AIChExtra

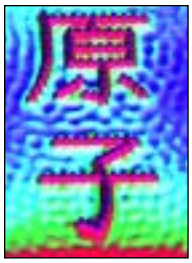
Introducing the NSE Forum

Thinking Big on Small Matter!

The Nanoscale Science & Engineering Forum (NSEF), the third "Genesis" initiative, was formally acknowledged as an AIChE entity in August of 2002. But, the group's programming initiatives actually date back to 2001, when the first Nanoscale Science and Engineering Topical Conference was held as part of AIChE's Annual Meeting in Reno, NV.

Like the Institute for Sustainability and its programming counterpart, the Sustainability Engineering Forum, and the Society of Biological Engineering, NSEF was launched by the Institute to meet the needs of members and other professionals within this emerging discipline. NSEF, whose first chair is Dr. Matthew V. Tirrell, dean of the School of Engineering at the University of California-Santa Barbara, is a forum for communication and networking among the combined community of engineers and scientists developing and applying "nanotechnologies," or "research and technology at the atomic, molecular, or macromolecular levels, in the length scale of approximately 1-100 nanometer range."

As stated in its bylaws, the forum seeks to provide a fundamental understanding of phenomena and materials at the nanoscale, and to create and use structures, devices and systems that have novel properties and functions because of their small and/or intermediate size." A key feature of NSEF is that it will bring together communities across chemical engineering sciences engaged in nanotechnology research, development, and education.



Nanotalk: The Japanese character for the word "atom" written literally with atoms. Image by IBM as it appears in the Lawrence Berkeley Laboratory Publication "Research Review Magazine," Fall 2001.

NSEF will coordinate, sponsor, cosponsor, and advertise relevant programming at technical sessions and conferences, including the aforementioned Topical Conference which will be held once again during AIChE's Annual Meeting. The 2003 installment at the San Francisco Hilton will include sessions on nanotools, nanostructured biomaterials, and nanoelectronics materials and processing. The conference also includes two plenary lecture sessions where invited papers will be presented from a number of technical areas, and a "public forum" will be held on Monday, November 17.

Among the Forum's other stated functions is "encouraging educators at all levels, particularly in chemical engineering, to integrate the concepts of nanoscale sciences into the engineering curricula," and "advocating curricula that prepare students for career use of nanotechnology." At the San Francisco meeting, Dr. Robert Hesketh of Rowan University will target that goal as chair of a session on "Teaching Nanotechnology and Microelectronics."

Other goals of the NSEF are promoting lifetime learning through workshops and short courses; and providing centralized links to technical publications and databases related to nanotechnology in chemical engineering sciences. Currently the Forum is engaged in identifying sessions, obtaining sponsors, and developing areas for the Topical Conference on Nanoscale Science and Engineering, to be held during AIChE's 2004 Annual Meeting in Austin, TX.

For more information on NSEF, go to http://www.aiche.org/mag/divisions/divdtl.asp.

NYC Welcomes 50th CHEM SHOW

Ever since its debut in 1915 as the Exposition of Chemical Industries, CHEM SHOW has served as one of the chemical processing industries' premier showcases for new products, technologies, systems, and services. During its past nine decades, hundreds of life-altering new products, trends, and technologies have been introduced to the world at this biennial trade show and conference.

Now, after 88 years, the 50th edition of CHEM SHOW is ready to roll into its longtime New York City home at the Jacob Javits Convention Center. The 2003 exposition and conference, to be held November 18-20, will feature more than 700 manufacturers and suppliers, and be attended by an anticipated 20,000 CPI professionals. Additionally, CHEM SHOW 2003 will offer its most comprehensive conference program ever, built around four major showcases—Powder Processing, Process Controls and Automation, Maintenance, and Process Integration. A comprehensive User Symposium will offer practical sessions on topics ranging from business solutions to engineering-oriented seminars.

