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NSF Grants Awarded to Inform the Public and Explore the Implications of Nanotechnology

The U.S. National Science Foundation (NSF) has announced a series of initiatives that will greatly expand efforts to inform the general public about nanotechnology and to explore the implications of this fast-moving field for society as a whole.

NSF has selected the Museum of Science in Boston (MoS), in partnership with the Science Museum of Minnesota and the Exploratorium in San Francisco, to lead a \$20 million effort to form a national Nanoscale Informal Science Education Network (NISE Network) of multiple science museums and research institutions. The NISE Network will collaboratively develop and distribute innovative approaches to engaging the public in nanoscale science and engineering education, research, and technology. The \$20 million award for the five-year effort is the largest award NSF has ever given to the science museum community.

"The nanotechnology field is rapidly evolving, with fundamental advances in physical and life sciences being seen in all areas of our society from medicine to manufacturing, and outcomes with technological, economic, social, environmental, and ethical implications that may change our world," said Mihael Roco, key architect of the National Nanotechnology Initiative and senior advisor for nano-

technology at the National Science Foundation. "An increased understanding of nanoscale science and engineering is vital to create an informed citizenry and a competitive workforce for this broad-based technology, and we recognize the substantial role of science museums and other informal science education institutions in pioneering innovative science learning experiences, supplementing K-12 school-based science education, and engaging adult audiences."

Leading educators and researchers will closely collaborate in this endeavor, steered by an experienced science museum group.

Larry Bell, vice president for research, development, and production at the Museum of Science and project lead for the NISE Network, said, "Building the network will be an outstanding opportunity for the nation's science museums to collaborate and leverage their creative efforts for greater overall educational impact, while also providing opportunities to strengthen ties between informal science educators, the scientific research community, and K-12 curricula developers."

In addition, NSF has selected the University of California, Santa Barbara, and Arizona State University in Tempe, to create two new Centers for Nanotechnology in Society. The Santa Barbara center will receive about \$5 million over five years to focus on the historical context of nanotechnology, on the innovation

process and global diffusion of ideas in the field, and on risk perception and social response to nanotechnology, with a special focus on collective action and the action of global networks. The center will also explore methods for public participation in setting the agenda for the future of nanotechnology.

The ASU center will receive \$6.2 million over five years to develop a broad program of "real-time technology assessment" (RTTA) for nanotechnology research. The center will use RTTA to map the research dynamics of nanotechnology, monitor the changing values of the public and of researchers, engage both these groups in deliberative and participatory forums regarding nanotechnology, and assess the influence of these activities on the researchers. The center will organize its efforts around two broad nanotechnology-in-society themes: freedom, privacy, and security; and human identity, enhancement, and biology.

Building on previously supported efforts, NSF has also funded nanotechnology-in-society projects at the University of South Carolina and at Harvard University. Continuing from its current Nanoscale Interdisciplinary Research Team (NIRT) award, the South Carolina project will receive about \$1.4 million over five years to examine the role of images in communicating about nanotechnology, and how research in this field is changing the scientific and engineering practices of the researchers themselves.

The Harvard project will receive \$1.7 million over five years to expand upon a prior NIRT award to UCLA. That project developed NanoBank, an electronically accessible database providing information about nanoscale researchers, research organizations and groups, patents, and firms. The new project, called NanoConnection to Society, plans to add a NanoEthicsBank and a NanoEnvironBank, to integrate these and other databases into an overall NanoIndicator series, and to study the flow and distribution of patents in nanotechnology.

Taken together, these awards represent a new point of departure for NSF, said Roco. "Since 2000, NSF has created 21 large centers and networks for nanotechnology," he said, each pursuing fundamental advances in topical areas from electronics, materials, and biomedicine to manufacturing.

Roco said, "The two new networks are relevant to society and the public not only through their research and education targets, but also through their national goals, 50-state outreach programs, and stakeholder participation."

South Africa's CSIR Celebrates 60th Anniversary with Renewed Focus on Research and Innovation

October 5, 2005, marked the 60th anniversary of South Africa's Council for Scientific and Industrial Research (CSIR).

"We are launching a reshaped and revitalized CSIR to respond with agility and resilience to changing environments, unpredictable expectations, and emerging opportunities," said Sibusiso Sibisi, CSIR President and CEO.

"Building on the solid foundation of the past 60 years, the CSIR is entering an era of regeneration in science and technology to create a national research and innovation icon that will make a visible difference in our country. Key factors for socioeconomic success in a country are a strong national S&T base, notably highly skilled people, and an edge in research and innovation," Sibisi said.

The CSIR started with a major repositioning process in 2004 to ensure that the organization delivers on its dual-focused mandate—to foster industrial and scientific development and to contribute to an improved quality of life for the people of South Africa.

