

Novel Materials under Scrutiny in the U.K.

Concerns in the United Kingdom about the safety of materials has moved on from worrying about nanotechnology to a more general scrutiny of the environmental effects of novel materials and applications. This is the focus of a new study, recently announced by the Royal Commission on Environmental Pollution (RCEP). The RCEP said that the study, which will begin later this year and is due to report in early 2008, will make recommendations to the U.K. government and will also look at work being carried out at the European Union and global levels.

The RCEP is one of the U.K.'s more prestigious public watchdog groups. Set up in 1970, the commission's remit is "to advise the Queen, government, Parliament, and the public on environmental issues." The current chair of the RCEP is John Lawton, who, in a long career in environmental research, was chief executive of the U.K.'s Natural Environment Research Council between 1999 and 2005. The rest of the commission is equally prestigious, with a

dozen or so members drawn mostly from the academic community and experts in law sitting alongside specialists in various areas of science and engineering.

On launching the study, Lawton said, "Novel materials, along with new forms and applications of existing chemicals, are continually being developed to help make technological advances and improve performance, driven by the needs of industry and the demands of society. Although much attention has been paid to the effects of the environment on novel materials and their behavior in different situations, there is relatively little work on the environmental effects of novel materials."

Even before it begins its studies, the RCEP will consult the broader community about the subjects that it should pursue. In the case of this latest investigation, the 27th in its history, the commission also considered studies on the implementation of environmental policies, noise and light pollution, and environmental aspects of nuclear energy and water in the United Kingdom.

In its response to this first wave of consultation, the Royal Academy of Engineering (RAE) described the proposal for a study of materials as being "particularly relevant currently." The RAE then highlighted the European Union's current implementation of new REACH (Registration, Evaluation, and Authorisation of CHemicals) legislation as making the proposed study timely.

The idea of REACH is that the regulations, which are likely to come into effect next year, will bring existing chemicals into a regime that requires them to undergo the same sort of safety and environmental scrutiny as the law demands of new materials. As the RAE put it, "REACH will have major consequences for the ongoing use of many chemicals; it also has implications for the testing and acceptance of new chemicals and materials."

The RAE was also a partner, along with the Royal Society, in the 2004 study of the safety of nanotechnology, another subject that will come within the remit of the RCEP.

The commission describes the scope of its study in some detail. Pointing out that while some subjects, such as nanotechnology, have already received considerable attention, it adds that "[T]he environmental impacts of other new materials, such as rare-earth metals in electronic components in use or in development, appear to be less well studied."

The areas of materials that the RCEP expects to look at in detail include

- the development process of new materials;

- life-cycle analysis of these materials;
- toxicity and eco-toxicity issues;
- the potential effect on human health in terms of environmental exposure;
- potential environmental impacts, both positive and negative, along with possible ways of dealing with them;
- the question of whether novel materials and applications are adequately regulated under existing environmental regulations; and
- waste issues: some products containing novel materials have a short lifespan and may not be recyclable.

The RCEP acknowledges that this could be a very wide-ranging study. For this reason, it has excluded genetic modification technology, the human health aspects of pharmaceuticals, and medical devices from its activity. Lawton said that the study will "look at all aspects of the environmental effects of novel materials and applications, including both benefits and potentially harmful impacts."

Most of the RCEP's work will take place in 2007. It is now working on a "scoping phase," during which it will determine areas on which to concentrate, and has invited more than 100 agencies and organizations to provide information.

The Royal Society itself recently turned up the heat on nanotechnology, with its demand that "industry should disclose how it tests products containing nanoparticles for safety." The Royal Society's action was prompted by the publication of a new inventory of more than 200 consumer products that use nanotechnology.

The Royal Society is particularly interested in seeing data made available to the public. Ann Dowling, who chaired the joint Royal Society-RAE report on nanotechnologies, said, "We are calling for industry to put the methods they use to test the safety of products containing free nanoparticles, such as some cosmetics, into the public domain because this is one particular area where there is some uncertainty about safety."

MICHAEL KENWARD

China and Russia to Join the Generation IV International Forum of Nations Pursuing Nuclear Energy

Dennis Spurgeon, assistant secretary for nuclear energy at the U.S. Department of Energy, announced on July 13 that China and Russia are expected to join the Generation IV International Forum (GIF), a group of the world's leading nuclear nations, who are working together to develop more efficient and less waste-intensive advanced reactors to meet future energy challenges. Earlier that day, the GIF Policy Group had voted

Tony F. Chan to Head Math and Physical Sciences at NSF

The National Science Foundation has named Tony F. Chan, dean of physical sciences at the University of California at Los Angeles, to be assistant director for mathematics and physical sciences at NSF. In his new position, Chan will guide and manage research funding totaling approximately \$1 billion a year to support astronomy, physics, chemistry, mathematics, materials science, and multidisciplinary activities. His appointment is effective October 1.

