

Direct-Bacterial Approach Holds Promise for Rapid Antibody Development

The ultimate goal for life science companies is getting patients the treatments they need as quickly as possible. Aiding this cause, a research group at The University of Texas at Austin (www.engr.utexas.edu), led by Dr. George Georgiou, professor of chemical and of biomedical engineering, has developed a method of mass-producing disease-fighting antibodies entirely within bacteria. The new antibody-production approach improves upon more time- and labor-intensive processes previously used to identify new drugs for treating rheumatoid arthritis, cancer and other diseases.

Developed in collaboration with Dr. Brent Iverson, professor of chemistry and biochemistry, the new approach “can provide a significant time savings,” said Georgiou, “and it enables antibodies to be isolated to treat human diseases that may not be possible to obtain otherwise.”

Bacteria are easy to grow in an inexpensive broth. As a result, harmless forms of the bacterium *E. coli* have already been used as factories to produce antibodies. However, previous approaches required an antibody that looked promising to be transferred from bacteria to mammalian cells to pursue large-scale, commercial production.

Getting mammalian cells to produce large quantities of antibodies costs more, and can take several months. The direct-bacterial approach shaves weeks off the production process. Based on the method’s early success, Georgiou has begun a collaboration to identify antibodies to treat arthritis and asthma.

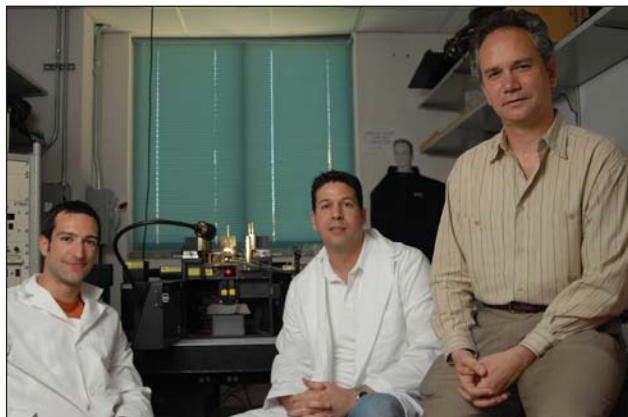
Using bacteria directly

In Georgiou’s E-clonal antibody method, an antibody that is produced by an *E. coli* bacterium becomes teth-

ered to one of its inner surfaces, or membranes. Small “errors” in the genes that produce antibodies are introduced. These changes result in slightly altered antibodies that may attach more strongly to a disease protein.

The interaction between the antibody and the disease protein blocks the protein from doing harm in the body, effectively short-cutting a disease process. Georgiou and Iverson previously used the antibody evolution process to engineer a similar antibody that is in late-stage, clinical trials to treat human anthrax infections.

To test the bacterium-only system, lead author Yariv Mazor, a postdoctoral student in chemical engineering, engineered antibodies to an anthrax toxin called PA. He and Thomas Van Blarcom, a graduate student in chemical engineering,



Dr. George Georgiou (right) in collaboration with Dr. Brent Iverson (professors at the University of Texas at Austin), along with chemical engineering students Thomas Van Blarcom (left) and Yariv Mazor (center), are developing and testing a method for mass-producing disease-fighting antibodies entirely within bacteria.

used a method called anchored periplasmic expression (APEX), co-developed by Georgiou and Iverson’s lab, to identify the bacteria-bound antibodies that attach best to the PA. Van Blarcom then took those bacteria and grew large numbers of them to begin refining the steps needed for mass-scale production of promising therapeutic antibodies.

The research was funded by the Foundation for Research in Houston and the results were published online in *Nature Biotechnology* (Apr. 15).

