

SCIENCE POLICY

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policy news from around the world.*

BES Materials-Related Initiatives for 2007 Feature Nuclear, Solar, and Hydrogen Energy

Nuclear, solar, and hydrogen energy research and midscale instrumentation are among the U.S. Department of Energy's Office of Basic Energy Sciences' (BES) new funding opportunities for fiscal year 2007. Basic research in these areas is expected to lead to reduced U.S. dependence on foreign oil and ensure that the United States is a world leader in solving what Harriet Kung, director of the BES Materials Sciences and Engineering Division, calls "probably society's greatest challenge"—building a clean, sustainable, and secure energy future.

BES aims to advance nuclear energy-related basic research by funding proposals that align with the results of a recent BES workshop, Basic Research Needs for Advanced Nuclear Energy Systems. A complete report from this workshop will be available in October on the BES Web site, www.sc.doe.gov/bes/. Nuclear power is currently the second leading source of electricity in the United States, and basic research in this area will enable it to play a larger role in creating a secure

energy future. The solicitation notice for these awards is expected to be posted by mid-October 2006 on the Department of Energy Web site, www.science.doe.gov/grants/. Pre-applications are due in early December 2006.

Solar energy basic research is another area that BES is investing in heavily in 2007, for which pre-applications were accepted in June. The BES 2005 workshop, Basic Research Needs for Solar Energy Utilization, identified the areas of research needs, including the conversion of sunlight to electricity by photovoltaic cells, the conversion of sunlight into fuel for transportation and residential and industrial applications, and the use of thermoelectric and thermophotovoltaic systems to increase conversion efficiency.

BES anticipates that further basic research in these areas will lead to breakthroughs in solar energy technology and make sunlight a cost-effective alternative power source. In addition to funding basic research in solar energy, the federal government announced a proposed 22% increase in funding to the Department of Energy's technology program offices for clean energy research as part of President

Bush's Advanced Energy Initiative. This initiative aims to make solar energy cost-effective by 2015.

NIBIB Seeks Grant Applications www.nhlbi.nih.gov

The U.S. National Institute of Biomedical Imaging and Bioengineering (NIBIB) of the National Institutes of Health has released a request for applications on "Bioengineering Approaches to Energy Balance and Obesity." Novel sensors, devices, imaging, and other technologies, including technologies to detect biochemical markers of energy balance, are expected to be developed and evaluated by collaborating engineers, physical scientists, mathematicians, and scientists from other relevant disciplines with expertise in obesity and nutrition. **Letters of intent are due November 24, 2006.** More information can be accessed at Web site <http://grants.nih.gov/grants/guide/rfa-files/RFA-HL-07-007.html>.



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Materials Research Society and
Optical Society of America
Invite Applications for Their

2007 – 2008

Congressional Science and Engineering Fellowship

Program:

► The Fellow spends one year working as a special legislative assistant on the staff of a member of Congress or congressional committee. Activities may involve conducting legislative or oversight work, assisting in congressional hearings and debates, and preparing briefs and writing speeches. The Fellow also attends an orientation program on congressional and executive branch operations, which includes guidance in the congressional placement process, and a year-long seminar series on science and public policy issues. These aspects of the program are administered by the American Association for the Advancement of Science for the MRS/OSA Fellow, and those Fellows sponsored by nearly two dozen other scientific societies.

Purpose:

► To provide MRS and OSA members with an invaluable public policy learning experience, to contribute to the more effective use of optical and materials science knowledge in government, and to broaden awareness about the value of scientist and engineer-government interaction among MRS and OSA members and within the federal government.

Criteria:

► A prospective Fellow must demonstrate a record of success in research or scholarship, in a field relevant to materials and/or optical science and technology. The Fellow must also demonstrate sensitivity toward policy issues and have a strong interest in applying scientific and technical know-

ledge to U.S. public policy issues. The Fellow must be able to work quickly and communicate effectively on a wide variety of topics, and be able to work cooperatively with individuals having diverse viewpoints. An applicant is expected to be a Member of MRS or OSA (or an applicant for membership) and have a doctorate.

Award:

► The Fellow will have a one-year appointment beginning September 1, 2007. The Fellowship stipend will be \$52,000, plus money for health insurance, travel and relocation expenses to the Washington, DC area. Final selection of the Fellow will be made in early 2007.

Application:

► Candidates should submit the following materials by **January 12, 2007**: (1) a detailed vita providing information about educational background, professional employment and activities, professional publications and presentations, public policy and legislative experience, and committee and advisory group appointments; (2) a statement of approximately 1000 words addressing the applicant's interests in the fellowship, career goals, contributions the applicant believes he or she can make as an OSA/MRS Fellow to the legislative process, and what the applicant wants to learn from the experience; and (3) three letters of reference, specifically addressing the applicant's ability to work on Capitol Hill as a special legislative assistant, sent directly to the address below.