"The aim of the reconfiguration has been to strengthen our S&T base, build and transform our human capital, and ensure that we address national challenges and development objectives. The renewed CSIR will perform relevant, directed research and transfer the knowledge that is generated through technology and skilled people," said Sibisi.

CSIR's operating units for research and development (R&D) are biosciences; the building environment; defense, peace, safety, and security; materials science and manufacturing; and natural resources and the environment. The CSIR national research centers' focus on areas of strategic importance for African science over the next two decades include the National Laser Centre and the National Metrology Laboratory.

U.K. Research Councils' Energy Program Launched at "Energy Research Summit"

The inaugural U.K. Energy Research Summit was held in London on November 1, 2005, for energy-related businesses, government, and other funding organizations. The event included the launch of the Research Councils' Energy Program as

Program Launched to Increase Participation of Women in Science, Engineering, and Technology in Ireland

In September, Micheál Martin, Ireland's Minister for Enterprise, Trade, and Employment, together with Michael Dell, announced the launch of a research-driven scholarship aimed at encouraging more young women into engineering degree courses. The scholarship program is offered by the Science Foundation Ireland (SFI) in a partnership with Dell. Up to 10 scholarships will be awarded in 2006, the inaugural year of the program.

The designated engineering courses are among those in which women have been traditionally under-represented. Based on CAO statistics, just 16.4% of students in four-year engineering degree courses in 2002–2004 were female. The scholarship is part of a broader SFI initiative aimed at boosting the number of talented science and engineering researchers in Ireland.

SFI board member Jane Grimson said, "There is a clear and unequivocal case for increasing the participation of women in science, engineering, and technology in Ireland. The under-representation of women threatens our global competitiveness and requires a coordinated set of focused research-driven programs."

"Like many countries, Ireland needs more students to pursue careers in engineering. Changing demographics and globalization require that we tap all key talent pools," said Dell.

Scholars will receive an annual award of €2,000, a Dell Precision M20 notebook computer, the assistance and support of a research active mentor throughout their undergraduate career, and encouragement to spend summers in a research internship in university or industry.

well as workshops, discussions, and a showcase of energy research. This summit begins a process of strategic engagement on research and training priorities with energy-related businesses.

The launch of the Energy Program represents a significant step forward in helping the United Kingdom meet the objectives and targets set out in the 2003 Energy White Paper, to drive forward the sustainable and low-carbon energy agenda. The overall Energy Program will be building on existing research in this area.

The Energy Program is being managed by the Engineering and Physical Sciences Research Council (EPSRC). EPSRC will be working closely with sister research councils along with the U.K. Department of Trade and Industry to develop the research portfolio. This portfolio of projects will cover a wide area across the economic, social, environmental, and biological sciences as well as the engineering and physical sciences.

A second energy summit will take place in May 2006 to report on progress and decide on action for the future.

Czech Council for R&D Proposes Seven Priority Research Themes

The Czech Council for Research and Development has published a proposal outlining seven scientific research topics that it believes the Czech government should prioritize and financially support, according to a report last August in CORDIS News, published by the Office for Official Publications of the European Communities.

The proposal recommends that the government focus on financing research in sustainable development, molecular biology, power resources, materials, competitiveness in engineering, information society, and security. The council, according to CORDIS News, regards these issues as vital for the development of a competitive economy and the sustainable development of Czech society. Up to 25% of the total government budget for science should be dedicated to financing these fields, said the Council, with the remaining money used to finance other research tasks, grant projects, and studies neces-

sary for civil service, including research implemented by individual ministries.

More information on R&D in the Czech Republic is available at the CORDIS News Web site at www.cordis.lu/czech-republic/home.html.

President of India Urges R&D Programs to Meet National Goal

The president of India, A.P.J. Abdul Kalam, addressed the inaugural meeting in November of the Global Conference of India R&D 2005: The World's Knowledge Hub of the Future. During his address, Kalam stressed the importance of attracting youth toward careers in science. He then launched into a list of research and development priorities to meet India's national goals. Among these are nuclear energy and nanotechnology applications—specifically, carbon-nanotube-based photovoltaic cells and nanotechnology for cancer treatment.

Addressing an audience of researchers, scientists, and leaders in education and industry, Kalam welcomed the conference goals of projecting India as the "knowledge hub of the future" and stimulating investment in terms of establishing more R&D centers in the country.

He told conference attendees, "We have to choose our own area of research and participate in the nanoscience technology revolution, which is just round the corner." He particularly emphasized the need in India for progress in CNT-based photovoltaics. "Energy independence has to be our nation's first and highest priority... This one major, 25-year national mission must be formulated, funds guaranteed, and the leadership entrusted without delay," he said. Kalam urged educational institutions, R&D organizations, and industry to launch an initiative to achieve production and marketing of CNT-based solar cells within the next three years.

Kalam also urged that a priority be placed on nuclear energy. "Research and technology development has to be accelerated for thorium-based reactors, since the raw material for thorium is abundantly available in our country." □

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