Georgiou Honored with the 2007 Amgen Biochemical Engineering Award

In honor for his profound impact on protein therapy, as well as other protein research, Dr. George Georgiou from The University of Texas at Austin is the recipient of the prestigious 2007 Amgen Biochemical Engineering Award. Georgiou has been instrumental in developing commercially relevant technologies for identifying and producing antibodies and other proteins to treat diseases. He has also made fundamental contributions to understanding how cells produce proteins. Georgiou received the award and delivered a lecture on his research at ECI’s Biochemical Engineering XV conference — Engineering Biology from Biomolecules to Complex Systems (July 15–19; Québec City, Canada; www.engconfintl.org/7am.html).

His previous awards and recognitions include: election to the National Academy of Engineering in 2005; the 2003 Professional Progress Award of the AIChE; the 2003 Marvin J. Johnson Award in Microbial and Biochemical Technology of the BIOT Division of the American Chemical Society; the Food, Pharmaceutical and Bioengineering Award of the AIChE in 2005; and election to the American Academy for Microbiology in 2004. He is the author of more than 140 publications and more than 34 patents, which have been widely licensed to the biopharmaceutical industry.



AIChE Leadership Development Conference Inspiring Tomorrow's Volunteer Leaders

Vision, determination, passion — these are the traits successful leaders share. At the Leadership Development Conference (LDC) hosted by the Boston local section (June 8–10; Boston, MA), today's AIChE volunteer leaders, along with tomorrow's, shared best practices, as well as participated in interactive workshops that helped to refine their leadership skills.

Expanding on the success of last year's LDC hosted by the South Texas local section, the Boston local section achieved its goal of over 100 attendees. While the days were long, starting from as early as 7:30 am and ending at nearly 10 pm, the attendees expressed satisfaction at what they learned and the quality of people they networked with.

The first full day of the meeting focused on honing leadership skills. Rob Reintjes, the 2004 chair of the Boston local section, kicked off the meeting with his thought-provoking discussion on visions and teams. "Great leaders align the people around them — employees, suppliers, and customers — towards their vision," said Reintjes. "If you want people to get on board your 'vision train,' they need to know where the vision is going and they must want to go there."

Following the leadership theme, attendees were educated on how to give effective presentations — where the audience remembers the message, and the presenter. Tom Kennedy, principal of the Kennedy Group (www.kennedy-groupboston.com) shared words of wisdom, drawing from his many years of experience training executives. One of the take-away messages — less can be more. Powerpoint, while a critical tool, is generally misused. "Rather than using it as a visual aid, people often write down their entire presentations on Powerpoint slides and read directly from them," said Kennedy. "The most



Larry Evans (left), AIChE president, presents James Cross, Boston local section chair, with a plaque of appreciation for hosting the 2007 LDC. Also instrumental in the success of the LDC are (starting from third person on left): Andy Irwin, past chair; Kannan Vembu, vice chair; Mike Blaney, marketing chair; Connie Blair, program chair; David Campanella, membership chair; Rob Reintjes, past chair; Yizu Zhu, section member; and Simon Spitalny, AIChE volunteer membership activities professional.

engaging speakers, such as Lou Gerstner, don't use Powerpoint," he continued. In perfecting a presentation, Kennedy noted that "it's all in the preparation" — know your audience and use relevant stories to engage them.

As all leaders know, there is no escaping office politics. Chris Holland, founder and president of The Holland Group (www.thehollandgroup.us), discussed navigating the minefield of office politics using tales from his own experiences involving his mentors. Rounding out the leadership training, Jeff Davis, principal leadership development consultant for the MITRE Corp. (www.mitre.org), challenged attendees to clarify how they can make a difference, while Janet Britcher, president of Transformation Management (www.transformationmanagement.com) focused on delegation skills.

Over dinner, attendees applied these new skills in stimulated discussions about how the AIChE can take a leadership role in solving world problems, including: energy technologies; green chemistry and sustainability; water resources; climate change; new and alternative fuels; and biotechnology.