Gary Anderson, Chairman and Chief Executive Officer of Dow Corning Corporation, will deliver the show's Keynote Address on November 18, speaking on "Lessons From the Past; New Strategies for the Future." Other sessions will feature presentations on bulk solids handling; instrumentation, automation, and control; operations, maintenance, safety and environmental protection; fluid handling/fluid sealing; advances in process technology; getting the most out of consultants; and energy efficiency through air pollution control.

Exhibitors will display thousands of products for every processing application, including instruments and controls, plant-wide automation, powder processing equipment, engineered materials, environment and safety equipment, and equipment maintenance and retrofit. For more information, or to register, see http://www.chemshow.com/.

And the Winners Are...?

Because AIChE election results cannot be officially declared until the Tellers' Report is approved by the Board of Directors at the Annual Meeting, we are unable to announce the new president-elect, secretary, and directors in this issue. Look for complete election coverage next month.

Upcoming Meetings & Conferences

November 16-21, 2003: AIChE Annual Meeting, San Francisco Hilton, San Francisco, CA. The largest AIChE meeting ever, in terms of number of sessions and papers presented. For more information, go to http://www.aiche.org/conferences/annual/.
AIChE's first Overall Meeting CD will contain all submitted papers from both this meeting's topical conferences and unaligned sessions. Onsite quantities will be limited, so order now to ensure onsite pickup. Those not attending may reserve a CD to be mailed after the conference. The $70 CD works in both Mac and Windows formats, contains the needed software, searchable text, an extensive help file, and phone and e-mail technical support. To order, call AIChE's Customer Service Center at 1-800-242-4363. International callers, dial 212-591-8100.

December 14-19, 2003: Solid-Liquid Separation Systems IV, Pucón, Chile. Solid-liquid separations are widely used in chemical, mining, pulp and paper, wastewater, sugar, pharmaceutical, ceramics, and other industries. This conference will review solid-liquid separation research, and its applicability to industrial processes. Topics include: fundamentals of particulate systems in solid-liquid separation, laboratory studies for parameter determination, physico-mathematical modeling and simulation, solid-liquid separation equipment, and case studies. For more information, or to register, see http://www.engconfintl.org/3bd.html.

April 18-22, 2004: American Filtration and Separation Society's 9th World Filtration Congress, Hyatt Regency Hotel, New Orleans, LA. AIChE is cosponsoring this Congress, which immediately precedes **AIChE's 2004 Spring Meeting** at the Hyatt from **April 25-29**. An AIChE-AFS joint Workshop on Membranes will take place from April 23-24. AIChE members who wish to attend the Congress and/or the Workshop receive a discount on registration. For more information, see the AIChE cosponsored meetings page at http://www.aiche.org/conferences/cosponsored/ and scroll down to 2004 for the technical program.

GOLDEN ANNIVERSARY FOR FOUR AIChE LOCAL SECTIONS

Four AIChE Local Sections celebrated 50th anniversaries this year. The **Central Oklahoma, Northeast New York, Rhode Island**, and **Tidewater Virginia Local Sections**—which were feted at the 2003 Leadership Development Conference Awards Luncheon, on June 7th—were all established in 1953.

The Central Oklahoma Local Section serves all AIChE members in the state of Oklahoma, except those in the northeast and eastern sections of the state served by the Bartlesville and Tulsa Sections.

The Northeast New York Local Section, originally supported by 46 members, has grown to approximately 200 members, representing a broad range of disciplines, including: advanced education, biopharmaceutical, environmental, fuel cells, nuclear sciences, and plastics. Since its inception, this section has been active in many facets of the Institute, and its members have served on national committees for career guidance, public relations, air and water pollution, research, equipment testing, and government interaction.

The Rhode Island Local Section was organized by Saul Ricklin of Brown University and T. Stephen Crawford of Rhode Island State College (now the University of Rhode Island) in 1948, but it became a full local section five years later. Although primarily from the textile industry, its members, drawn from all of Rhode Island and the southwest part of Massachusetts, now also work in electronics and biotechnology.

