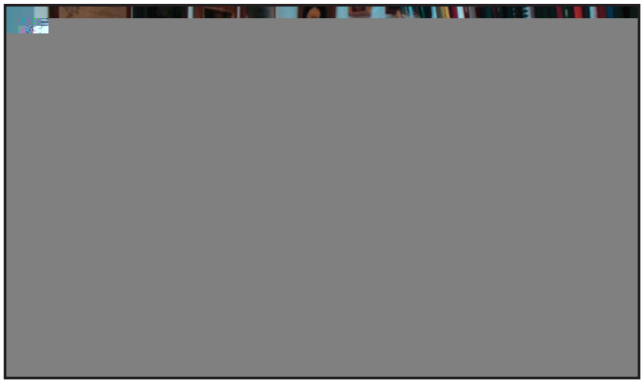
Langer Receives Millennium Technology Prize for Intelligent Drug Delivery

Robert S. Langer, Institute Professor of Chemical and Biomedical Engineering at the Massachusetts Institute of Technology (MIT), has been awarded the 2008 Millennium Technology Prize, the world's largest prize for technology. The Millennium Prize is awarded every two years by Finland's Technology Academy for a technological innovation that significantly improves the quality of human life and promotes sustainable development.

Langer was honored "for his invention and development of innovative biomaterials for controlled drug release and tissue regeneration that have saved human lives and improved the lives of millions of patients." Langer received the prize of €800,000 ($1.27 million) and the "Peak" prize trophy from Tarja Halonen, the President of the Republic of Finland, at the Grand Award Ceremony in Helsinki on June 11, 2008.

Cited as "the father of controlled drug delivery and tissue engineering" and "one of history's most prolific inventors in medicine," Langer's innovations have had a significant impact on fighting cancer, heart disease, and numerous other diseases. His work has also brought about significant advances in tissue engineering, including synthetic replacement for biological tissues, such as artificial skin. Over 100 million people a year are already using advanced drug-delivery systems, and this number is rising rapidly. In the future, tissue engineering may revolutionize medical treatment that could affect millions of other people. "Tissue engineering holds the promise of creating virtually any new tissue or organ," Langer says.

Langer's research laboratory at MIT is the largest biomedical engineering laboratory in the world. He holds more than 600 issued or pending patents, which have been licensed to over 200 pharmaceutical, chemical, biotechnology and medical device companies, and his research has spawned more than a dozen biotechnology firms.



Millennium Prize winner Robert Langer displays a vial of nanoparticles.

A past chair of the U.S. Food and Drug Administration's Science Board, Langer is also the youngest person (at age 43) in history to have been elected to all three of America's major national science academies: the National Academy of Sciences, the National Academy of Engineering and the National Institute of Medicine. His many honors include the U.S. National Medal of Science, the Charles Stark Draper Prize (the equivalent of the Nobel Prize for engineering), the John Fritz Medal, the Max Planck Research Award, and AIChE's William H. Walker and Professional Progress Awards.

Edwards to be Honored for Contributions to Arts and Sciences

David A. Edwards, a writer and professor of biomedical engineering at Harvard Univ., has been elected to the Order of Arts and Literature of France. He will receive the knighthood desigation Chevalier de l'Ordre des Arts et des Lettres, recognizing his contributions to the arts and literature and their propagation.

As an author, Edwards has been involved in the translation of ideas from the university through novel medical technology, performing and visual arts. His work gained recognition in France through his creation of Le Laboratoire (www.lelaboratoire.org), which he describes as "the first experiment-driven art and science incubator." The center aims to give scientists a venue for creative thinking outside the constraints of specialization and grant applications.

Edwards's scientific research concerns the mathematical design of novel physical parameters that allow nanostructured materials to efficiently deliver drugs and vaccines to the lungs and other human organs, with a special focus on infectious diseases in developing nations.

Aside from his research, he has written several fiction and nonfiction books, most recently "ArtScience: Creativity in the Post-Google Generation" (Harvard Univ. Press, 2007), which examines the intersection of the arts and sciences in culture, education, industry and society.

Edwards is a member of the National Academy of Engineering, and received AIChE's Professional Progress Award in 2002.

The Ordre des Arts et des Lettres was established by France's Minister of Culture and confirmed as part of l'Ordre National du Merite by President Charles de Gaulle in 1963.

Edwards's investiture will take place in Paris on Sept. 24, 2008.

On a sultry June day in 1908, the "committee of six" — Charles F. McKenna, William M. Booth, John C. Olsen, Richard K. Meade, William H. Walker, and Arthur D. Little — gathered in Philadelphia to form the American Institute of Chemical Engineers. (For more on AIChE's past, visit www.aiche.org/About/Centennial/Books/index.aspx.)

To celebrate the Institute's 100th birthday, AIChE returns to its birthplace for the 2008 Annual Meeting, which will be held in Philadelphia Nov. 16–21. The conference — expected to be AIChE's largest ever — will take place at the Pennsylvania Convention Center, Marriott Hotel and Loews Hotel, with presentations that reflect the achievements of chemical engineering in the past

at the National Constitution Center, on Wednesday, Nov. 19, from 7 to 10 pm, including multimedia presentations and interactive exhibits.