Application Material Should be Sent To

OSA/MRS Congressional Science and Engineering Fellow Program
c/o Laura Kolton
OSA
2010 Massachusetts Avenue, NW, Washington, DC 20036-1023



The deadline for applications is January 12, 2007.

Hydrogen-related basic energy research pre-applications were collected by BES in July for proposals on new materials for hydrogen storage that can be used on board vehicles, in power generation, and in delivery and refueling infrastructure; nanoscale catalysts that could lead to increased efficiency of hydrogen production, storage, and use; and improvements in the materials, performance, and function of the membranes in fuel cell systems. These priority areas were identified during the Basic Research Needs for the Hydrogen Economy workshop in May 2003.

The Department of Energy has long shown a commitment to hydrogen-related energy research and has been the leading federal department in the Hydrogen Fuel Initiative since 2003. As part of the Hydrogen Fuel Initiative, BES sponsors basic research that targets breakthroughs in focused areas to bridge the gaps between current technologies and those required for a mature hydrogen economy. The recent BES solicitation intends to increase the basic research effort in both intensity and scope. The main goal of this initiative is for hydrogen-powered fuel cell vehicles to be a cost-effective option for the average consumer in the 2020 timeframe.

In light of the importance of midscale instrumentation in basic energy research, BES collected pre-applications for mid-scale instrumentation proposals in May. BES is providing both one-time awards for equipment purchase and multiyear awards for midscale instrumentation construction and development. X-ray and neutron scattering instruments are a high priority, along with instruments used for scanning probe microscopy, specialized mass spectrometers, and laser-based systems for ultrafast science.

Funding for midscale instrumentation will go to laboratories that will make the instruments available for use by all U.S. researchers. BES is funding these opportunities because breakthroughs in basic science research often result from the use of new and improved tools, Kung said.

Awards in these four areas include more than \$70 million in new funding due in large part to the American Competitive Initiative, which aims to double investment over the next 10 years in key federal agencies that support basic research programs in the physical sciences and engineering.

Basic research areas such as hydrogen, solar, and nuclear energy make up the centerpiece of the American Competitive Initiative, making it likely that these areas will continue to benefit from funding increases throughout the coming years. In addition, BES recently planned and hosted workshops on basic research needs for superconductivity and solid-state lighting, which will probably influence future research directions and new program opportunities in BES, according to Kung.

These high-priority projects "will not only provide the scientific foundations to overcome short-term 'showstoppers' in energy technologies," said Kung, "but also to reach far beyond today's problems in order to provide the basis for long-term solutions."

For more information about the BES program and research opportunities, access Web site www.sc.doe.gov/bes/.

KENDRA RAND

FDA Forms Internal Nanotechnology Task Force

Acting Commissioner of Food and Drugs Andrew C. von Eschenbach has announced the formation of an internal Food and Drug Administration (FDA) Nanotechnology Task Force. The task force is charged with determining regulatory approaches that encourage the continued development of innovative, safe, and effective FDA-regulated products that use nanoscale materials.

The task force will identify and recommend ways to address any knowledge or policy gaps that exist so as to better enable the agency to evaluate possible adverse health effects from FDA-regulated products that use nanoscale materials. FDA will continue to address product-specific nanotechnology-related issues on an ongoing basis.

"As this exciting new area of science develops, FDA must be positioned to address both health promotion and protection challenges that it may present," said von Eschenbach. "Through this task force, we are leveraging our expertise and resources to guide the science and technology in the development of nanotechnology-based applications."

Specifically, the task force will:

- Chair a public meeting to help FDA further its understanding of developments in nanoscale materials that pertain to FDA-

regulated products, including new and emerging scientific issues such as those pertaining to biological interactions that may lead to either beneficial or adverse health effects (this public meeting had been scheduled for October 10, 2006);

- Assess the current state of scientific knowledge pertaining to nanoscale materials for the purposes of carrying out the FDA's mission;

- Evaluate the effectiveness of the agency's regulatory approaches and authorities to meet any unique challenge that may be presented by the use of nanoscale materials in FDA-regulated products;

- Explore opportunities to foster innovation using nanoscale materials to develop safe and effective drugs, biologics, and devices, and to develop safe foods, feeds, and cosmetics;

- Continue to strengthen FDA's collaborative relationships with other federal agencies, including the agencies participating in the National Nanotechnology Initiative such as the National Institutes of Health (NIH), the Environmental Protection Agency (EPA), and the U.S. Department of Agriculture (USDA), as well as with non-U.S. governmental regulatory bodies, international organizations, healthcare professionals, industry, consumers, and other stakeholders to gather information regarding nanoscale materials used in, or that could be used in, FDA-regulated products;

- Consider appropriate vehicles for communicating with the public about the use of nanoscale materials in FDA-regulated products; and

- Submit its initial findings and recommendations to the acting commissioner within nine months of the public meeting.