The Tidewater Virginia Local Section spans the southeast section of Virginia. An active proponent of student chapter interaction, the section includes two student chapter presidents and two faculty members on its Board. And, it runs special activities for National Engineers' Week, in addition to its 10 meetings per year.

SECOND INDUSTRIAL FLUID PROPERTIES SIMULATION CHALLENGE ANNOUNCED

The challenge is on! On September 10, a group of researchers from 3M, BP, the Dow Chemical Company, DuPont, Mitsubishi Chemicals, and the National Institute of Standards and Technology (NIST) announced the problems for the Second Industrial Fluid Properties Simulation Challenge. Academic groups, research laboratories, and scientific software companies from around the world now have one year to predict vapor pressures and heats of vaporization, gas solubility, and enthalpies of mixing for materials specified by the contest committee.

Aidan Thompson (l) of Sandia National was one of winners in the first competition

The purpose of the contest, organized in conjunction with AIChE's Computational Molecular Science and Engineering Forum and the Theoretical Subdivision of the American Chemical Society (ACS) Physical Chemistry Division, is to objectively assess current capabilities for the prediction of fluid properties, and to promote the use of molecular simulation, which was identified as a "promising technology" for predicting materials properties in the *Vision 2020: Roadmap for the Chemical Industry*. The problems focus on industrially-relevant properties, and the competition's three sections challenge entrants to predict vapor pressures and heats of vaporization for two different materials; to predict the solubility of gases in liquids; and to predict heats of mixing for an amine in both hydrocarbon oil, and in water, over a range of concentrations at different temperatures. Accurate experimental measurements of all properties will be taken at NIST and the Dow Chemical Company during the year, and used to judge predictions made by the contest entrants.

Modeling groups from academia, industry, and government laboratories are encouraged to participate. Contest problems, rules, and complete registration information can be found on the NIST Web site at http://www.cstl.nist.gov/FluidSimulationChallenge/index.htm. Manuscripts must be submitted by **September 10, 2004,** and the winners will be announced and prizes awarded at a special session at the AIChE Annual Meeting. which will be held in November 2004 in Austin, TX.

"WISE Guys" (and Gals) Wanted

An old joke suggests that there are two things one should never watch being made: sausages and laws. For many years, engineers and the firms that employed them were happy to live by this philosophy of government relations. But, within the last two decades or so, industry has come to realize that understanding the way policy is made is critical to surviving and thriving in today's heavily regulated world.

One reflection of that attitude seachange was the 1980 founding of the Washington Internships for Students of Engineering (WISE) program by representatives of several professional engineering societies. WISE is now soliciting applications from outstanding third-year engineering students for its 2004 program, which will run from **June 1 to August 6**.

Each summer, WISE brings up to 16 interns to Washington for a 10-week program where they learn how government officials make decisions on complex technological issues, and how engineers can contribute to the legislative and regulatory policymaking process. Meetings with congressional committees, executive office departments, and corporate government affairs offices are daily activities for the interns.

The end product of the summer is a position paper on a topical engineering-related public policy issue important to the sponsoring society. The 2003 AIChE-sponsored intern, John Hillert of the Colorado School of Mines, did his policy paper on the theme "An Analysis of Federal Efforts in Ensuring a Successful Future for Rural and Agricultural Communities Through New Uses for Soybeans."

Students work under the guidance of a prominent engineering professor serving as Faculty-Member-in-Residence, and are mentored by representatives of their sponsoring societies. While in DC, they live in a dormitory on the campus of George Washington University, located in the Foggy Bottom area of the city. A stipend of $2,100 is provided to cover living and travel expenses.

AIChE did not become an official sponsor of WISE until 1984, but chemical engineering students have been part of the program since its beginning. The initial group of interns that converged on Washington, DC in 1980 included two: Mary Shelman from the University of Kentucky (now board chair of RiceTec, Inc. in Alvin, TX), and Jeff Derby from the Massachusetts Institute of Technology (now a professor at the University of Minnesota-Twin Cities).

