrs.org, 724-779-2702.

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You should have received an e-mail from our service provider, Election-America, which includes personal access codes and instructions for logging onto the Election-America website to vote. The email is from "Election-America for MRS" so we encourage you to modify your Spam filter to accept this email.

(If your email address has changed in the last year, you are encouraged to update your contact information on the MRS website.)

NEWS FROM THE WORLD OF MATERIALS

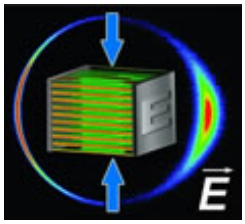
Keep up with materials research news through MRS!
Materials News Web Page | RSS feed | Twitter feed

Materials in Focus

High piezoelectric properties discovered in non-polar block copolymer system
Oak Ridge National Laboratory (ORNL). See also the press release by Ron Walli of ORNL.

Image credit: ORNL. Click image to enlarge.

Image caption: Schematic of the piezoelectric effect in a non-polar block copolymer system.



The discovery of piezoelectric behavior in non-polar block copolymers that is an order of magnitude higher than that found in more traditional inorganic ceramic piezoelectric materials caught researchers from Oak Ridge National Laboratory (ORNL) in Tennessee and Aachen University in Germany off guard. "People did not expect that non-polar block copolymers would show any strong response to electric fields, so that was quite a surprise," says Volker Urban of ORNL. "When we observed how large the effect was at first we were not sure whether we should even call this a piezoelectric effect." However, common characteristics with conventional piezoelectric ceramics, such as linear dependence on the electric field strength, convinced them that they were observing a new form of piezoelectric material having different physics at the molecular level.

Most piezoelectric materials found to date have been perovskite ceramics, like lead zirconate titanate (PZT), whose crystalline structure is responsible for piezoelectricity. As reported recently in *Advanced Materials*, Urban and his colleagues experimented with the non-polar block copolymer poly (styrene-*b*-isoprene) in solution with toluene. The solvent makes the block copolymers more mobile, but the system retains its underlying phase morphology, such as nanoscale lamellar structures. "So you retain this phase morphology but you make the system more flexible and then you can align the lamellae much more easily in an electric field," Urban says. "That's really unique to our research."

Crystalline piezoelectric materials lose their anisotropy when heated above the Curie temperature, resulting in a loss of their piezoelectric properties. The block copolymer system, however, shows an increase in piezoelectricity when crossing the order-disorder transition temperature. The researchers explain this contrasting behavior by discussing the thermodynamics of the block copolymer system, specifically the entropic gain and the enthalpic penalty as the polymer chain reaches a more Gaussian conformation.

Urban sees potential long term applications for this discovery in the areas of batteries, capacitors, and fuel cells. Polymers have already been used as membranes in fuel cells. "But what has been overlooked until now is what effect electric fields, which of course are present in these electric storage devices, may have on the structure of the polymers that are involved in the system," Urban says. "This has been neglected completely until now." He acknowledges that fuel cell membranes have been made from polymers that are simpler than block copolymers, so the effects will be different. But he believes that this research provides a unique perspective that may open up new

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avenues for the improvement of such devices in the future. [Advanced Materials]

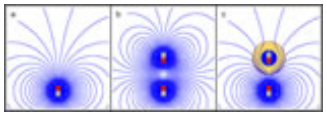
Nano Focus

Antimagnet proposed using superconductor-metamaterial hybrid

Universitat Autònoma de Barcelona, Spain.

Image credit: Alvaro Sanchez, Universitat Autònoma de Barcelona, Spain. Click image to enlarge.

Image caption: (a) a magnet and its field; ((b) two adjacent magnets whose fields interfere; (c) antimagnetic cylinder (yellow) enclosing one of the magnets, preventing the internal magnetic field from leaking out, and preventing interference with the magnetic field of the other magnet.



