

PMSE NEWS

Polymeric Materials: Science and Engineering Division of the American Chemical Society

SPRING 2007

Message from our Chair, Elliott Douglas



Dear PMSE Members,
This is an exciting time for the division, as we implement a number of new initiatives that were begun last year under the guidance of the previous Chair, Ron DeMartino. His efforts, and the efforts of the Chairs before him, have allowed the division to expand its reach into new areas, while still maintaining the excellence we have come to expect.

The evolution of the preprints continues with a move from CD to online preprints. One of our past Chairs, Benny Freeman, has been working with the ACS Publications office to develop a product which will continue to provide benefit to our members while at the same time expanding the reach and accessibility of the preprints to a wider audience. Preprints are available back to 2001 from the ACS Publications website; PMSE members can access the preprints by logging in with their ACS member number. Check it out and tell us what you think. As we work out the bugs in the online preprints you will also continue to receive the CD, but we plan to eliminate the CD in the coming years. Moving from print to CD preprints resulted in substantial cost savings for the division. Similar savings will come as we eliminate the CD, and we hope to add revenue through non-member and institutional subscriptions.

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See p.8 for details!**

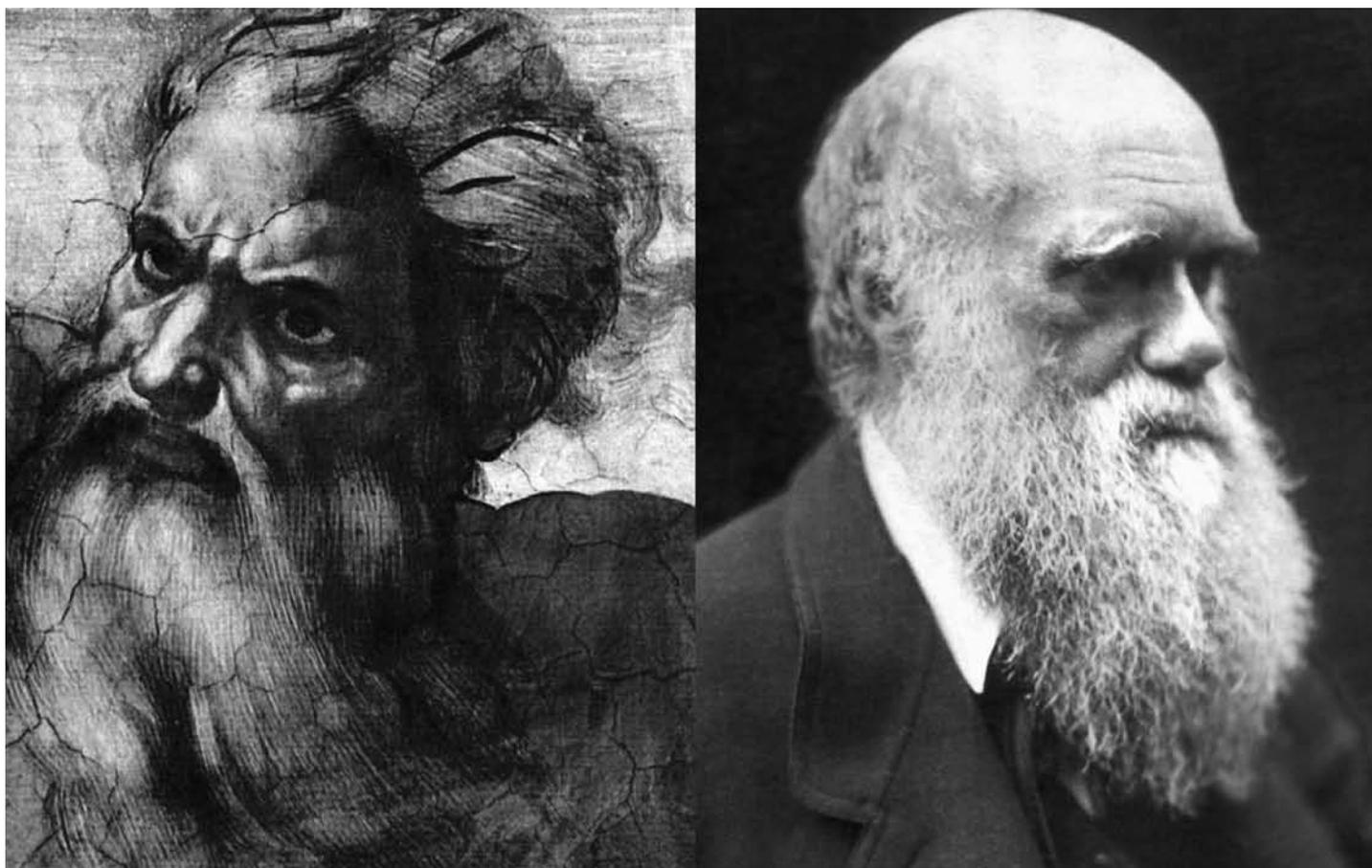
Another initiative that we have been pursuing in the last few years is increased visibility at ACS

