

AIChE Launches SBE in SF

Introducing the Society of Biological Engineering

Chemical engineering departments across the United States are discussing changes to their names and modifications in curricula to reflect a shared focus on biology and chemistry in engineering. Industries traditionally involved in commodity chemical production, are now entering the world of biological processing. And biotechnology firms are thriving on the discovery and innovation of biologically derived products. This is the new face of chemical engineering.

AIChE is embracing this unique opportunity to expand the reaches of chemical engineering. At its 2003 Annual Meeting in San Francisco, the Institute plans to announce the formation of the Society for Biological Engineering. The new society will further strengthen AIChE's position as a premier professional association for engineers and applied scientists with interest in the broad area of biological engineering.

Introducing SBE

The thought process behind the new group began when members and industrial advisors recommended that the Institute increase its focus on new and emerging disciplines. AIChE responded by developing the "Genesis Plan." Endorsed by the AIChE Board of Directors, it is an overarching strategy to grow membership, relevance, and influence in key technology areas. It was the Genesis Plan that provided the basic roadmap to new initiatives in Sustainability (Institute for Sustainability, launched at this year's Spring Meeting) and Biological Engineering. New projects in these areas will only be possible with outside funding sources.

A "kick-off" meeting was held on March 6 of this year, bringing together more than 30 academic and industry leaders to discuss current activities in bioengineering, such as curricula modifications, shifts in industry growth to bio-businesses, and increased government involvement in the bio-arena. Participants were asked, "Why another society?" The resounding answer was that there is a need for a "connector" organization that brings the multidisciplinary elements of this ever-expanding discipline together. Chemical en-



A few of the academic and industry leaders who gathered last March to discuss where AIChE is—and should be—in the field of bioengineering.

gineers are uniquely positioned to bridge the research, discovery, refinement, and manufacturing aspects of bioengineering.

Shortly afterwards, a planning team was organized to map out directives for the newly named Society of Biological Engineering. Specifically, they believed the society should focus its efforts on connecting engineers with scientists, and industry with academia and government, cultivating knowledge through information sharing and validation, and catalyzing the discipline through inspiration and support of future engineers and scientists.

The society will help the biological engineering community connect, cultivate, and catalyze its constituents through a number of different vehicles. Five key program have been designed so that companies can come together to sponsor specific projects that benefit their interests and the greater engineering and scientific community.

(1) SBE Conference Series: The Society will co-sponsor Gordon-style conferences, and partner with other organizations to establish new conferences. The SBE will also help strengthen bio-related programming at AIChE meetings and serve as a disseminator of networking/conference information.

(2) SBE Training Initiatives: These programs will fill voids in biological training for chemical engineers, and engineering training for scientists. Among the proposed subjects are microbial fermentation, recovery, enzymatic chemistry, biologic process control, non-engineer courses, and safety of solids handling.

(3) SBE Guidance Projects: These initiatives will provide forums for industry to appropriately share best practices in bioprocessing, biomedical manufacturing, and pharmaceutical production. These programs may range from developing "Guidelines," to working with multiple entities to create management-level certification programs, which will aid with validation requirements.

(4) SBE Data Collaborations: A priority for the society is to develop methods for sharing, standardizing, and focusing collective knowledge. Activities may include a biological properties database, and collection of predictive models. The society will encourage the continual generation of data to help the practicing engineer.

(5) SBE Foundation: The Foundation will help influence the direction of research and education, and connect industry and academia. Activities will include corporate-sponsored research grants, scholarships and student contests.

The Society is still in its formative stages. In order to make it most effective, SBE and AIChE need your participation and support. If you would like to help shape the SBE, we encourage you or your company to support our five key thrusts. E-mail us at bio@aiche.org. This is not only the new face of chemical engineering, it is also, very much, the future.

Wanted: 2005 Candidates

The Nominating Committee is seeking candidates for the 2005 election slate. If you would like to recommend names for the committee's consideration, send all relevant information to President Dianne Dorland, Nominating Committee chair, via e-mail at president@aiche.org. Candidates will be considered by the nominating committee in November.

Upcoming Meetings & Conferences

Designing Urban and Industrial Watersheds: Ecological Engineering for Integrated Water Management, a three-day conference organized by the Center for Technology and Environment of the Harvard Graduate School of Design, will be held on the school's Cambridge, MA, campus from **October 31 to November 2, 2003**. Cosponsored by a number of corporations and associations, including AIChE, the conference looks at water recycling in commercial and institutional buildings, industrial water recycling, stormwater collection for site use, integrated watershed management, ecological and engineering-based treatment technologies and designs, marketing ecological solutions, and more. For more information, go to <http://www.ecological-engineering.org>.

