



Notes from the Chair

While the MESD has been a part of AIChE for over three decades, the progress made by the Division over the past fifteen years is particularly noteworthy. In the early and mid-1980's the Division had no presence at the Annual Meeting. This meant that chemical engineering faculty, graduate students, and post-docs who did materials-oriented research and like practitioners and researchers in industry and at national labs either did not participate in the Annual Meeting at all or had to apply to give presentations in sessions of little relevance to materials research. Due to the efforts of a few people in the mid- and late 1980's, notably among them Chris Macosko, the Division presence at the Annual Meeting was re-established. Since then, many MESD members have contributed to the almost continual growth in the number of sessions sponsored and co-sponsored by MESD at the Annual Meeting. There has also been a growing recognition by many divisions of AIChE about the central role of material-related research in chemical engineering, both traditional (thermodynamics, fluid mechanics, reaction engineering) and novel (nanotechnology, sensors). The MESD membership should be proud of this progress in making materials-oriented topics a vital part of the Annual Meeting.

However, there remains a great challenge for the MESD membership. While MESD and its members play key roles in the Annual Meeting, it is usually not the case that the Annual Meeting is seen to be a key meeting by the materials community. There is often little attendance by non-chemical engineers or non-U.S. chemical engineers, limiting the scientific impact of the meeting, especially for interdisciplinary topics such as polymers, biomaterials, ceramics, electronic materials, and composites, the five active areas of MESD. Ultimately, the MESD membership will gain more from the AIChE Annual Meeting and AIChE will have a more successful Annual Meeting if there are both strong social and scientific reasons for attending. While the MESD leadership has some

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plans for focused symposia co-sponsored with other societies at future AIChE Meetings, I welcome suggestions from the MESD members regarding ways in which we may be able to improve the scientific impact of the AIChE Annual Meeting.

- John Torkelson

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Register Named Stine Award Winner

Richard A. Register, Professor of Chemical Engineering at Princeton University, has been named the 2002 recipient of the Charles M.A. Stine Award, sponsored by DuPont. Rick received his undergraduate and master's degrees from MIT, and his Ph.D. from the University of Wisconsin (with Stuart L. Cooper, the 1987 Stine Awardee). He joined Princeton in 1990, where he also serves as Director of Graduate Studies for Chemical Engineering, as a core faculty member of the Princeton Materials Institute, and on the Executive Committee of the Center for Photonic and Optoelectronic Materials. Rick's current research interests revolve around micro- and nanostructured polymers, such as block copolymers, polymer blends, semicrystalline polymers, and ionomers. His nearly 100 peer-reviewed publications span polymer synthesis, to morphological characterization, to materials applications ranging from packaging film to electroluminescent devices. A particular interest is in the design of self-assembling materials, ones where a desired mesoscale structure can be "built into" the molecule during synthesis to achieve robust control of material properties. Crystallizable block copolymers, the subject of the 2002 Stine Award Lecture, illustrate the richness possible when two or more self-assembling mechanisms compete to dictate material structure. Rick and collaborators have also demonstrated that block copolymers can make effective templates for the nanofabrication of inorganic objects. Rick received the Unilever Award (ACS) in 1992, and has also been named an NSF Young Investigator, a DuPont Young Professor, a Fellow of the American Physical Society, and the NEC Preceptor at Princeton.

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.

Profile of Candidates for Second Vice Chair

Alon V. McCormick received his B.S. in Chemical Engineering at Tulane Univ. in 1983 and his Ph.D. in Chemical Engineering at the Univ. of California at Berkeley in 1987, where he studied with Prof. Alexis Bell. After a postdoctoral year in Prof. Alex Pines' group in the Chemistry Dept. at Berkeley, he joined the University of Minnesota in the Dept. of Chemical Engineering and Materials Science. Since 1999 he has been the Director of Undergraduate Studies in Chemical Engineering and the coordinator for the Nanostructural Materials and Processes program of the Minnesota Industrial Partnership for Research in Interfacial and Materials Engineering. In 2001 he was appointed to a three-year term as the Neal and Shirley Amundson Professor of Chemical Engineering.

With collaborators and students, he has published over 130 papers in the field of reaction engineering of advanced materials, aimed at extending and applying chemical engineering fundamentals to the design, optimization, and control of chemical processes for advanced materials synthesis. His current directions of research are in hybrid inorganic/organic polymerization (including several "sol/gel" processes), radiation-induced crosslinking polymerization to glassy coatings, nanoparticle synthesis and assembly in the liquid phase, and molecular self-assembly processes using surfactant systems. His students have also been active in zeolite adsorption and catalysis, nuclear magnetic resonance spectroscopy, and bioseparations using nanostructurally designed chromatographic materials. He has advised 30 graduate students and postdoctoral associates, who have gone into both academic and industrial positions, and he has served as consultant for a number of companies active in commercializing and scaling up materials synthesis processes.