regional meetings. Ron DeMartino, Lisa Baugh, and Jay Dias have spearheaded the effort to provide a presence at these meetings with a PMSE table and financial sponsorship. In the past most of PMSE's activities have centered around the ACS national meetings. However, a large number of ACS members never attend a national meeting, and it is important that we reach out to these members through new, innovative approaches. By tapping into the resources of the regional meetings, we can enhance our membership and our programs.

In 2006 we founded the first PMSE student chapter, at Case Western Reserve University. The idea for this chapter was actually brought to us by the students themselves, which shows the excitement and enthusiasm students can bring to our activities. We will monitor this experiment and consider how we might expand the concept to other institutions. I want to especially thank Dave Schiraldi, who is overseeing the student chapter at Case.

The lifeblood of our division is of course the programming we present at the national meetings. Our Program Committee of Zhenan Bao, Abhi Patil, and Darrin Pochan has done an excellent job at planning our programs for the future. This year we welcome Chris Soles to the committee, who replaces Zhenan Bao as she rotates off. As the field has evolved we have faced the challenge of expanding our programming to include the "hot" areas of biomaterials, nanotechnology, and electronic and optical materials, while still maintaining our traditional areas of programming. We are working more closely than ever with the Polymer Chemistry Division, our sister organization in ACS, to ensure that the two divisions together can provide balanced, complementary programming at the national meetings. To that end we are looking for ways to better coordinate program planning between the two divisions. We have also co-sponsored a number of joint

Continued on p. 5



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Program for Chicago

March 25 - 30, 2007

Conjugated Oligomers and Polymers. Antonio Facchetti, Dept. of Chemistry and the Materials Research Center, Northwestern University, 2145 Sheridan Road, Evanston, IL 60208-3113, (847) 491 3307, a-facchetti@northwestern.edu; Bert de Boer, Molecular Electronics, Materials Science Centre, University of Groningen, Nijenborgh 4, NL-9747 AG, Groningen, The Netherlands, +31 (0)50 3634370, b.de.boer@rug.nl.

Cooperative Research Award. David Schiraldi, Case Western Reserve Univ., 2100 Adelbert Rd., Cleveland, OH 44106-7202, (216) 368-4243, das44@po.cwru.edu.

Designed macromolecular assemblies for biomedical applications. Joel Collier, Biomedical Engineering Dept., University of Cincinnati, 2901 Campus Dr. ERC 893, Cincinnati, OH 45221-0048, 513-556-1172, joel.collier@uc.edu; Theresa Reineke, Dept. of Chemistry, The University of Cincinnati, Cincinnati, OH 45221-0172, (513) 556-9250, theresa.reineke@uc.edu; William Murphy, Depts. of Biomedical Engineering/Pharmacology, University of Wisconsin, 1550 Engineering Drive, Madison, WI 53706, 608-262-2224, wlmurphy@wisc.edu.

Materials for Probing and Manipulating Living Cells. Darrell Irvine, Dept. of Materials Science & Engineering and the Biological, Engineering Division, Massachusetts Institute of Technology, Room 8-425, 77 Massachusetts Avenue, Cambridge, MA 02139, (617) 452-4174, djirvine@MIT.EDU.

Nanostructures from Block Copolymers and Supramolecular Polymers (Cosponsored by POLY). Chang Y. Ryu, Dept. of Chemistry and Chemical Biology, Rensselaer Polytechnic Institute, Troy, NY 12180, Tel: (518) 276-2060, ryuc@rpi.edu; Daniel A. Savin, Dept. of Chemistry, University of Vermont, Burlington, VT 05405, Tel: (802) 656-0276 Daniel.Savin@uvm.edu; Travis S. Bailey, Dept. of Chemical and Biological Engineering, Colorado State University, Fort Collins, CO 80523, Tel: (970) 491-4648, tsbailey@engr.colostate.edu; Bing Gong, Dept. of Chemistry, University at Buffalo, SUNY, Buffalo, NY 14260, Tel: (716) 645-6800 ext. 2243, bgong@chem.buffalo.edu.