During the second day, the attendees

dispersed into groups and shared best practices on a range of topics, such as programming, marketing and outreach, and volunteer engagement and recruitment. For example, the South Texas and Southeast Texas local sections discussed strategies on how to get members to attend meetings. Interestingly, evening events held in the Southeast Texas local section were not necessarily technical in nature. Many were social gatherings, such as a crawfish boil, where members networked informally.

Many attendees mentioned that it was hard not to be motivated by the organizers and presenters. "The Boston section put on a great conference — I improved my leadership skills, connected with many AIChE leaders and participated in discussions about helping to solve world energy and environmental problems," said Scott Bobek, senior vice president at Morgan Stanley.

"Hopefully, those who came will be inspired to volunteer as hosts and continue the revitalization of the LDC," said Felicia Guglielmi, director of AIChE Volunteer and Membership Activities. For more information on hosting future LDCs, contact Simon Spitalny at simos@aiche.org.

THE NEXT GENERATION OF CHEMICAL ENGINEERS 2007-08 TAU BETA PI FELLOWS AND SCHOLARS

Founded at Lehigh Univ. in 1885 to recognize students of distinguished scholarship and exemplary character, engineering honor society Tau Beta Pi (TBP; www.tbp.org) recently announced the 2007–2008 Tau Beta Pi Fellows and Scholars. This year's recipients include numerous AIChE members:



Tau Beta Pi Fellows from left to right: **Emily P. Chang**, University of Pennsylvania; **Ryan M. Boehler**, University of Kansas; **Craig M. Dana**, Rutgers Univ.; **Jennifer Ehrhardt**, Villanova Univ.; **Nikolce Gorevski**, Lafayette College; and **Stephanie I. Wilson**, Univ. of Tennessee at Chattanooga.



Tau Beta Pi Scholars

Top row from left to right: **Andrew P. Wilson**, Howard University; **Candice L. Daibes**, University of Florida; **Jose L. Mojica**, University of Houston; **Daniel A. Crawford**, University of Arizona; and **Rebecca L. Everett**, Howard University

Middle row from left to right: **Christopher R. Fisher**, University of Maine; **Aleksandr T. Gamble**, Colorado School of Mines; **Abasha N. Lewis**, Virginia Polytechnic Institute & State University; **Steven J. Mouton**, University of South Alabama; and **James G. Moxness II**, University of Arizona

Bottom row from left to right: **Trudy J. Padmore**, Howard University; **Thu K. Pham**, University of New Mexico; **Traci M.-S. Taylor**, Michigan State University; **Benjamin R. Tryon**, Kansas State University; **Emily A. Voigt**, Kansas State University; and **Jianming "Alex" Zhang**, Yale University

In Memoriam — Edward K. Lofberg

Edward K. Lofberg, age 92, of Teaneck, NJ, passed away on May 7. He was born in Teaneck, NJ, where he lived for most of his life. He was a member of the American Institute of Chemical Engineers for 70 years, which he joined in January 1937, and a member of the North Jersey AIChE local section.

Lofberg graduated from the Newark College of Engineering — now the New Jersey Institute of Technology — in 1936 with a bachelor of science degree in chemical engineering. He also attended Stevens

Institute for graduate courses.

At the start of WW II, he enlisted in the U.S. Navy. Upon graduation and prior to World War II, he worked for a chemical company producing explosives and similar type products. Based on this unique, specific experience, he was made a lieutenant and assigned to the U.S. Naval Ordnance School in Virginia as an instructor, where he served for the duration of the war.

After the WW II, he worked for Corning Glassworks as a principal technical engineer representative for over 40 years, where he participated

in the development and deployment of new products, such as fiber-glass-covered glass pipe and all-glass heat exchangers. After retirement, he frequently served as an expert witness in glass-related legal cases.

Lofberg was an active member of the Montclair Society of Engineers and the Revolutionary War Society. He and his late wife, Esther, were avid pistol and skeet shooters and were very active in the New Jersey Horticulture Society, where he led a movement to keep a prime selected area of Teaneck forever wild.