Application forms for WISE 2004 were posted over the summer. Prospective interns are required to fill out the form, write two brief (one-page) essays in response to questions, arrange for two faculty references, and forward an official transcript. **Deadline to postmark applications is December 12.** For additional information, or to download a PDF version of the application, go to http://www.wise-intern.org/apply.html. Specific questions should be referred to Allian Pratt of ASME at 202/785-3756, fax 202/429-9417; e-mail: pratta@asme.org.

In Memorium: John H. Sanders

John H. Sanders, a past president of AIChE, passed away on July 11 at Wellmont Holston Valley Medical Center in Kingsport, TN. He was 82.

Born in Washington, DC, and raised in Birmingham, AL, Sanders received a BS degree in chemical engineering from Auburn University in 1943, then fought in the U.S. Army during World War II, earning a Purple Heart, and promotion to the rank of captain. Sanders then joined Tennessee Eastman Company as a junior chemical engineer in the Acid Division in 1946. Thirty-three years later, he had risen to the post of assistant general manager of Eastman Chemicals Division, and vice president of Eastman Kodak Company, positions he held until retirement.

Sanders was an AIChE member for more than 40 years, serving as director, vice president, and eventually as president in 1984. He was named an AIChE Fellow, inducted into the Institute's Marketing Division Hall of Fame, and was a member of the American Section of the Society of Chemical Industry, and the Chemists' Club of New York.

Locally, he served as president of Junior Achievement of Kingsport, was a member of the Chamber of Commerce, and chaired the local chapter of the American Red Cross. He served on the Industry Advisory Council for the School of Arts and Sciences at Auburn, and on the board of directors for the university's Alumni Association, and for Girls, Inc.

Obituaries

Edwin J. Bielecki, 79
Boyertown, PA
Vladislav J. Bily, 49
Houston, TX
William E. Davis, 79
Raleigh, NC
Charles W. Dean, 87
Memphis, TN
Parker S. Dunn, 93
Oklahoma City, OK
George E. Haddeland, 83
Bellingham, WA
Arthur S. Hildebrand, 77
Schereville, IN
Marvin Hillstrom, 54
El Cajon, CA
Klaus P. Hochschwender, 81
Glenmoore, PA
Robert F. Huehner, 88
West Bend, WI
Charles F. Kastensmidt, Jr., 71
Round Rock, TX
Joseph V. Longcor, 89
Whispering Pines, NC
Glenn C. Marken, 75
Alvin, TX
Alfred C. Mueller,* 92
Ashland, VA
Charles A. Porter, 99
Minnetonka, MN
Charles D. Schroeder, 87
Sioux Falls, SD
Henry Shaw,* 69
Scotch Plains, NJ
Ferris C. Standiford, 81
Bellevue, WA
Robert A. Steel, 89
San Diego, CA
Wallace H. Toole, 82
Lima, PA
John West, 78
Tulsa, OK
G. Brymer Williams*, 89
Ann Arbor, MI
Charles T. Winchester, 82
Beaumont, TX

** Fellow Grade*

"MOLECULAR FRONTIER" STUDY SETS PATH FORWARD FOR ALL CHEMICAL SCIENCES

Where are the chemical sciences going? What is the current status and future goals of its many sectors? How should the chemical sciences be measured, as a field, against these goals?

Beyond the Molecular Frontier: Challenges for Chemistry and Chemical Engineering, a 240-page paperbound book from the National Research Council (NRC), grapples with these and other issues facing a scientific discipline at a crossroads. This report is an overview of a study conducted by NRC's Committee on Challenges for the Chemical Sciences in the 21st Century, under the auspices of the Board on Chemical Sciences and Technology (BCST), and cochaired by Dr. Ronald Breslow, professor of chemistry at Columbia University, New York, NY, and Dr. Matthew V. Tirrell, dean of the School of Engineering at the University of California-Santa Barbara, and a past chair of AIChE's Chemical Engineering Technology Operating Council.