The **50th CPI Exposition**, better known as the **CHEM SHOW**, rolls into the Javits Convention Center in New York City from **November 18-20, 2003**. Since its debut in 1915 as the "Exposition of Chemical Industries," the CHEM SHOW has given the chemical process industries a forum for spotlighting new products, technologies, systems, and services. This year, the show features more than 700 exhibitors; special product showcases; and a conference program focusing on bulk solids handling, instrumentation, automation and control, operations, maintenance, safety, and environmental protection, fluid handling and fluid sealing, advances in process technology, and getting the most out of consultants. For more information, go to <http://www.chemshow.com>.

Looking ahead to 2004, the **Stationary Source Sampling and Analysis for Air Pollutants Conference XXVIII** will be held **March 7-12, 2004**, at the Kiawah Island Resort, in Kiawah Island, South Carolina. The conference will focus on implementing environmental regulations, new and developing emissions measurement technologies, field and laboratory problem-solving, data management, and data quality measures. For additional details and registration information, go to the Source Evaluation Society Web site at <http://www.sesnews.org>.

FIRST PDS SYMPOSIUM SCORES; SEQUEL ALREADY IN THE WORKS

Under the leadership of Conference Chair Cawas Cooper of Air Products and Chemicals, Inc., the AIChE Process Development Division held the first-ever Process Development Symposium (PDS-I) from June 22 to 25, 2003, at the Split Rock Resort in Lake Harmony, PA. The event, which tailored both programming and networking opportunities toward specific work issues faced by participants, succeeded on many levels, causing Cooper to observe that it "clearly showed that there was a need for this type of a meeting, and I believe we have started a new tradition that will continue for a long time."

The symposium theme was "Accelerating Process Development for Growth" and it lived up to its name by attracting almost twice as many people as originally expected. Participants from a wide range of industries, including food, pharmaceutical, specialty chemicals, and petrochemicals; service providers (equipment, software, and consulting); universities; and government agencies discovered a common critical success factor: multidisciplinary collaboration, from discovery to development to manufacturing to commercial success.

Following a "Gordon conference" format, the meeting featured morning technical sessions, free time in the afternoon, and energetic panel discussions after dinner. This schedule provided many slots for networking, and for viewing vendor tabletop displays, organized by Bob Duggal (Ethyl Corp.) "This was AIChE's first Gordon-style conference," Joe Cramer, director of technical programming for the Institute, noted. "Its success will certainly lead to more such programming efforts."



Dr. Frits M. Dautzenberg of ABB Lummus Global speaks at Wednesday executive level session.

Monday's program centered on batch processing in the pharmaceutical and fine chemicals industries, Tuesday's on continuous processing in the petroleum/commodity chemical industries, and Wednesday's on broader-view, executive-level presentations from Arthur Andrews, vice president of process R&D at Merck, Kenneth Kem, vice president of chemicals technology at Air Products and Chemicals, Inc., and Frits Dautzenberg, vice president of technology development, ABB Lummus Global, Inc.

On the conference's final evening, participants discussed plans for the next symposium. Because so many volunteers enthusiastically embraced the idea, the division announced that "PDS II: Working Right on the Right Thing," will be held next June in Chicago. After 2004, PDS will move to an alternate-year schedule.

The AIChE Chicago local section will partner with the division on the 2004 conference, and Annette Johnston of Chicagoland company Abbott Laboratories, will serve as chair. "There are two fundamental components to successful process development," Johnston told attendees. "The first is communication to determine 'The Right Thing' and retain the information. The second is applying excellent science and technology to the problem at hand, or 'Working Right.' At PDS II, we will explore the state-of-the-art of both components and discuss how to apply these to current and future processes."

Sponsors for PDS I were ABB Lummus Global, Air Products and Chemicals, Lyondell, and the Rohm and Haas Company. AIChE plans to issue CD proceedings at a cost of \$100. To order a copy, or for more information on the PDS II, contact Jack Dean at johnd@aiche.org.



It's Time to Rock and Mole!

Mark your calendars for October 23. National Mole Day will be celebrated that day from 6:02 a.m. to 6:02 p.m., as it has been each year since 1991, by chemistry teachers and students from elementary school through college. The day commemorates Avogadro's Number (6.02×10^{23}), the basic measuring unit in chemistry, and was created to foster interest in chemistry through a range of creative programs, including original songs. For more information, go to <http://www.moleday.org/>.

Are you ChE's "New Face?"