Are you in the news?

Tell *CEP* about your recent award or latest research. Or share information on innovative new programs you think members would like to hear about. Email us at cepedit@aiche.org.

OBITUARIES

S. M. Cimino, 89, Southern Pines, NC
J. Arnold Glass, 86, Houston, TX
Lyle Gross, 78, Portland, OR
Harry Litwin, 100, Wichita, KS
Edward K. Lofberg, 92, Teaneck, NJ
Stanley V. Margolin*, 79, Hyannis, MA
Michael P. Merkel, 48, Raleigh, NC
Charles S. Sharkey, 67, Baton Rouge, LA
Eugene McEachin, 85, Homosassa, FL
Thomas A. Trinker, 76, Chicago, IL

* Fellow

Correction: AIChE's sincere apologies to Risdon W. Hankinson, who was accidentally listed in this column last month (June 2007, p. 15). Mr. Hankinson is indeed alive and well. AIChE apologizes for the inconveniences this has caused.

Lyle Gross (1929–2007)

Lyle James Gross, a senior member of AIChE and active participant in the Columbia-Pacific local section, passed away on May 23. He was 78 years old. Gross was born Feb. 13, 1929, in Sidney, NE. He graduated from the University of Colorado at Boulder and received a master's degree from the Institute of Paper Chemistry (now the Institute of Paper Science and Technology). Gross was a chemical engineer for several pulp-and-paper companies, including Crown Zellerbach, Georgia-Pacific and Boise Cascade. In 1955, he married Katherine L. Jamison. Survivors include his wife; sons, Brian Gross and Kevin Jamison; daughter, Tanya; and five grandchildren.

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.)

SBE's 3rd International Conference on Bioengineering and Nanotechnology (ICBN)

August 12–15 • Biopolis, Singapore

2007 Ammonia Conference

September 16–20 • Loews Lake Las Vegas • Henderson, NV

2007 AIChE Annual Meeting

November 4–9 • Salt Palace Convention Center • Salt Lake City, UT

2008 SBE's International Conference on Stem Cell Engineering

January 20–23, 2008 • Coronado Island Marriott Resort • Coronado, CA

2008 Spring National Meeting

April 6–10, 2008 • Hyatt Regency New Orleans • New Orleans, LA

Election News

2008 Election: Directors



James T. Cobb, Jr.

I am Associate Professor Emeritus at the University of Pittsburgh, where I served as both undergraduate and graduate coordinator for the chemical engineering department, and director of the school's Energy Resources Program. For the past decade, my research and development interests have centered on bioenergy, currently with a focus on biomass gasification.

I am a licensed P.E. in Pennsylvania. For 10 years, I have served on the ChE P.E. Examination Committee of the National Council of Examiners for Engineering and Surveying, and am currently chair of the ChE Subcommittee of the FE Examination Committee. I have chaired the Pittsburgh Chapter of the Pennsylvania Society of Professional Engineers (PSPE) and served on its Board of Directors.

I have actively served in various entities of National AIChE since 1971, including chairing: the Pittsburgh Section; three major national committees (Continuing Education, Professional Development and Professional Legislation); and, in 2006, the Career and Education Operating Council (CEOC).

AIChE is ready to advance vigorously into its second century. A robust, strategic planning process is currently in place to identify future initiatives. I am chair of one of the working groups of the strategy study, and as Director, I will promote the initiatives that emerge from the process. My service on CEOC and my current participation in a Board of Directors (BOD)/Operating Councils (OC) task force to improve coordination of the activities of the BOD, OC and other entities of the Institute provide me with the experience needed to facilitate implementation of the plan.