Alon has been active in MESD and other Groups in AIChE for over ten years, having served as programming vice-chair and chair of Area 8D and as chair or co-chair of numerous sessions in MESD,

Particle Technology Forum, Catalysis and Reaction Engineering, the Computational Molecular Science & Engineering Forum, Engineering Sciences & Fundamentals, and Separations. He has also been active in ACS, ACerS, and MRS.

As Second Vice Chair and in the duties of the ensuing year, Alon would focus on efforts a) to maintain and build further connections between MESD and other Groups to ensure integration of Materials into the developing core of the chemical engineering curriculum and industrial practice, b) to continue to push for rational session allocation and effective cosponsorship with emerging topical conferences, and c) to help ensure that co-sponsoring groups are represented well at the Winter AIChE meeting planning retreat and in the subsequent arrangements by the New York staff and the Meeting Programming Chair.

Molly Shoichet received her S.B degree from the Massachusetts Institute of Technology in 1987 and her Ph.D. from the University of Massachusetts, Amherst in 1992 in Polymer Science and Engineering. After working at a neuro-biotechnology start-up (CytoTherapeutics), she was recruited to the University of Toronto in 1995. Molly currently holds the Canada Research Chair in Tissue Engineering and is an Associate Professor of Chemical Engineering & Applied Chemistry and Chemistry at the University of Toronto. A recipient of such prestigious distinctions as NSERC's University Faculty Award, the Young Explorer's Award (to the top 20 scientists in Canada under 40), and Canada's Top 40 under 40™ (an award for leadership and innovation to the top 40 individuals under 40 in Canada), Molly is an expert in the study of Polymers for Regeneration – that is materials that promote healing in the body. Molly is primarily focused on promoting nerve regeneration after spinal cord injury, for which there is no cure. The complexity of the biology of the brain and spinal cord has made progress slow in this area. While

researchers are gaining a better understanding of the central nervous system, Molly is leading an international effort to find ways to overcome injury through novel regeneration strategies. Molly is also involved in collaborative research for bone regeneration.

Quite separate from biomaterials, Molly is also a leading expert in fluoropolymer synthesis and applications and thus represents two major thrusts of MESD – biomaterials and polymers. Molly has published over 50 peer-reviewed papers, 75 abstracts, 16 patents and has given over 75 invited seminars. Molly supervises a group of 15 and has graduated 4 Ph.D.s, 5 Master's and 16 Bachelor's

students. Although Molly is a professor at a Canadian university, she has been active in AIChE and MESD for 7 years and is committed to growing the impact of materials-related research at the annual AIChE meeting. Molly previously served as the programming vice chair and chair of area 8B and was able to secure several additional sessions for materials-based research by co-sponsorship of sessions with other areas. By having international leadership in MESD, Molly hopes to foster increased international representation and participation in MESD and AIChE. Molly is particularly excited at the potential to grow MESD's representation at AIChE.

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

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.

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 in this area and has 3 patents pending. Additionally, he is co-editor of the book "Biomimetic Materials and Design" by Marcel Dekker published in August of 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 (2 years) and Chair (2 years) of Area 8b, Biomaterials, of AIChE. In the past year, Tony was active in organizing 4 nanotechnology-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 industry. Additionally, he will work to increase MESD membership and participation with special emphasis on student participation in MESD.

Don Paul received degrees in Chemical Engineering from North Carolina State University (B.S.) and the University of Wisconsin (M.S. and Ph.D.) and then worked at the Chemstrand Research Center for two years. He joined the Department of Chemical Engineering at the University of Texas at Austin in 1967 where he served as department chairman during 1977-85; he is currently the Director of the Texas Materials Institute and holds the Ernest Cockrell, Sr. Chair in Engineering. His research interests include the broad areas of polymer science and engineering and chemical engineering. Current research involves various aspects of polymer blends, membranes for separation, drug delivery, packaging, processing, and nanocomposites. The blend research deals with the thermodynamics of

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polymer-polymer mixtures, reactive compatibilization, and rubber toughening. The research on diffusion involves investigation of structure-property relationships for better membranes for separations and barrier applications. The research on nanocomposites is involved with strategies for exfoliation of clays and polymers by melt processing and understanding the properties of these materials. Synthesis, characterization, and performance are all integral parts of these research programs.

Don has edited numerous books on blends and membranes and has published approximately 500 research papers. He has received awards for teaching, research, and leadership from the University of Texas, ACS, AIChE, SPE, and the Council for Chemical Research. He has been designated a distinguished graduate of North Carolina State University and of the University of Wisconsin. He was elected to the National Academy of Engineering in 1988 and to the Mexican Academy of Sciences in 2000. He has served as Editor of Industrial and Engineering Chemistry Research, published by ACS, since 1986.