Building on recent revelations about metamaterials that can cloak a region in space from electromagnetic waves, researchers at the Universitat Autònoma de Barcelona have determined through simulations that it is possible to design an antimagnet using two materials that are within the realm of possibility: metamaterials and superconductors. According to a paper published recently in the *New Journal of Physics*, Alvaro Sanchez and his colleagues have outlined a method of designing an antimagnet that would "switch off the magnetic interaction of a magnetic material with existing magnetic fields without modifying them." Such a device could have applications in medical MRI or in reducing the magnetic signatures of planes or ships.

To be precise about what the researchers are proposing, they define an antimagnet as "a material forming a shell that encloses a given region in space while fulfilling the following two conditions: (i) the magnetic field created by any magnetic element inside the inner region—e.g., a permanent magnet—should not leak outside the region enclosed by the shell; and (ii) the system formed by the enclosed region plus the shell should be magnetically undetectable from outside (no interaction—e. g., no magnetic force—with any external magnetic sources)."

Sanchez and his co-authors propose a cylindrical shell for their antimagnet, although they contend that other shapes are possible. The use of a superconductor with magnetic permeability $\mu = 0$ on the inside of the cylinder satisfies condition (i). To satisfy condition (ii), the outer shell of the cylinder would have to be made of a magnetic material with homogeneous radial and angular magnetic permeabilities. Since no known material has these properties, they propose using alternating layers of available materials. A superparamagnet made by embedding ferromagnetic nanoparticles in a non-magnetic material could be used for the first type of layer, and arrays of superconducting plates could be used for the second type, according to the researchers. A ten-layer cylinder with carefully defined permeabilities could produce the desired antimagnetic properties, they contend. The researchers recognize the difficulty of producing a practical antimagnetic device at this time, but offer the results of their simulations as a significant step in the development process. [New Journal of Physics]

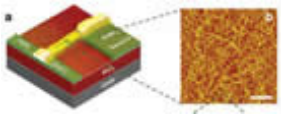
Bio Focus

Proton-based transistor could provide viable bio-interface

University of Washington. See also the press release by Hannah Hickey of the University of Washington Office of News and Information.

Image credit: Uniiversity of Washington. Click image to enlarge.

Image caption: On the left is a colored photo of the University of Washington device overlaid on a graphic of the other components. On the right is a magnified image of the chitosan fibers. The white scale bar is 200 nanometers.



Researchers at the University of Washington in Seattle and collaborators at the University of Waterloo in Canada have developed a protonic field effect transistor (H^+-FET) that controls the flow of protons instead of electrons, making it a good potential starting point for bio-interface devices. In biology, it's generally the movement of

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ions (H^+, Na^+, K^+, and Ca^{2+}), instead of electrons, that controls processes such as ATP synthesis, neuronal signaling, and cell communication. Protons specifically play a key role in biological energy transduction mediated by ATP.

Lead author Marco Rolandi of the University of Washington coined the word "bionanoprotonics" in a recent paper in *Nature Communications* to describe this novel field, complementing research being done in bionanoelectronics. "We had to learn and, at times, make up all new terminology because all of a sudden there are no electrodes, there are 'protodes' for contacts, and there's no electronic current, there's protonic current," he says.

The H^+-FET consists of maleic chitosan nanofibers bridging the source and drain of the transistor, which are made of proton-conducting PdH_x. The prototype is built on a traditional Si/SiO_2 substrate, which would have to be replaced with a biocompatible and flexible material if these devices are ever used in biological systems. Maleic chitosan is a biodegradable, non-toxic polysaccharide chitin derivative that forms many hydrogen bonds when hydrated. When an electrostatic potential is applied between source and drain, the protons dissociated from the maleic acid groups "hop" along the hydrogen bond network as described by the Grotthus mechanism. This hopping results in a protonic current from source to drain, which can be modulated by a voltage applied to the gate. The measured mobility of this current is 4.9×10^{-3} cm^2 V^{-1} s^{-1}. "We think it is actually a molecular level process rather than protons [as hydronium ions] just diffusing between the water molecules, pushing them around," Rolandi says. Because the mechanism is specific to protons, this device will not be suitable for controlling Na^+, K^+, or Ca^{2+}. "We wish we could work with those ions, but we're happy with protons for now," he says.