While no profession could be more focused on the future, the image of engineering that seems to linger in the public perception is something out of the 1950s: Old, Dull, Boring. The New Faces of Engineering program, launched last year as part of the 2003 National Engineers Week celebration, is taking on those stereotypes and proving them wrong. The campaign is designed to enhance and improve the image of engineering by:

- Putting faces to what has often been referred to as "the stealth profession;"
- Showing a group of young, diverse, and talented engineers, thereby portraying engineering as an exciting profession open to everyone;
- Providing both stimulation and incentive for college engineering students to explore the variety of career options available to them with their engineering degrees, as well as encouraging high school students to study engineering in college.



This year, Kent Nettleingham of ConocoPhillips, was ChE's "New Face." Could you be the face of 2004?

- Helping students understand they are part of a global profession.

What makes a "new face"? Young engineers, two to five years out of school, whose work embodies the freshness and excitement of engineering today. New Faces of Engineering recognizes achievements in all disciplines, and anyone belonging to a sponsoring society of National Engineers Week—of which AIChE is one—is eligible to be nominated. Societies with international chapters are requested to nominate two of their five candidates from outside the U.S.

The top individual "New Faces" will be featured in a full-page ad in USA TODAY during National Engineers Week, and pro-

filed on the National Engineers Week Web site at www.eweek.org, and at www.discoverengineering.org, the EWeek web site for middle school students. Additional nominees will be publicized on the EWeek Web site and promoted by their sponsoring engineering society. Top candidates will also take part in an e-mail and/or online "Q&A" forum with engineering undergraduates at a date to be determined.

If you would like to be considered for nomination as AIChE's "New Face," please e-mail two electronic photos (one color and one black/white photo, either .jpg or .tif, and at least 300 DPI) and a brief biography and description of your current work assignment to Felicia Guglielmi, AIChE director of volunteer and membership activities, at felig@aiche.org. Entries should be received by no later than October 15, since AIChE must forward its nominee by October 31. For more information, go to http://www.eweek.org/News/Eweek/2004_nomination.shtml.

RECENT HONORS

Dr. Deran Hanesian, professor of chemical engineering, and a past chair of the chemical engineering, chemistry, and environmental science departments at the New Jersey Institute of Technology, was recently honored with the Chester F. Carlson Award for Innovation in Engineering by the American Society for Engineering Education. Hanesian, a fellow and emeritus member of AIChE, received the award for developing a laboratory that teaches the scientific method to students of all ages and capabilities.

A number of Institute groups were recognized with 2003 Public Awareness Committee awards at AIChE's Leadership Conference in June:

- **2003 John C. Helman Impact Award for Excellence in Educational Support:** Northern California Local Section
- **2003 Randall D. Sheeline Award for Excellence in Public Relations:** Margo Tilley and the Southwest Louisiana Local Section
- **Marx Isaacs Newsletter Awards:** Mid-Size Local Section: Pittsburgh Large Local Section: South Texas Division/Forum: Particle Technology Forum

Obituaries

Jay Balder, 62
Newark, DE

Herbert R. Ballinger, 74
Katy, TX

L.L. Breckenridge, 69
Philadelphia, PA

Leslie Burris,* 81
Naperville, IL

Walter G. Canham, Jr., 82
Brentwood, MO

Edgar Chiswell,* 89
San Jose, CA

Gordon M. Clement, 81
Santa Rosa, CA

John F. Crymble, 87
Broken Arrow, OK

Elbert M. DeForest, 86
Wichita, KS

Robert J. Di Bona, 77
Ontario, NY

Samuel W. Duncan, 94
Alton, IL

William C. Heidenreich, 92
Hanover, NH

Arthur S. Hildebrand, 77
Schererville, IN

Herman D. Kerfman, 80
Northbrook, IL

Joseph F. Lawrence, 85
Ann Arbor, MI

Edward Lis, 74
Freehold, NJ

George S. Nichols, 85
Pittsburgh, PA

Neil O'Donnell, 79
Jacksonville, FL

Gerald J. O'Rourke, 64
Wilmington, DE

Russell M. Pickelmann, 82
Harrisville, MI

James B. Pfeiffer, 63
The Woodlands, TX

Warren C. Shultis, 79
West Chester, PA

Robert L. Solomon, 60
Bellevue, WA

Heinz Weber, 89
Seattle, WA

Richard Weinberg, 45
Kingman, AZ

Richard W. Wheeler, 63
Pittsford, NY

Stuart D. Whitford, 78
Sequin, TX

Maurice H. Youssef, 61
Mississauga, Canada

Stanley B. Zdonik, 87
Arlington, MA

* Fellow Grade

ChEs STILL CLAIM TOP ENTRY-LEVEL SALARIES

Overall, job prospects for 2003 graduates were dimmer than in 2002, and most who did find jobs are being paid less than they would have been a year ago, according to an article posted at CNNMoney.com in May. However, there are a few fields where entry-level salaries have risen a bit, and chemical engineering is one of them.