I will particularly support the plan's initiatives along the lines of:

- promoting programs focused on serving the young professionals (YP) of the Institute, including establishing YP groups within local sections, organizing special programming for YPs at national meetings, and bringing YP issues before all the entities of the Institute

- enhancing programs, such as the Education Services Program, that serve the continuing professional development needs of all of the Institute's members

- assuring the availability of robust programs, such as Career Tools Plus, that assist members in managing their careers effectively

- developing procedures and practices for facilitating the activities of the volunteer leaders at all levels of the Institute.

A special issue that I will address concerns licensure. The state boards have begun working towards requiring 30 graduate credits (or their equivalent) for candidates of all disciplines to sit for the PE examination. The unreasonableness of this for chemical engineers must be advocated.



Jennifer Sinclair Curtis

Jennifer Sinclair Curtis is Professor and Chair of the chemical engineering department at the University of Florida. She received her BS degree in chemical engineering from Purdue University and PhD in chemical engineering from Princeton University. Professor Curtis has an internationally recognized research program in the development and validation of numerical models for the predic-

tion of particle flow phenomena. She was a recipient of the NSF Presidential Young Investigator Award, the Eminent Overseas Lectureship Award by the Institution of Engineers in Australia, and American Society

for Engineering Education's (ASEE) Sharon Keillor Award for Women in Engineering. She serves on the Editorial Advisory Board of the *AIChE Journal*, the *Chemical Engineering Education Journal*, the *Journal of Powder Technology*, and the *Journal of Pharmaceutical Development and Technology*. Within AIChE, she served as the 2002 Annual Meeting Co-chair and the 2006 Chair of the Transport and Energy Processes Division. She was also a member of the Particle Technology Forum Executive Committee from 1994–1998 and again starting in 2006.

I believe that AIChE can best fulfill its duty to serve chemical engineers who serve the world by increasing community building within its membership. AIChE has a unique opportunity to both: connect its members more effectively to each other; and leverage this improved connectivity into a more prominent role for chemical engineers to play in technology transfer and public policy decisions.

These opportunities transcend career stage — a member's educational or professional background. Newcomers to AIChE need to feel that membership better allows them to integrate more quickly/fully into the profession. In addition to career-stage appropriate professional development opportunities, AIChE needs to offer all its members multiple paths for:

- meeting others in their same fields
- obtaining first-person knowledge of industry trends
- providing ongoing opportunities for members to exchange relevant, interdisciplinary information
- mentoring — allowing members to share with one another valuable and ongoing career insights that are personalized to an individual's specific situation.

Much of this community building can occur virtually by using the AIChE website, and also by other mechanisms that link new members immediately to divisions and forum activities, as well as local sections. If elected to the Board of Directors, I will focus on community building within AIChE, which is, I believe, one of the key reasons people join our organization and one of the key ways to build and strengthen it.



L. Antonio Estévez

I am a Professor of Chemical Engineering at University of Puerto Rico, Mayagüez Campus, where I have been since 1987. I served as the Associate Director of Chemical Engineering between 1991 and 1995, and as the Associate Dean of Academic Affairs and Director of Graduate Studies from 2001 to 2003. During the second period, I was actively involved in the Council of Graduate Schools, and was appointed to its Advisory Committee on Minorities in Graduate Education. My education includes a PhD from the University of California, Davis, MS from the Central University of Venezuela, and BS from the University of Santiago, Chile.

My passion to service in professional societies is shown by my involvement in AIChE. I joined in 1985 and was a founding member of the AIChE local section in Puerto Rico. I have participated in the Minority Affairs Committee, the Societal Impact Operating Council, and the Career and Education Operating Council. I also served three terms (1995–2000) on the Board of the Interamerican Confederation of Chemical Engineering as Vice-President, President, and Past-President. Later, in 2002, I was elected Secretary General. During these terms, I have been committed to improving the ties among the Confederation's member societies, including AIChE. Incidentally, I speak the Confederation's four official languages — English, French, Portuguese and Spanish.

