



Notes from the Chair

The Division Programming Chairs have assembled an impressive program for the upcoming Fall Annual Meeting. There are over 90 technical sessions that focus on materials across a broad spectrum of topics and there is strong participation from the Division members. It promises to be an exciting meeting. You will have many session choices and one I encourage all to attend is the Division Plenary Session [Session 368] that will be held Wednesday, November 9 from 8 – 10:30 am. We use the plenary session to highlight research from across the Division programming areas and to recognize the Charles M. A. Stine recipient. This year's recipient, Thomas F. Kuech, will give a talk on "Materials Integration in Micro- and Opto-electronics."

I also want to encourage you to become part of the changes that are underway in undergraduate education and to bring the excitement of our research into these changes. Workshops and planning have been underway for over a year to address chemical engineering undergraduate education. This effort has culminated in a proposal to NSF, and ultimately to other organizations, to undertake a multi-year program to dramatically restructure the curriculum. These changes are coming and will happen. A special workshop will be held on Sunday to describe the steps forward and more information can be found at the "Frontiers in Chemical Engineering Education" link on the MIT web page <http://mit.edu/cheme/>. The restructuring will evolve around three organizing principles: molecular transformations, multiscale analysis, and a systems approach. To quote from the proposal, "Much more versatile chemical engineers are needed to meet the challenges and opportunities of creating products and processes, manipulating complex systems, and managing technical operations in industries increasingly reliant on molecular understanding and manipulation." Materials engineering and science embodies the essence of creating products and processes through molecular understanding and manipulation. It will be incumbent on Division members to provide the leadership and assistance to ensure materials, and what we do, is fully integrated into the dialog at this point and ultimately into the restructured curriculum.

- John G. Ekerdt
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Kuech 2003 Stine Award Winner

Thomas F. Kuech, Shoemaker Professor of Chemical Engineering at the University of Wisconsin- Madison, has been named the 2003 recipient of the Charles M.A. Stine Award, sponsored by DuPont. "The award recognizes Tom's efforts in the understanding of compound semiconductor growth by organometallic chemical vapor deposition," said Dennis Hess, chair of the Stine Award selection committee.

Tom received his undergraduate and a master's degree from Marquette University and his Ph.D. from the California Institute of Technology. After Caltech, he joined the IBM T.J. Watson Research Center. He came to UW-Madison in 1990 and had served as the Director of the NSF Materials Research Science and Engineering Center on Nanostructured Materials and Interfaces. He is currently Chair of the Department of Chemical and Biological Engineering. Tom's research interests have focused on the design of new processes for the attainment of novel materials, structures, or device enhancements for microelectronic and photonic applications. He has published over 300 peer-reviewed papers in the fields of epitaxial growth, chemical vapor deposition, transport properties of Schottky barriers, ohmic contacts, and heteroepitaxial structures, non-stoichiometric ceramic oxides, and the solid state properties of semiconductor materials. Tom is a Fellow of the American Physical Society, holds a concurrent Professorship at Nanjing University, and has received recognitions for his work in crystal growth and semiconductor materials science.

Newsletter Goes Electronic

This issue of the MESD Newsletter marks the last edition that will be sent to members in hardcopy format. At the 2002 MESD Executive Meeting in Indianapolis, it was decided to make a "transitional issue" which would be delivered in both hard and electronic format. As a result, you should have also received an email indicating that this newsletter was available for download from the MESD Website (www.che.gatech.edu/MESD). (Note: email addresses are supplied by the national organization in New York, and reflect current dues-paying members). Future editions of the newsletter will be available only from the division website, and you will be contacted regarding the availability of new issues via email. The Executive Committee hopes this will provide for more rapid communication of division information, in addition to reducing the division's expenses. As always, the MESD officers welcome your feedback on this issue.

Materials and Engineering Sciences Division Elections

Electronic balloting was approved by the MESD Membership in 2000. Biographies are presented here as a courtesy to our members. Please visit the AIChE website at www.aiche.org to complete your ballot. You will need your membership number to cast your votes. The voting deadline is Friday, October 3, 2003 (this is a correction to the initial email notification from AIChE).