Don is involved in a number of other professional societies (ACS, SPE, MRS, APS, PPS, etc.), and as Director of MESD he would work towards synergy in the overlapping technical programming and other activities with these organizations.

Alec Scranton received his B.S. in Chemical Engineering from the University of Iowa in 1984 and his Ph.D. from Purdue University in 1990, where he worked with Prof. Nicholas Peppas. He worked as a research associate at Argonne National Laboratory in 1985 and served on the faculty at Michigan State University from 1990 until 2000. In January of 2000 he joined the faculty at the University of Iowa as the Chair of the Department of Chemical and Biochemical Engineering and the Director of the Center for Photopolymerization. Alec's research interests include kinetics and mechanisms of cationic and free radical photopolymerizations, novel applications of light-induced reactions, polymer networks, and reversible emulsifiers. He has published more than eighty papers, has been granted seven patents, and has given numerous invited talks and presentations at

professional meetings. He has received several awards including The J.J. Martin Award from the ASEE in 1999, the AIChE Outstanding Professor Award in 1996, a Michigan State University Teacher-Scholar Award in 1995, a Withrow Award for Teaching Excellence in 1993, and DuPont Young Faculty Awards in 1990 and 1991.

Alec has been very active in MESD. In the past decade he has organized seven symposia for the AIChE Annual Meeting, has participated in the Area 8A programming meetings, and has given numerous research presentations. In addition to his service to AIChE, Alec has been active in a number of other professional societies and recently finished a three year term as the Program Chair of the ACS Division of Polymeric Materials: Science and Engineering. This experience will be useful for building collaborative relationships and coordinating MESD's programming activities with other national societies.

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)

Interested in attending a conference on **Nanostructured Materials**? Pack plenty of clothing...

September

- 4-5 Nanotech Venture Fair; La Jolla, CA
www.nanotechventurefair.com
- 5-6 SPIE Conference on Nanotechnology and MEMS; Galway, Ireland
www.spie.org/conferences/calls/02/ire/confs/IR04.html
- 9-12 Nanotech 2002 – At the Edge of a Revolution; Houston, TX
www.nanospace.org/confer.htm
- 9-13 Trends in Nanotechnology Conference (TNT2002); Santiago de Compostela, Spain
www.cmp-cientifica.com/TNT2002.html
- 10-13 Symposium and Summer School on Nano and Giga Challenges in Microelectronics; Moscow, Russia
www.AtomicScaleDesign.Net/Moscow
- 16-19 International Conference on Micro- and Nano-Engineering (MNE2002); Lugano, Switzerland
www.mne02.org
- 18-20 ASME Conference on Integrated Nanosystems 2002; Berkeley, CA
www.asmenews.org/meetcourse/nanomar.html
- 23-25 Nanocomposites 2002: Delivering New Value to Plastics; San Diego, CA
www.executive-conference.com
- 23-28 International School and Workshop on Nanotube & Nanostructures; Roma, Italy
www.Inf.infn.it/conference.nn2002

October

- 10-13 10th Foresight Conference on Molecular Nanotechnology; Bethesda, MD
www.foresight.org/conference
- 11-12 2nd International Conference on Electrodeposited Nanostructures; Budapest, Hungary
www.szfki.hu/~bakonyi/ednano.html
- 14-17 Nanotechnology Business Roadmap for Industry Meeting; Chicago, IL
www.infocastinc.com/NanoRoadmap/nnrp.htm
- 21-25 Materiaux 2002 Symposium on Nanostructured Powders and NanoMaterials; Tours, France
www.materiaux2002.net
- 27-30 Nanoparticles 2002 Conference; New York, NY
www.bccresearch.com/nano2002

November

- 3-8 Second Topical Conference on Nanoscale Science & Engineering, AIChE; Indianapolis, IN
www.aiche.org
- 17-20 2002 Biennial Symposium: Polymeric Nanomaterials; Rohnert Park, CA
Email: alan.d.english@usa.dupont.com

December

- 2-6 Nanomaterials Symposia C, E, F, G, H, I, J, Q, NN, 2002 MRS Fall Meeting; Boston, MA
www.mrs.org/meetings/fall/2002
- 5-6 NSF Workshop on Nanostructured Materials; Boston, MA
www.nsf.gov/od/lpa/news/press/01/pr0197.htm
- 9-13 Second International Conference on Nanomaterials by Severe Plastic Deformation; Vienna, Austria
www.ap.univie.ac.at/users/nanospd2
- 15-19 6th Engineering Foundation Conference on Molecular-Scale Electronics; Key West, FL
www.engfnd.org/2bc.html

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