Future work will attempt to make a truly nanoscale device; the prototype is a microscale device with nanoscale fibers. Rolandi would like to bridge the source and drain contacts with a single nanofiber of maleic chitosan to see whether that improves the on/off ratio of the H^+-FET, which is currently low compared to traditional semiconductors. A further goal is to interface these transistors with cell cultures. Ultimately, in the distant future, the goal is to optimize the materials and performance of H^+-FETs in physiological conditions so that *in vivo* sensing and stimulation of proton-selective ion channels could become possible. [Nature Communications]

Energy Focus

MATERIALS FOR ENERGY BLOG

Join the conversation! Read the latest blog entries and let us know what you think by adding a comment.

Add your comments, or e-mail materialsforenergy@mrs.org to suggest future topics and contributors.

Energy Quartely in MRS Bulletin, September 2011

By Dr. Russell Chianelli, The University of Texas at El Paso, M.R.T.I

Opening the grid across continents: Desert visions.

The September issue of Energy Quarterly in MRS Bulletin reports on the Desertec initiative that promises to distribute solar power from the Middle East and North Africa (MENA) for distribution to Europe. Corinna Wu describes Desertec as a centerpiece of Europe's plans to dramatically increase renewable sources in its energy supply mix. There are many obstacles to developing the system, some political and some technical. However, one issue that arises in centralized solar with power transmission is the transmission grids that must be constructed and the materials used. In some areas, for example in the Southwestern United States, distributed energy systems involving individual people, businesses, and institutions installing solar power devices on local buildings eliminates the need for long transmission systems. However, in this case, energy storage is the issue. We look forward with interest to the competition between these two approaches.

Solid-state lighting: The future looks bright.

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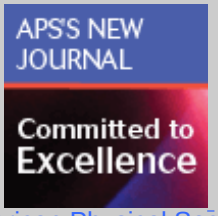


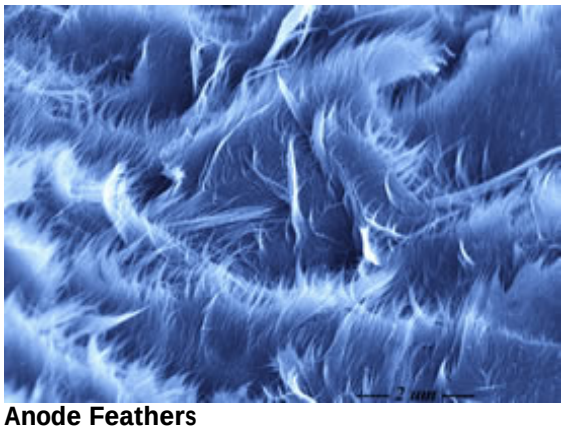
American Physical Society

Also, in the September issue is an article by Prachi Patel in which she describes the progress in making LEDs (light-emitting diodes) for practical solid-state lighting devices. LEDs promise to reduce energy use by 75% and increase lifetime by a factor of ten. But technical challenges remain. LEDs are made using semiconductor materials (e.g., InGaN or GaN). However, cost and spectral properties need improvement. These issues are covered in detail in this article.

Batteries for energy: generation and storage

An interview with Yet-Ming Chiang of MIT covers a crucial issue for efficient use of energy in electrical vehicles and solar installations: batteries. Chiang is an entrepreneurial leader in next-generation nano-phosphate lithium batteries, having formed companies such as A123 Systems, which now supplies these batteries to industry, and 24M Systems, which produces flow batteries. Flow batteries are preferred for solar-produced-energy storage. The interview also discusses Chiang's experience as an entrepreneur and the process that he followed from laboratory research to marketable products.