Profile of Candidates for Second Vice Chair (Vote for one)

Jeffrey T. Koberstein received his B.S. in Chemical Engineering in 1974 from the University of Wisconsin and his PhD in Chemical Engineering in 1979 from the University of Massachusetts where he worked with Professor Richard Stein in the Polymer Science Department. After a year as postdoctoral researcher at the Centre de Recherches sur les Macromolécules in Strasbourg, France he joined the faculty of Princeton University. After moving to the University of Connecticut, he served as director of the Polymer Science Program, a large interdisciplinary degree-granting program housed within the Institute of Material Science, and held the position of Distinguished Professor of Engineering. At Connecticut he was also founding director of the Polymer Compatibilization Research Consortium and co-director of the Biomaterials Design Initiative, two multi-investigator research groups. Jeff joined the faculty at Columbia University in 2000 where he assumed the position of Department Chair and currently holds the positions of Hudson Professor of Chemical Engineering and Hartley-Wallach Living-Learning Center Professor in residence.

Prof. Koberstein and his students have made seminal contributions in a number of fields related to polymer materials science including x-ray, light and neutron scattering, block copolymers, blends, interfacial properties and surface modification. Current work in his group focuses on development of smart material concepts, particularly related to the molecular-level control of surface properties for applications such as bioactive biomaterials and microarray sensors. He currently co-directs the NSF-IGERT program on soft materials that is a collaborative effort between City College and Columbia and is a co-investigator in the Columbia University MRSEC program focused on oxide nanoparticles. His accomplishments in both teaching and research have been recognized by several awards: the ACS Doolittle Award, the SPE-ANTEC best paper award, the American Cyanamid (*cont.*).

R. K. (Raj) Krishnaswamy is currently the team leader of the polymer processing and solid-state characterization research group at Chevron Phillips Chemical Company. While Raj has benefited from attending the AIChE annual meetings, he sees a serious gap in communication between researchers in industry and academia. Through his involvement in the MESD committee, Raj hopes to offer an industrial perspective to bridge the communication gap and interaction barriers between researchers in academic and industrial establishments. While such interactions will assist industrial researchers to solve their problems more efficiently, they will also expose academic researchers to new and challenging problems; this will also offer tremendous educational opportunities to students. Therefore, such cross-functional endeavors can benefit both communities tremendously. As Vice-Chair, Raj will try and develop sessions that will be attractive to both academic and industrial researchers. A sincere effort will be made to collaborate with local chapters (depending on the annual meeting venue) of other relevant societies such as ACS, APS and SPE during the planning of MESD programs. The objective here is to enhance the value of MESD and perhaps increase membership in the process. Raj also hopes to introduce a new session that may help prepare graduate students (materials focus) for careers in industrial R&D and beyond. The invited speakers in such a session may include industrial scientists, R&D program managers, intellectual property lawyers and professors that have worked extensively with industry.

As Director of MESD, Raj initiated a one-day short course taught by MESD members (Register, Kornfield, Rutledge, Wu & Krishnaswamy); this was offered on the Sunday of the 2002 annual meeting. This short course was a tremendous success; in fact, it was the most attended AIChE short course that year. It is hoped that (*cont.*)

(Koberstien, cont.) Academic award and the Rogers teaching award. Jeff has been very active in a number of materials societies including MRS, SPE, ACS, the Adhesion Society and the APS. He was program director for last year's Adhesion Society meeting, served on the board of directors for the SPE Engineering Properties and Structure Division, and has held many positions within the American Physical Society Division of High Polymer Physics including program chair and chair of the division. He was elected a fellow of the APS in 1992.

As an officer in MSED, Jeff would apply his considerable administrative experience with professional societies to help evolve and modernize AIChE as a professional society and in particular to increase the representation and impact of more molecular-based fields of chemical engineering such as materials science. A second goal would be to improve attendance at AIChE meetings by the materials community at large, particularly materials chemists, material scientists and the international materials community through better interaction and joint programs with other materials societies.

(Krishnaswamy, cont.) the short course (tutorial) component of MESD will continue in subsequent years. Raj has also chaired various Polymer Processing and Rheology sessions at the AIChE annual meetings.