Unguided Tours and Activities

Opportunities for free time and independent activities abound, including a visit to the Chemical Heritage Foundation (CHF; www.chemheritage.org), which was founded by AIChE and the American Chemical Society in the 1980s. Meeting registrants, guests and family members are welcome to visit CHF between 10 am and 4 pm, Monday–Friday. Admission is free. CHF maintains world-class collections of instruments and apparatus, rare books, fine art, and the personal papers of prominent scientists, all related to the chemical and molecular sciences. It is located near the intersection of Third and Chestnut Streets in Philadelphia, a walkable mile or a five-minute taxi ride from the Convention Center.

During the meeting, CHF will present "Molecules that Matter," a traveling exhibition showcasing ten organic molecules that profoundly altered the 20th century: aspirin, isooctane, penicillin, polyethylene, nylon, DNA, progestin, DDT, Prozac, and buckminsterfullerene (*CEP*, Feb. 2008, p. 64). Additionally, CHF hosts "Making Modernity," a permanent exhibition that traces scientific

While the United States searches for ways to use more renewable resources for electric power generation, too little attention is being paid to developing innovative ways to store large quantities of this energy (*CEP*, Mar. 2008, pp. S23–S32). A new white paper published by AIChE's Government Relations Committee (GRC) says that's a problem because intermittent and highly variable solar and wind energy, as generated, needs massive storage to convert it to steady power that can be dispatched to the nation's power grid. The GRC is getting this message out to legislators and science and technology reporters.

Everyone — from T. Boone Pickens to the employees of the U.S. Dept. of Energy (DOE) — seems to be working toward electric power systems that draw more from renewable resources and less from fossil fuels. However, the GRC warns that almost all of the attention on renewable energy is being given to its generation — and not enough to storing this renewable energy, which is necessary for its use on a broad scale.

The solution, say Bernard Lee and David Gushee — the report's authors, who retired from the Institute of Gas Technology and the Congressional Research Service, respectively — is to develop and commercialize massive electricity storage (MES) technology. The authors explain that traditional power plants have nuclear, natural-gas- or coal-fired generators that run steadily and continuously to deliver reliable electricity to consumers. However, if renewable energy — such as wind and solar — is to move from its current role as an incremental provider and become a major supplier of power, then the intermittent and variable renewable energy must be converted to dispatchable power for delivery to the consumers on a steady and continuous basis.

A copy of the full report is available on AIChE's GRC website, found under www.aiche.org/committees.

The GRC in Action

On other fronts, working with representatives of the Career and Education Operating Council (CEOC) and the Professional Development Committee (PDC), the GRC endorsed the American Society of Mechanical Engineers' (ASME) position paper, "Mandatory Educational Requirements for Engineering Licensure," opposing mandatory, across-the-board requirements of 30 credits beyond the bachelor's degree as a requirement for licensure as a Professional Engineer.

The GRC, chaired by Phil Winkler of Air Products and Chemicals, has also written to the chair of the Senate Committee on Health, Education, Labor and Pensions supporting the "Worker Protection Against Combustible Dust Explosions and Fires Act of 2008." Members of AIChE and AIChE's Center for Chemical Process Safety (CCPS) played key roles in the development of the standards upon which the legislation is based.

Additionally, with the support of the committee, AIChE President Dale Keairns has joined the leaders of 14 other engineering organizations, under the auspices of the American Association of Engineering Societies, in writing to members of Congress to thank them for including crucial science and engineering funding in a recent supplemental appropriations bill. The letter further encouraged them to continue to provide sufficient funding in fiscal year 2009 to assure that the U.S. remains competitive in the face of stronger global competition.

And, the GRC, working with ASME, IEEE and other organizations, has contacted ranking members of Congres-

AIChE Conference Calendar

For information and registration details, visit www.aiche.org/conferences
or call Customer Service at 1-800-242-4363 or 1-203-702-7660 (outside the U.S.)

2008 Ammonia Conference
September 7–11, 2008 • Hyatt Regency • San Antonio, TX

2008 AIChE Regional Conference
September 21–23, 2008 • University of Illinois at Chicago • Chicago, IL

2008 AIChE Annual Meeting
November 16–21, 2008 • Philadelphia Marriott & Pennsylvania Convention Center
Philadelphia, PA

SBE's 2nd International Conference on Biomolecular Engineering
January 18–21, 2009 • Fess Parker Doubletree • Santa Barbara, CA

SBE's 2nd International Conference on Accelerating Biopharmaceutical Development
March 9–12, 2009 • Mariott Coronado • Coronado Island, CA

2009 Spring National Meeting
April 26-30, 2009 • Tampa Convention Center • Tampa, FL

2009 Offshore Technology Conference
May 4–7, 2009 • Reliant Park • Houston, TX

Earl A. Ebach, 83, Midland, MI