Image in Focus



Anode Feathers

SEM image of an anode used in lithium ion batteries. This particular sample consists of 95% pure semiconducting single-walled carbon nanotubes.

Credit: Laila Jaber Ansari, Northwestern University
(Click image to enlarge.)

(An entry in the Science as Art competition at the 2011 MRS Spring Meeting)

Entries for the 2011 MRS Fall Meeting Science as Art competition are now being accepted through October 18!

HAPPENINGS AT MRS

MRS News

2012 Acta Materialia, Inc. Materials & Society Award goes to Midred Dresselhaus

The winner of the 2012 Acta Materialia, Inc. Materials & Society Award (formerly the J. Herbert Hollomon Award) is Dr. Mildred Dresselhaus, who is currently Institute Professor of Electrical Engineering and Physics at the Massachusetts Institute of Technology (MIT). Professor Dresselhaus is a member of the National Academy of Sciences and the National Academy of Engineering, and has served as President of the American Physical Society, Treasurer of the National Academy of

Sciences, and President of the American Association for the Advancement of Science (AAAS) and on numerous advisory committees and councils.

Dr. Dresselhaus is an internationally recognized scientist and engineer. Her contributions, both in basic science and applied engineering, to the many aspects of carbon science and technology through her in depth studies of carbon nanostructures, especially carbon nanotubes and graphene, have greatly stimulated interactions between Materials and Technology and societal interests. Dr. Dresselhaus's creativity, vision, achievements and influence on her field are specifically honoured by the present Award.

Dr. Dresselhaus was selected as the 2012 awardee by an international panel of judges appointed by the Board of Governors of Acta Materialia, Inc. and will receive this prestigious award in 2012 during the MRS Fall Meeting in Boston, MA.

2011 World Materials Summit

The 2011 World Materials Summit, sponsored by the Materials Research Society (MRS), the European Materials Research Society (E-MRS), and the Chinese Materials Research Society (C-MRS), will take place from October 8-12, 2011, in Washington, D.C. This is an invitation-only gathering of world renowned technical experts and policymakers, assembled to assess and document the global research and innovation needs, develop policies, and outline the future of advanced energy materials.

The Summit will also host the inaugural Student Congress, a program for active graduate students and postdoctoral scholars in fields directly related to energy and environmental science, engineering and/or policy. Using a competitive application process, 50 participants from around the world—the best and the brightest next-generation scientists, engineers and leaders—have been selected to join the Summit and work alongside today's energy experts.

The 2011 World Materials Summit is funded in part by the National Science Foundation, the Department of Energy's Office of Basic Energy Sciences, the Office of Naval Research, Aldrich® Materials Science, Dow®, American Elements®, and the European Science Foundation's Materials Committee.

Of Interest to the Materials Science Community

The White House and National Science Foundation Announce New Workplace Flexibility Policies to Support America's Scientists and Their Families

On September 26, White House Council on Women and Girls Executive Director Tina Tchen, White House Office of Science and Technology Policy Director John P. Holdren, and National Science Foundation (NSF) Director Subra Suresh announced the "NSF Career-Life Balance Initiative," a 10-year plan to provide greater work-related flexibility to women and men in research careers. Among the best practices that NSF will expand Foundation-wide, are ones that will allow researchers to delay or suspend their grants for up to one year in order to care for a newborn or newly adopted child or fulfill other family obligations – maximizing current policy to facilitate scientists' reentry into their professions with minimal loss of momentum.

The new initiative will offer a coherent and consistent set of family-friendly policies and practices to help eliminate some of the barriers to women's advancement and retention in STEM careers. It will:

- **Allow postponement of grants for child birth/adoption** - Grant recipients can defer their awards for up to one year to care for their newborn or newly adopted children.

- **Allow grant suspension for parental leave** - Grant recipients who wish to suspend their grants to take parental leave can extend those grants by a comparable duration at no cost.