Raj Krishnaswamy obtained his Ph.D. in chemical engineering from the University of Kentucky in 1995. He was a post-doctoral associate at Virginia Tech for 1.5 years before joining the polymer processing research group at Phillips Petroleum in 1997. In 2000, he was awarded the distinction "Outstanding Young Scientist" of Phillips Petroleum Company. In 2002, he obtained the Husky Education award from the Society of Plastics Engineers. In 2002, he also received a special innovation award from the Technology Vice-President of Chevron Phillips. To date, Raj has co-authored 18 peer-reviewed journal papers and 4 book chapters. He is also a co-inventor on 9 U.S. patents and patent applications. He has also delivered several invited lectures at industries and at universities.

Profile of Candidates for Position of Director (Vote for two)

Christopher N. Bowman is currently the Gillespie Faculty Fellow and Department Chair of the Department of Chemical Engineering at the University of Colorado. He received his B.S. and Ph.D. in Chemical Engineering from Purdue University in 1988 and 1991, respectively. After receiving his Ph.D., he began his academic career at the University of Colorado in January of 1992 as an Assistant Professor. Since that time Professor Bowman has built a program focused on the fundamentals and applications of crosslinked polymers formed via photopolymerization reactions. In the broad areas of the fundamentals of polymerization reaction engineering, polymer chemistry, crosslinked polymers, photopolymerizations and biomaterials, Professor Bowman has published more than 140 papers and been recognized with numerous awards including the AIChE Allan P. Colburn Award, the ASEE Curtis W. McGraw Award, and the Materials Research Society's Outstanding Young Investigator Award. Professor Bowman has once served AIChE

as the National Meeting Vice-Chair, has served for three years as the ACS Division of Polymer Chemistry Program Co-Chair, and for the last four years has served as the Co-Director of the NSF Industry/University Cooperative Research Center for Fundamentals and Applications of Photopolymerizations.

Michael (Mike) T. Harris received his B.S. in Chemical Engineering at Mississippi State Univ. in 1981 and his M.S. and Ph.D. in Chemical Engineering at the University of Tennessee-Knoxville in 1987 and 1992, respectively, while employed as a Development/Research Engineer at the Oak Ridge National Laboratory (1981-96).

Mike joined the faculty at the University of Maryland, College Park in January 1996. He had a joint appointment with the Department of Chemical Engineering and the Institute for Physical Science and Technology. He was the recipient of NSF CAREER award in 1997. He was also the recipient of the 1999 AIChE Student Chapter Outstanding Teaching Award. He joined the faculty in the

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School of Chemical Engineering at Purdue University in January 2002 where he serves as chair of graduate student recruitment in the School of Chemical Engineering and as chair of a couple of committees in the Schools of Engineering at Purdue University.

He has published 54 papers in areas such as environmental control technology; nanoparticle synthesis; SAXS, USAXS characterization of nanostructured materials; electrodispersion precipitation; and interfacial engineering. His current research interests include (i) the application of electrodispersion precipitation in the formation of nanostructured particles for application in medical diagnostics and the controlled release of drugs; (ii) the use of biotemplates for producing nanocircuits; (iii) development of advanced algorithms to obtain surface/interfacial tension and contact angle measurements from pendant and sessile drops; (iv) and experimental and computational studies of the formation of colloidal ceramic deposits during the evaporation of sessile drops. He has advised 12 graduate students. One has accepted an academic position and the other students are working in industry or in post-doctoral positions. He has served as a consult to several companies in the area of materials synthesis and characterization.

Mike has been active in MESD and the Particle Technology Forum for many years, having served as programming vice-chair of Area 8D and as chair or co-chair of numerous sessions in MESD and the Particle Technology Forum. Recently, he organized a new session, Manipulation of Nanophases by External Fields, in the Nanoscale Science and Engineering Forum. He is also a member of ACS, AcerS and AAAS and has co-chaired sessions at the AcerS meeting.

As MESD director, Mike will work to promote greater dialog between experimental, theoretical and computational researchers in the materials science community. He will also focus on continued improvement of collaborative relationships with other programming divisions (Groups 1, 3, 15, 20, 21 and 23) in the AIChE and with other national societies such as ACerS and ACS. Finally, Mike will work with groups such as the Minority Affairs Committee to improve the participation of underrepresented groups in MESD.