"We are delighted that NSF can benefit from Tony's extraordinary record as a scientist and an administrator, especially at this critical time in the history of mathematics and physical sciences," said NSF Director Arden L. Bement Jr. "America has turned to the Foundation for leadership in fundamental research and in sustaining our national competitiveness. No one is better suited to meet that challenge than Tony Chan is."

Chan's current research interests involve interdisciplinary mathematics in such fields as image processing and computer vision, multiscale computational methods, optimization and multilevel methods for electronics design, and computational geometry for brain mapping.

unanimously to extend an offer of membership to the two countries. China and Russia's formal entry into GIF is expected to be finalized by November 2006.

Spurgeon said, "We are pleased that China and Russia will bring their considerable technical capabilities to the Generation IV International Forum as we work globally to develop the next generation of nuclear power reactors. As global demand for electricity soars, and as we seek to diversify our nation's energy mix, the use of nuclear power is becoming an increasingly valuable, large-scale, reliable, and non-emitting baseload source of energy."

As a result of the vote in July, China and Russia will join the United States, Argentina, Brazil, Canada, France, Japan, South Korea, South Africa, Switzerland, the United Kingdom, and Euratom (the European Atomic Energy Community) in the forum, which was chartered in 2001. Senior representatives from GIF participate in a range of committees that coordinate the research activities required to develop the six next-generation nuclear energy systems selected by the forum in its December 2002 *Generation IV Roadmap*. These six concepts are gas-cooled fast reactor, lead-cooled fast reactor, molten salt reactor, sodium-cooled fast reactor, supercritical water-cooled reactor, and very high-temperature reactor.

In addition to the acceptance of China and Russia, the GIF Policy Group also announced the selection of France's Jacques Bouchard as its new chair, succeeding the United States' Shane Johnson, principal deputy assistant secretary for nuclear energy at the DOE. Bouchard currently serves as one of the two vice chairs for the GIF Policy Group. He will begin his three-year term as chair at the next GIF Policy Group meeting, anticipated to be held in Paris in late 2006. Bouchard served as head of the Nuclear Energy Division of France's Commissariat à l'Énergie Atomique until his retirement in 2004.

"We look forward to working with Dr. Bouchard and the rest of the GIF Policy Group during this exciting time for nuclear energy around the world," Spurgeon said.

U.S. and European Commission Renew Task Force on Biotechnology Research

John H. Marburger III, the U.S. president's science advisor and director of the Office of Science and Technology Policy, and Janez Potočnik, Commissioner for Science and Research for the European Commission (EC), signed an extension to the U.S.-EC Task Force on Biotechnology Research during a meeting in June held in Washington. The renewal of the administrative arrangement extends the mandate for the task force, which is a long-standing consultative mechanism between the European Commission and the U.S. government on scientific policies and programs.

Initiated in 1990, the task force is a dynamic, forward-thinking group that fosters open communication between the Commission and U.S. federal agencies that conduct biotechnology research. The task force has been particularly successful in identifying and energizing new fields of scientific inquiry such as neuroinformatics, nanobiotechnology, environmental biotechnology, applications of biotechnology to bio-based products and fuels, and, most recently, synthetic genomics. In keeping with its mandate to promote the science of biotechnology for societal benefit, the task force also invites social scientists to provide insights into the social, legal, and ethical dimensions of emerging scientific and technical developments.

The task force is co-chaired by Kathie L. Olsen, deputy director of the U.S. National Science Foundation, and Christian Patermann, director of biotechnology, agriculture, and food research for the Research Directorate-General of the EC.

New Zealand Research Foundation Finalizes New Investment Processes

New Zealand's Foundation for Research, Science, and Technology released details on July 18 of the 2006-2007 and 2007-2008 "public good" science investment rounds which take into account feedback from research organizations and

research users. Over the next two years, the foundation will be investing over \$200 million a year in research contracts with universities, national research institutes, and other research organizations. Given an average contract life of five years, these investments represent more than a billion dollars in science funding. Investments will be made in areas of significant importance to New Zealand, including infrastructure, environmental change, new materials and technologies such as nanotechnologies, manufacturing, agriculture and land use, and food technologies. Following a cabinet decision in April, some of those contracts will, for the first time, be the subject of negotiation rather than contest.

Foundation Chief Executive Murray Bain said that although those contracts will account for less than 18% of the total value of the government's investment in research, negotiation is important because it means the foundation and researchers can work together to ensure that proposals best meet New Zealand's long-term science needs. Once negotiation starts, Bain said, quality assurance will determine the ongoing size and term of the contract. Bain said, "We think of this as moving from a 'promise-based' culture to a 'performance-based' one."

Bain said, "We see the next two years as a step towards a more stable funding environment for New Zealand science. The new investment processes are substantive changes to science funding. We will be implementing them gradually and evaluating their effectiveness, before deciding on long-term policies. Feedback from the sector will continue to be important." □

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