To enable members to make informed selections for the upcoming AIChE election, the candidates have provided overviews of their experience, as well as their plans for future programs and directions for the Institute. These messages are in each candidate's own words. Following publication in *CEP*, statements will be posted at <http://www.aiche.org/election>.

Voting dates and deadlines: Ballots will be mailed on August 20. Electronic proxy will also be available on this date. Directions on electronic proxy will be included with the ballot and emailed to members with email addresses on file. All ballots must be received by September 24. The Teller's Committee will meet to verify the results of the election on September 28. Election results will be announced in November at AIChE's Annual Meeting in Salt Lake City, UT, and in the December issue of *CEP*.

Chemical engineering has become a key profession in the nation's and world's development. Alternative energy sources, sustainability, emerging bioprocesses, and nanotechnology are more than buzzwords — they are key elements in mankind's survival and chemical engineers are the best masters of them. One of AIChE's challenges, however, is to make sure all fellow chemical engineers perceive it as an open, inclusive professional society. More and more colleagues will join AIChE as long as they feel that they are represented and their voices are heard. To this end, all groups must be present within its leadership. The Hispanic community has been traditionally one of the most underrepresented groups in the Institute. My experience and background may help AIChE in this and other crucial fronts — diversity, inclusiveness, international relations, graduate education and membership. Increasing the membership will result in reduced per-member costs.

The AIChE directors elected in 2007 will serve the three-year term from 2008–2010. This term includes the Centennial celebration in Philadelphia next year, and the 8th World Congress of Chemical Engineering in Montreal in 2009. Both events will be Interamerican Congresses of Chemical Engineering, providing an excellent opportunity to project AIChE internationally as the leading chemical engineering society. I will strive for it.



Bob Hoch

I am running for the Board because I believe in an overarching chemical engineering profession and in the need for an overarching professional society to advance, defend and promote that profession. A few years ago, the threat to this vision was the shaky financial status of AIChE itself. We appear to have survived this, although we have lost the cushion against adversity (or

opportunity for entrepreneurial initiatives) we once had. The challenge now is to maintain such a profession and such a professional society in the face of a diverse, and probably less supportive, industrial base than we have enjoyed in the past.

This should not be impossible; *Science* and *Nature* do not shrink from covering the whole gamut of scientific inquiry. Retaining our identity as chemical engineers in multi-disciplinary fields should be nothing new to us — we have co-existed with chemistry for 100 years. Civil, mechanical and electrical engineers have all long served a diverse industry. We can learn from them.

At the same time we must grow the profession in the face of rapid technological change. We must, on the one hand, embrace and encourage new technologies falling under the umbrella of chemical engineering. We must, on the other hand, resist the temptation to reinvent ourselves as, for example, biochemical, green chemical or nano-chemical engineers. These will not be the last new technologies to come along. And, we must do all this while providing better support for our many members in the core technologies of chemical and petroleum process technology. These will not be going away, nor will unit operations or engineering sciences, but balancing the interests of members in both these new and traditional fields is the near-term challenge for the Institute.

I have been active in AIChE at the National level for over 30 years. I have chaired the Research and New Technology Committee and the Executive Board of the National Program Committee. I am a Fellow of the Institute. I know how AIChE works. I will not be proposing any half-baked initiatives. In addressing the problems facing chemical engineering and AIChE, I will always make preservation of the profession my first priority.



Rob Reintjes

Now that AIChE has successfully been returned to sound financial health, it is time to chart a course for the future. As past chair of the Boston section (2004–05), I have experience with the development of successful growth strategies. If elected to the Board of Directors, I will apply my visioning, strategic planning and entrepreneurial experience to help revitalize the AIChE.

At my first Boston local section meeting, I was struck by the tremendous collective brainpower in the room, and imagined how powerful it would be if harnessed to solve world problems. Globally, there is increased awareness of environmental and energy related problems. The AIChE now has an unprecedented opportunity to help solve these issues.