Anthony M. (Tony) Lowman received his education in chemical engineering at the University of Virginia (B.S., 1993) and at Purdue University (Ph.D., 1997). He is currently an Associate Professor of Chemical Engineering at Drexel University where he has been on the faculty since 1997. He also has appointments in the Department of Materials Engineering and School of Biomedical Engineering at Drexel. In addition to his main academic appointment, Tony has been active in international collaboration with major research centers around the world. He has served as a Visiting Professor at Hoshi University of Tokyo, Japan and a Visiting Researcher at the University of Parma, Italy. Additionally, in 2002 Tony co-founded Gelifex, Inc., a company pursuing non-invasive methods for using hydrogels for repair of the nucleus pulposus of the intervertebral disc. Currently, he serves as the Chief Technical Officer of Gelifex in Philadelphia.

His research contributions have been in the area of polymers for biomedical applications. He is known for his work on the preparation, characterization and evaluation of the behavior of compatible, crosslinked polymers known as hydrogels, which have been used as biocompatible materials and in controlled release devices, especially in controlled delivery of drugs, peptides and proteins, and the development of novel biomaterials. He has over 50 publications and proceedings papers in this area and four patents pending. Additionally, he is co-editor of the book "Biomimetic Materials and Design" by Marcel Dekker published in August, 2002.

Tony has been active in professional societies, including AIChE, ACS, CRS and the Society for Biomaterials. He has taken numerous leadership roles in organizing and chairing conferences and symposia related to biomaterials and drug delivery systems. Additionally, he has twice served as the Drug Delivery Interest Group Chair for the Society for Biomaterials as well as the Vice-Chair and Chair of Area 8b, Biomaterials, of AIChE. In the past year, Tony was active in organizing four bionanotechnology-related sessions for the upcoming AIChE meeting.

As MESD director, Tony will continue to develop interdisciplinary program tracks within AIChE through joint initiatives between divisions as well as with other professional societies and (*cont.*)

(*Lowman, cont.*) industry. Additionally, he will work to increase MESD membership and participation with special emphasis on student participation in MESD.

Newsletter Editor Sought

Interested in contributing to AIChE and the division? Have an “itch” to do some writing and editing? If you answered “yes” to either of these questions, then MESD needs you! The position of Newsletter Editor is open. Please contact any of the MESD officers for more information.

Fall Annual Meeting Reminder

The AIChE Fall Annual Meeting will be held November 16-21 at the San Francisco Hilton in San Francisco, CA. Meeting registration is now available at:

www.aiche.org/conferences/annual/registration.htm

We hope to see you there!

Stine Award Recipients

- Curry E. Ford (1979)
- John L. Kardos (1981)
- Alan S. Michaels (1982)
- Nicholas A. Peppas (1984)
- Donald R. Paul (1985)
- Sheldon E. Isakoff (1986)
- Stuart L. Cooper (1987)
- Christopher W. Macosko (1988)
- J. Larry Duda and James S. Vrentas (1989)
- Curtis W. Frank (1990)
- Robert S. Langer (1991)
- Dale S. Pearson (1992)
- Edward W. Merrill (1993)
- Timothy J. Anderson (1994)
- Klavs F. Jensen (1995)
- Matthew V. Tirrell (1996)
- Ilhan A. Aksay (1997)
- Buddy D. Ratner (1998)
- Dennis W. Hess (1999)
- Robert E. Cohen (2000)
- John G. Ekerdt (2001)
- Richard A. Register (2002)
- Thomas F. Kuech (2003)

Materials Engineering and Sciences Division Membership Application Form

Not a member of the MESD? Are you a member, but have a colleague who might be interested? Come join one of the most active programming divisions in AIChE. Just fill out the form below, cut it out and return it with a \$7 check made out to AIChE to:

AIChE
 Customer Service Center
 3 Park Avenue
 New York, NY 10016-5991

Yes! I want to be a member of MESD.

or call the Customer Service Center at (212) 591-8100 for credit card payments.

Name _____

Mailing Address _____

City _____ State _____ ZIP _____ Country _____

AIChE Member Number _____

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