What sets this report apart from such earlier NRC assessments as the Pimentel (1985) and Amundson (1988) reports, is that, for the first time, chemistry and chemical engineering are not treated as separate disciplines. Instead, the report unites research, discovery, and invention across the entire spectrum of activities in the chemical sciences—from fundamental, molecular-level chemistry to large-scale chemical processing technology. The authors explain that this structure mirrors the field today, where, both in academia and industry, the lines separating these disciplines are rapidly blurring.

"It is critical that the disciplinary structures within our fields not hinder the future growth

AIChE member Dr. Matthew Tirrell (l) of the University of California-Santa Barbara, cochaired the NRC Committee that wrote the "Molecular Frontier" report (below).

of chemical sciences into new areas," the committee states in the report's Executive Summary. "Interdisciplinary refers here...to the strong integration from the molecular level to the process technology level within...and to the intersections of the chemical sciences with all the natural sciences, agriculture, environmental science, and medicine, as well as with materials science, physics, information technology, and many other fields of engineering."

The report addresses nine distinct areas within fundamental and applied chemistry and chemical engineering: synthesis and manufacturing; chemical and physical transformations of matter; isolating, identifying, imaging, and measuring substance and structures; computation and theory; the interface of chemistry with biology and medicine; design and manufacture of materials; atmospheric and environmental chemistry; energy, including alternative sources; and national and personal security. For each area, the report presents goals, progress to date, and challenges and opportunities for the future.

The report concludes with a number of action items. "Chemical sciences and engineering have not only a great past but an even more exciting future," the authors assert. But, they caution, "we will need to communicate more effectively with our fellow citizens, and will need their support so that we can indeed make the contributions that we see as possible."

Beyond this overview. the "21st Century Project," will produce a series of reports, written by an independent committee and using input obtained at a corresponding workshop. Each workshop is organized around a specific area of societal need: materials and manufacturing, energy and transportation, national security and homeland defense, health and medicine, computing and communications, and environment.

In addition to Dr. Tirrell, a number of AIChE members served on the committee: Drs. Mark A. Barteau, University of Delaware; Robert A. Brown and Alice P. Gast, Massachusetts Institute of Technology; Ignacio E. Grossmann, Carnegie Mellon University; Michael L. Shuler, Cornell University; and Jeffrey J. Siirola, Eastman Chemical. AIChE was one of a number of organizations supporting the study, including the U.S. Department of Energy, the National Science Foundation, the U.S. Environmental Protection Agency, the American Chemical Society, the Camille and Henry Dreyfus Foundation, and the National Institute of Standards and Technology.

The report can be purchased in print or electronic formats, or both, from the National Academies Press. For more information, or to order, go to http://www.nap.edu/catalog/10633.html or call 1-800-624-8373 (or, outside the U.S., 202-334-3313).

Report Findings Anchor SF Session

Tirrell will host a panel discussion at the Annual Meeting in San Francisco based on the conclusions and action items identified by the "Challenges for the Chemical Sciences in the 21st Century" study. The session, to be held on Sunday, November 16, from 3:30 to 5:00 p.m., will include a 15-minute overview of the project, followed by brief remarks from the chairs of the five follow-up workshops cited above. Presenters and topics are:

- Materials and Manufacturing, Elsa Reichmanis, Lucent
- Energy and Transportation, Mark Barteau, University of Delaware
- Information and Communication, Richard Alkire, University of Illinois
- Environment, Jeff Siirola, Eastman Chemical Company
- Health and Medicine, Douglas J. Lauffenburger, Massachusetts Institute of Technology
- National Security and Homeland Defense, John Anderson, Carnegie Mellon University

Happy Trails!

With this issue, Lois Anne DeLong and Beth Shery Sisk, close out their second stint as the editorial staff of *AIChExtra*. Lois had been one of *Extra's* founding editors back in 1988, while Beth joined the staff in 1989. After leaving the paper for about four years, both enjoyed the chance to work on it again this past year. We hope *Extra* has served you well during our tenure.