To do this, the AIChE must become a leader in both policy creation and research in the fields of energy, sustainability, materials and biotechnology. In addition, our members' expertise spans a broad array of other important technologies. We need to encourage shared thinking among members and build stronger collaborations between industry and academia to develop solutions.

Benefits of this strategy to AIChE members

- Increased visibility of chemical engineering as a valuable profession
- The AIChE will have greater relevance to members and society
- Improved member-to-member networking
- Students will be drawn to the field of chemical engineering
- Membership will increase

To contact me or learn more about my campaign, go to

www.robreintjes.com.

I am Managing Director of New England Equity Group. We provide private equity investing to companies utilizing chemical engineering technology. Previously, I founded two successful ventures, including a biomedical company. Prior to that I worked for several multinational corporations, including W.R. Grace and Thermo Electron. I serve on the Tufts University Chemical and Biological Engineering Departmental Advisory Board.

My achievements within AIChE include:

- Chair (2004–05) — AIChE Boston Section (The Ichthyologists.)
- Co-founder and Chair (2005–07) — AIChE-Boston Executive Forum
- Initiated coalition of 12 chemical engineering department chairs and 13 industrial executives (2005)

■ Keynote speaker on Visioning and Team Building — 2007 AIChE Leadership Development Conference

■ Member — 2007 AIChE Strategy Study work group.

Awards include:

- Distinguished Service Award, 2005 — Tufts University ChBE Dept.
- Team Leader of 11 officers who received the 2006 AIChE Gary Leach Award, for "Success in redesigning the Boston Local Section as a model for the 21st Century."

I received a BS in chemical engineering from Tufts University in 1970 and an MBA from Northeastern University in 1981.



John C. Tao

Dr. Tao is the Corporate Director of Technology Partnerships for Air Products and Chemicals, Inc., a \$9 billion company producing industrial gases and specialty chemicals for customers in the manufacturing, process, and service industries. His responsibilities include world-wide external technology development via

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collaborations with universities, national labs and start-ups; intellectual asset management; government contracting; and licensing/technology transfer. His work in the field of open innovation and licensing has been cited in articles in the *Harvard Business Review*, the *New York Times*, *The Economist*, and in Henry Chesbrough's book "Open Business Models."

Previously, Dr. Tao was involved in engineering and R&D management, commercial development, venture management, and planning and business development in the areas of synfuels, co-generation, copolymers, adsorption and membrane separations position. He holds BS and PhD degrees in chemical engineering from Carnegie-Mellon University, and an MS in chemical engineering from the University of Delaware. He is currently a board member of the Industrial Research Institute and the Lehigh Valley Ben Franklin Technology Partnership. He also served as a voting representative and member of the Governing Board of the Council for Chemical Research, the Advisory Board of Yet2.com and as a two-term board member of the Commercial Development and Marketing Association. Dr. Tao was Chairman of Chemical Industry Environmental Projects, a LLC of chemical companies created to jointly develop environmental technologies. He has published and presented over 70 papers and has 9 patents.

Within AIChE, Dr. Tao has served as Vice Chair of the Lehigh Valley Chapter, as Director of the Fuels and Petrochemical Division, and on the Advisory Board of CWRT. He is a Fellow of AIChE.

In the coming years, AIChE must take a leadership position in addressing important areas of national interest, namely energy and sustainability, globalization, and U.S. competitiveness in science and engineering. As director, I would focus on the following objectives:

- provide a leadership voice for chemical engineers in shaping national energy and environmental policy
- encourage and promote collaborations between academia and industry to advance chemical engineering research and development
- network and promote collaboration in areas of mutual interest to chemical engineers from other countries of the global economy, especially China and India.

In addition, through my involvement with other organizations such as the Industrial Research Institute and the Commercial Development and Marketing Association, I will continue to promote the value of AIChE programs as a means to increase the Institute's membership.