Materials made on the nanoscale can often have chemical or physical properties that are different from those of their larger counterparts. Such differences include altered magnetic properties, altered electrical or optical activity, increased structural integrity, and increased chemical and biological activity. Because of these properties, nanoscale materials have great potential for use in a vast array of products. Also because of some of their special properties, they may pose different safety issues than their larger counterparts.

The FDA scheduled a public hearing for October 10, 2006, in order to learn about the kinds of new nanotechnology material products under development in the areas of foods (including dietary supplements), food and color additives, animal feeds, cosmetics, drugs and biologics, and medical devices; whether there are new or emerging scientific issues that should be brought to FDA's attention, including issues related

EC Publishes "Survival Kit" to Help Scientists Communicate to the Public

The European Commission has published a brochure to assist scientists in communicating their fields to the public. The brochure, "Communicating Science: A Scientist's Survival Kit," can be accessed at Web site http://ec.europa.eu/research/science-society/science-communication/index_en.htm.

to the safety of nanoscale materials; and any other issues about which the regulated industry, academia, and the interested public may wish to inform the FDA concerning the use of nanoscale materials in FDA-regulated products. Electronic and written comments, identified for Docket No. 2006N-0107, may be submitted by November 10, 2006, to www.fda.gov/dockets/ecomments or to the Division of Dockets Management (HFA-305), Food and Drug Administration, 5630 Fishers Lane, Rm. 1061, Rockville, MD 20852 USA.

For more information, contact Poppy Kendall, U.S. Food and Drug Administration (HF-11), 5600 Fishers Lane, Rockville, MD 20857 USA; tel. 301-827-3360, fax 301-594-6777, or e-mail poppy.kendall@fda.hhs.gov.

International Energy Agency Issues Report on Energy Technology Scenarios and Strategies

"Technologies can make a difference," said Claude Mandil, executive director of the International Energy Agency (IEA) during a presentation in Paris in June on the key findings of a new IEA publication, *Energy Technology Perspectives: Scenarios and Strategies to 2050*. "A sustainable energy future is possible, but only if we act urgently and decisively to promote,

develop, and deploy a full mix of energy technologies, including improved energy efficiency, CO₂ capture and storage, renewables, and—where acceptable—nuclear energy. We have the means; now we need the will," Mandil said.

Energy Technology Perspectives is part of the agency's response to the call from G8 leaders at their summit in Gleneagles, Scotland, in July 2005 for the IEA to advise on alternative scenarios and strategies aimed at a "clean, clever, and competitive energy future." The study presents a series of scenarios to demonstrate the role energy technologies that are already available or under development can play in future energy markets.

"We find that clean and more efficient technologies can return soaring energy-related CO₂ emissions to today's levels by 2050 and halve the expected growth in both oil and electricity demand," Mandil said.

Released against a backdrop of historically high oil prices and global CO₂ emissions from energy use almost 25% higher than a decade ago, this publication takes a detailed look at status and prospects for key energy technologies in power generation, buildings, industry, and transport. It puts forward strategies for attaining scenarios unimaginable under current trends.

"Improved energy efficiency is an

indispensable component of any policy mix," said Mandil, "and it is available immediately." Accelerating energy efficiency improvements alone can reduce the world's energy demand in 2050 by an amount equivalent to almost half of today's global energy consumption. To achieve this, however, "governments, in both OECD and non-OECD countries, must be willing to implement measures that encourage the investment in energy-efficient technologies," Mandil said.

Another key technology is the capture and storage of CO₂ (CCS) emitted from power generation or industrial processes. The study explains that the early demonstration of CCS in full-scale power plants should be a high priority. "If we do not succeed in making CCS viable, the cost of mitigating CO₂ emissions will be much higher," Mandil said.

According to the report, deploying CCS, along with more renewables, more nuclear energy, and more efficient use of natural gas and coal, can significantly decarbonize global electricity generation by 2050. "With the right policy incentives, we think there is scope for renewables to quadruple by 2050 and for nuclear [energy] to gain a more important role in countries where it is acceptable," Mandil said. □

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Shown at right: The interior of the Model RC43 analysis endstation contains a 5-axis goniometer for precision sample handling, surface barrier detector for forward and back scatter particle detection and the NEC electrostatic micro quadrupole quadruplet for producing ion beams with diameters from 2 mm to 20 microns. Typically used with the 1.0, 1.7 and 2.0 MV tandem Pelletrons.

National Electrostatics Corporation

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