- **Provide supplements to cover research technicians**- Principal investigators can apply for stipends to pay research technicians or equivalent staff to maintain labs while PIs are on family leave.

- **Publicize the availability of family friendly opportunities** - NSF will issue announcements and revise current program solicitations to expressly promote these opportunities to eligible awardees.

- **Promote family friendliness for panel reviewers** - STEM researchers who review the grant proposals of their peers will have greater opportunities to conduct virtual reviews rather than travel to a central location, increasing flexibility and reducing dependent-care needs.

- **Support research and evaluation** - NSF will continue to encourage the submission of proposals for research that would asses the effectiveness of policies aimed at keeping women in the STEM pipeline.

- **Leverage and Expand Partnerships --** NSF will leverage existing relationships with academic institutions to encourage the extension of the tenure clock and allow for dual hiring opportunities.

National Science Foundation East Asia and Pacific Summer Institutes for U.S. Graduate Students - 2012 Application now open.

The National Science Foundation (NSF) East Asia and Pacific Summer Institutes for U.S. Graduate Students (EAPSI) is a flagship international fellowship program for developing the next generation of globally engaged U.S. scientists and engineers knowledgeable about the Asian and Pacific regions. The Summer Institutes are hosted by foreign counterparts committed to increasing opportunities for young U.S. researchers to work in research facilities and with host mentors abroad. Fellows are supported to participate in eight-week research experiences at host laboratories in Australia, China, Japan (10 weeks), Korea, New Zealand, Singapore and Taiwan from June to August. The program provides a $5,000 summer stipend, round-trip airfare to the host location, living expenses abroad, and an introduction to the society, culture, language, and research environment of the host location.

The 2012 application is now open and will close at 5:00 pm proposer's local time on November 9, 2011. Application instructions are available online at www.nsfsi.org. For further information concerning benefits, eligibility, and tips on applying, applicants are encouraged to visit www.nsf.gov/eapsi or www.nsfsi.org.

Should you have any questions, please contact the EAPSI Help Desk by email at eapsi@nsfsi.org or by phone at 1-866-501-2922.

MEETINGS UPDATE

Critical Meeting Deadlines

MRS WORKSHOP SERIES—Photovoltaic Materials and Manufacturing Issues II October 4-7, 2011 Denver, Colorado	Onsite registration available
MRS WORKSHOP SERIES—Industrial Applications of X-Ray Scattering/Diffraction November 27, 2011 Boston, MA	Preregistration Open— Register for Workshop only or with 2011 MRS Fall Meeting by November 11 for Discounted Rates
2011 MRS Fall Meeting & Exhibit November 28 -December 2, 2011 Boston, MA	Preregistration Open— Register by November 11 for Discounted Rates
6th International Conference of the Africa Materials Research Society December 11-16, 2011 Victoria Falls, Zimbabwe	Preregistration Open— Register by October 15 for Discounted Rates
2012 MRS Spring Meeting & Exhibit April 9-13, 2012 San Francisco, CA	CALL FOR PAPERS Submission Deadline—November 1

JUST PUBLISHED

MRS Bulletin

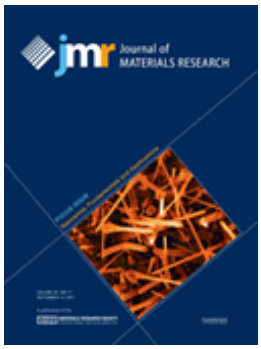
Next-Generation Biopolymers: Advanced Functionality and Improved Sustainability
September 2011 Issue
Guest Editors: P.J. Halley and John R. Dorgan