The article references a Spring 2003 report from the National Association of Colleges and Employers (NACE)—which conducts quarterly surveys of starting salary offers to new college graduates, and prepares an annual forecast of hiring trends—that shows chemical engineering graduates are bucking the trend. This year's Spring graduates received an average starting salary of \$52,169, up about 1.8% from 2002, and still the highest among entry-level positions. The rest of the 2003 "top ten" entry level salaries were in : electrical engineering, computer science, math/statistics (tied with management information systems), accounting, civil engineering, economics/finance, information sciences, and nursing,

although the latter was based on Fall 2002 pay, and the nursing shortage may have had an impact on salaries this year.

Of course, even the chemical engineering graduates have to find a job to get those salaries. NACE spokesperson Camille Luckenbaugh reported that, while employers generally planned to recruit the same number of college grads as last year, many slashed those numbers by as much as 36% last year. So, overall the number of new hires is still down from two years before.

Of those recent graduates lucky enough to be hired this year, NACE notes that about four out of 10 employers, or 44%, will keep salary levels unchanged. For example, electrical engineering graduates will typically be paid a starting salary of \$50,566, up just 0.5% from last spring. About 42% of employers are actually cutting salaries for new hires, with political science majors seeing the largest drop, nearly 13% less. And computer science majors, who are still among the highest-paid new employees, are seeing offers starting at around \$46,536, nearly 8%

less than the 2002 average of \$50,352.

Graduates and their parents may have to adjust their expectations, perhaps remaining home another year or so, even needing loans to get by. "Graduates who haven't received full-time job offers are looking for other things like part-time employment," says Luckenbaugh. "Some are willing to do unpaid internships to get their foot in the door of a company that may convert them to a full-time hire when things change."

But, although the current market is stagnant, a college degree is still worth something, and the more education you have, the higher your salary tends to be, Luckenbaugh maintains. Government statistics show that the unemployment rate for adults over age 25 with only a high school diploma is 4.2%, while their median weekly income is around \$520. For college graduates, unemployment levels have hit, on average, 2.3%, with median weekly income levels at \$924.

For the full article, see http://money.cnn.com/2003/05/07/pf/saving/q_jobless_grads/index.htm.

WHAT MAY HAVE INFLUENCED YOUR ENGINEERING CAREER CHOICE?

Can you think of any factors that may have influenced your decision to choose chemical engineering over electrical? Was it the salary potential, a terrific professor, or could it have been something even more subtle?

According to a July 2003 study by Engineering Trends, an e-commerce consulting firm that specializes in studies and analyses in engineering education, undergraduate discipline preferences may be influenced by gender. And, certain fields are more highly prized among particular minority groups and foreign nationals.

The study compared the relative number of B.S. engineering degrees awarded to six specific groups from 1975-76 through 2001-02: women, underrepresented minorities (African, Hispanic, Native and Asian Americans), and foreign nationals, to the total relative number of degrees awarded to that group. It showed that women have strong preferences for biomedical engineering and bioengineering, environmental, chemical, and industrial engineering, metallurgy and metallurgical engineering, and engineering management. These preferences seemed inconsistent with trends in the total numbers of degrees in the various engineering disciplines. For example, while the total number of bioengineering degrees are rising rapidly, and environmental engineering degrees are declining, both were highly preferred by women.

African American undergraduates gravitated to just a few disciplines, and, in the past decade, only the large, traditional engineering disciplines of electrical, industrial, and chemical engineering were consistently favored. Recently though, manufacturing and sys-



tems engineering have been added to the preferred areas. Civil engineering has not been favored for more than 25 years.

Hispanic American undergraduates seemed to have an even "more restricted set of preferred disciplines than African Americans," with industrial engineering strongly favored, and a consistent preference for civil and electrical engineering.

Native American undergraduates showed a modest preference for civil, aerospace, and chemical engineering, with a consistent trend against industrial engineering, although the data for 2001-2002 showed a change in that area.

Asian American undergraduate students preferred biomedical engineering and bioengineering, and computer science and engineering, electrical, and systems engineering (slightly), over other areas, but were the only group to strongly favor both of the rapidly growing areas of bioengineering and computer science and engineering.

Choice of disciplines among foreign nationals have varied substantially. Petroleum engineering was preferred for a quarter of a century, but became very strong since the late 1980s. Civil engineering was preferred from the late 1970s through the late 1980s, but not since. And other areas have fluctuated widely as well.

The study has shown that the likes and dislikes of the six groups differ substantially, but, since combined they compose nearly half of all engineering graduates in the U.S., their preferences have an impact on the numbers of degrees awarded in the individual engineering disciplines. A full summary of the study can be seen at

<http://engtrends.com/InsideEE/Article08a/>.