Gavin Towler

My current job is Senior Manager of Process Design, Modeling and Equipment at UOP. In this role, I manage the areas of process design and optimization, equipment design, and physical and kinetic modeling for UOP Research and Development. I have worked in process and equipment design in all the positions I have held, including applications in oil refining, gas and petrochemical processes, separations, heat integration, refinery optimization, fuel cells and process miniaturization. I have a BA and MEng in chemical engineering from Cambridge University and a PhD from U.C. Berkeley. I'm a Chartered Engineer and Fellow of the U.K. Institution of Chemical Engineers and have 29 U.S. patents. I am also an Adjunct Professor at Northwestern University, where I co-teach the design courses.

I've been involved in programming and chairing AIChE conference sessions for about 12 years. I've worked with the Fuels and Petrochemicals Division and the Computing and Systems Technology Division to try to create more value for AIChE members in industry, particularly those in the early stages of their career. I also serve on AIChE's

Membership Committee and the Chemical Technology Operating Council that oversees Divisions, meetings and publications. In all of these groups, I try to bring some perspective of industrial needs and constraints.

I am running for election as Director of AIChE because I'd like to see AIChE do more for members in industry. Most of the content in the national meetings is aimed at academic researchers. Few engineers from industry get to attend these meetings anyway, so we need to find other ways to share information and build professional ties. I would like to see AIChE put more emphasis on subjects like safety, automation and emissions control that are of interest to engineers who are out there trying to keep plants running safely and profitably. We should use the web and other advances in IT to reach engineers whose job responsibilities won't allow them to spend a week at a national meeting. I've gained a lot professionally from my involvement with AIChE and met a lot of smart and enthusiastic people. I'd like to see AIChE become more attractive to a broader range of engineers so that others can get value from it too.



Phil Westmoreland

As a Director, I'd bring a wide range of career and AIChE experience that drives how I see our opportunities as a professional society and as a profession. Currently a professor at UMass Amherst, I am on leave as a Program Manager at the National Science Foundation. My students and I conduct experiments and modeling on reaction engineering of combustion, fuels, and polymers. Between degrees (NC State BS '73, LSU MS '74; MIT PhD '86), I worked in coal research at Oak Ridge National Laboratory.

I've been active in the Knoxville-Oak Ridge Section and Central New England Section, serving there as chair. I've been chair of AIChE's National Program Committee and founding chair of its Computational Molecular Science and Engineering Forum (CoMSEF). I'm a director of the Combustion Institute, the Council for Chemical Research, and past president of CACHE. Recognitions include AIChE's Public Relations Award (1977), Presidential Young Investigator (1990-95), GE Outstanding Teaching Award (1990), Glenn Award (ACS Fuel Chemistry, 1992), Corcoran Award (ASEE, 2002), AIChE Fellow (2004), Shirley Award (LBNL, 2005), and AIChE's Lappin Service Award (2007).

Chemical engineering is exciting as a career through the ways we impact the wants and needs of our world. Energy is always vital, whether spotlighted or not. We are surrounded by chemically engineered fibers, paints, computers, paper, clean water and safe foods. Over the last 15 years, the big story about biological processes and materials is their chemical underpinnings, naturally involving more and more of us professionally.

Asserting and affirming this encompassing vision of our profession is a core responsibility of AIChE. It is important to keep it as a guiding beacon for our future — to our members of all ages, to our children, and to our neighbors. Telling this story must be at the heart of AIChE's public relations and our professional identities. It is key to sustaining our profession with the best and brightest new members, beginning in the schools and continuing beyond BS graduation. It is key to our sense of AIChE as our community and professional meeting place.

We must back our visions with our actions, addressing wide-ranging needs of our members. National advocacy, direct member services, vibrant local sections, national meetings, career aids, and Young Professionals groups are all important. So are AIChE fiscal guidance, advancing sustainability, and K-12 outreach. In our centennial year and beyond, our central responsibility as Directors is to showcase and enhance our members' careers, contributions and futures.