A significant change is occurring in the global polymer industries. Development of a new generation of bio-based polymers, polymers derived from renewable resources, is progressing rapidly. Complementing historical biopolymers such as natural rubber and cellulosics, these new bioplastics include a growing number of commercial successes, including polylactides and polyhydroxyalkanoates. Many more bioplastics are on the near horizon, made possible by rapid advances in biotechnology. The molecular specificity of biochemical transformations is ideally suited for producing high purity monomers needed for making high molecular weight polymer molecules. Some of the newest developments involve the creation of well-established polymers (polyethylene, polybutlylene, poly (ethylene terephthalate)) via new biochemical pathways that start with renewable, rather than fossil, resources. This article highlights some recent advances in bio-based polymers. Specifically, this review includes topics ranging from novel biopolymer synthesis, new bio-based nanocomposites, novel processing, and holistic assessments of sustainability through quantitative life-cycle analysis. It is demonstrated that greener plastic materials can be produced through ecologically responsible conversion of renewable resources using industrial biotechnology and enhanced by nanotechnology. This emerging approach represents a

triple technological convergence that promises to significantly alter the value chains of the global plastics industries.

Journal of Materials Research

Focus Issue -- Nanowires: Fundamentals and Applications
August 2011, Volume 26, Issue 17 - A selection of papers



Vanadium oxide nanowires for Li-ion batteries
Liqiang Mai, Xu Xu, Lin Xu, Chunhua Han and Yanzhu Luo,
DOI: 10.1557/jmr.2011.171

Doping of semiconductor nanowires
Jesper Wallentin and Magnus T. Borgström, DOI:10.1557/jmr.2011.214

Liquid droplet dynamics and complex morphologies in vapor-liquid-solid nanowire growth
E.J. Schwalbach, S.H. Davis, P.W. Voorhees, D. Wheeler and J.A. Warren, DOI:10.1557/jmr.2011.96

MRS Communications

Rapid Communications - A selection of papers

Crystal formation in tetracyanoquinodimethane on the nanoscale: polymorphism and progression of self-assembly
Maki Nishida and Edward R. Van Keuren,
DOI:10.1557/mrc.2011.5

In situ thermomechanical testing for micro/nanomaterials
Wonmo Kang and M. Taher A. Saif,
DOI:10.1557/mrc.2011.7

JUST PUBLISHED! in the MRS Symposium Proceedings Series
From the 2010 MRS Fall Meeting, Boston, MA

Microelectromechanical Systems—Materials and Devices IV
Editors: F.W. DelRio, M.P. de Boer, C. Eberl, E. Gusev
Volume 1299
ISBN 978-160511-276-3

Soft Matter, Biological Materials and Biomedical Materials—Synthesis, Characterization and Applications
Editors: A.J. Nolte, C.M. Stafford, T. Li, P.J. Yoo, J. Harding, S. Lin-Gibson, J.S. Evans, K. Shiba, C. Hellmich, U.G.K. Wegst, M.J. Buehler, R. Narayan, P. Kiesel, D. Nolte, X. Fan, M. Zillman
Volume 1301
ISBN 978-160511-278-7

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CAREER CENTRAL

Classifieds

Partial listing from the upcoming October 2011 issue of MRS Bulletin

American Institute of Physics
Managing Editor

American Institute of Physics
Journal Manager

Ecole Polytechnique Federale de Lausanne (EPFL)
Faculty Position, Energy Generation, Conversion and Storage

Gwangju Institute of Science and Technology (GIST)
Faculty Position, School of Materials Science and Engineering

Indiana University
Faculty Position, Experimental Condensed Matter

Kyushu University
Research Associates, International Institute for Carbon-Neutral Energy Research

Lawrence Livermore National Laboratory
Lawrence Postdoctoral Fellowship

Michigan Technological University
Department Chair, Department of Materials Science and Engineering

Pennsylvania State University
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Princeton University
Professor, Energy Science and Engineering

Research Triangle Materials Research Science and Engineering Center
Technical Staff Positions

Rutgers, The State University of New Jersey
Faculty Position, Materials Science and Engineering Department

Sandia National Laboratories
Postdoctoral Researcher, Interface Science of Materials

University of California, Santa Barbara
Assistant Professor, Structural Materials

University of Florida
Faculty Position, Department of Materials Science and Engineering

University of Kansas
Tenure-Track Assistant Professor, Department of Physics and Astronomy

University of Illinois at Urbana-Champaign
Assistant Professor, Department of Materials Science and Engineering

University of Notre Dame
Lab Manager, Transmission Electron Microscopy, Integrated Imaging Facility

University of Pennsylvania
Nano Cluster Hiring Initiative, School of Engineering and Applied Science

University of Utah
Faculty Position, Alternative Energy

Washington University in St. Louis
Faculty Position, Experimental Condensed Matter/Materials Physics

DIVERSIONS

Did You Know?

That our *Journal of Materials Research* has issued two Calls for Papers for special focus issues in 2012? Papers for the "Advanced Materials for Fuel Cells" issue are due by January 13, 2012. For the "Oxide Semiconductors" focus issue, the deadline is February 12.

Quiz

What subatomic particle was recently caught allegedly violating the universal speed limit--that is, traveling faster than the speed of light?

Answer to the Quiz in the previous Materials360®:
The 2007 World Materials Summit was held in Lisbon, Portugal, and the 2009 Summit was in Suzhou, China.

Quote of the Month

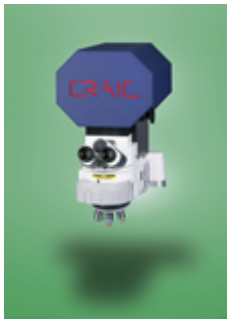
Science is as sorry as you are that this year's science is no more like last year's science than last year's was like the science of twenty years gone by. But science cannot help it. Science is full of change. Science is progressive and eternal. The scientists of twenty years ago laughed at the ignorant men who had groped in the intellectual darkness of twenty years before. We derive pleasure from laughing at them.
--American humorist Mark Twain

NEW PRODUCTS FOCUS

Materials Printers Line Expanded

FUJIFILM Dimatix, a provider of industrial inkjet printheads, components and systems, recently launched the DMP-5005 complementing its extensive line of Materials Printers. The DMP-5005 is a large format, non-contact, fluid deposition system capable of jetting a wide range of fluid types using the FUJIFILM Dimatix 16-jet, 1 or 10 picoliter user-fillable cartridges for product and process development and up to five sequentially operating 128-jet, 1 or 10 picoliter printheads with up to five different functional fluids.
[Contact: infomdd@dimatix.com or 408-565-9150]

Micro-analysis Tool for Manufacturing Facilities



CRAIC Technologies recently introduced the 20/20 XL™ Film Thickness Measurement Tool, a microspectrophotometer designed to non-destructively analyze microscopic areas of very large samples. This system offers the ability to measure the thickness of thin films in both transmission and reflectance. If also offers the ability to measure the Raman spectra of microscopic samples, along with Ultraviolet and Near Infrared microscopy of semiconductor and other types of samples. Due to its flexible design, applications are numerous and include mapping thin film thickness of large devices, locating and identifying contaminants, measuring strain in silicon and much more.
[Contact: sales@microspectra.com or 310-573-8180]

Expanding Multiphysics Applications with New Software

COMSOL, Inc. recently announced the release of the latest version of COMSOL Multiphysics, its award-winning simulation environment. Version 4.2 expands the applications covered by COMSOL with three new application modules—Microfluidics, Geomechanics, and Electrodeposition—and new LiveLink interfaces for AutoCAD® and SpaceClaim®. General geometry and meshing, solvers, postprocessing and user interface enhancements have all been upgraded. These new capabilities reach all products throughout the COMSOL environment, both existing and new.
[Contact: info@comsol.com or 781-273-3322]

[To suggest items for inclusion in Industry News and New Products Focus, please contact Mary Kaufold at 724-779-2755]

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