Polymer-Based Nanoparticles and Nanostructures. Michael Mackay, Dept. of Chemical Engineering & Materials Science, College of Engineering, Michigan State University, East Lansing, MI, 48824, USA, (517) 432-4495, mackay@egr.msu.edu; Amalie Friscknecht, Center for Integrated Nanotechnologies (CINT), Sandia National Laboratory, P. O. Box 5800, Albuquerque, NM 87185-1427, (505) 284-8585, alfrisc@sandia.gov; Stuart Rowan, Dept. of Macromolecular Science and Engineering, Case Western Reserve University, 2100 Adelbert Road, Kent Hale Smith Bldg, Cleveland, Ohio 44106, (216) 368-4172, Fsjr4@cwru.edu.

Polymer Surfaces, Interfaces, and Films. Rigoberto Advincula, Dept. of Chemistry, University of Houston, 136 Fleming Bldg., Houston, TX 77204-5003, (713) 743-1760, radvincula@uh.edu.

Polymer-Directed Mineralization. Shu Yang, Materials Science and Engineering, University of Pennsylvania, 3231 Walnut Street, Rm 203 LRSM, Philadelphia, PA 19104, (215) 898-9645, shuyang@seas.upenn.edu; Nils Kröger, School of Chemistry and Biochemistry, Georgia Institute of Technology, Atlanta, GA 30332, (404) 894-4228, nils.kroger@chemistry.gatech.edu; Fiona Meldrum, School of Chemistry, University of Bristol, Bristol BS8 1TS, UK, +44 (0)117 3317215, +44 (0)117 929 0509, Fiona.Meldrum@bristol.ac.uk; Helmut Cölfen, Max-Planck-Institute of Colloids and Interfaces, Colloid Chemistry, Am Mühlenberg 1, 14476 Golm, Germany, +49 (331) 567-9513, coelfen@mpikg.mpg.de

General Papers/New Concepts in Polymeric Materials. Dean Webster, ND State Univ, Dept. of Coatings and Polymeric Materials, 1735 NDSU Research Park Dr., P.O. Box 5376, Fargo, ND 58105, (701) 231-8709, dean.webster@ndsu.edu.

Joint PMSE/POLY Poster Session: General Papers/New Concepts in Polymeric Materials. Dean Webster, dean.webster@ndsu.edu.

Program Committee

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Eighth Class of PMSE Fellows

Four selected as PMSE Fellows in 2007

The American Chemical Society Division of Polymeric Materials: Science and Engineering (PMSE) has just completed its process to select a new class of Fellows for 2007, and the following people have been chosen:

Mohamed El-Aasser

Wen-Li Wu

James Crivello

James Stoffer

They will be inducted as the eighth class of PMSE Fellows during the PMSE/POLY Awards Reception at the Chicago ACS National Meeting on Monday, March 26, 2007. PMSE is pleased to welcome this distinguished group of polymer scientists and engineers to the ranks of fellows. Here is a short description of each of their careers and accomplishments.



PROF. MOHAMED EL-AASSER is the Provost and Vice President for Academic Affairs of Lehigh University. Dr. El-Aasser received his undergraduate and Master's degree at the University of Alexandria, Egypt and his Ph.D. at McGill University, Montreal, Canada. Over the past 30 years at Lehigh University, Dr. El-Aasser has served in a variety of leadership and administrative positions while heading a major academic research effort that produced 343 technical articles, 9 patents and the editing of 5 books based on symposia meetings. He has been the major professor and advisor for 63 Ph.D. and 53 M.S. graduate students. He is internationally known for his research in polymer colloids and emulsion polymerization processes. His principal research interests are associated with kinetics and mechanisms of hetero-polymerization processes which includes modeling and control, the thermodynamic and kinetic phenomena involved in developing morphological features in latex systems, and the colloidal and surface interactions in latexes and their film formation. He and his research group in the Emulsion Polymers Institute pioneered the field of miniemulsions.

Over the past 30 years, Dr. El-Aasser has been the principal and co-principal investigator on many research grants and contracts with funding from NASA, NSF, DOE and numerous industrial companies. He is the Director of the Emulsion Polymers Institute, which interacts with industry via a successful liaison program with 25 industrial member companies from the U.S., Europe, Japan, and Korea. He is the founder of the NSF/IUCRC Polymer Interfaces Center at Lehigh and acted as its first director for 5 years. He has also organized and chaired several meetings and symposia, most notably the Gordon Research Conference on Polymer Colloids, and the NATO Advanced Research Workshop on "Future Directions in Polymer Colloids".

PROF. JAMES CRIVELLO received his B.S. in chemistry from Aquinas College in Grand Rapids, Michigan in 1962 and his Ph.D. in organic chemistry from the University of Notre Dame in 1966. He joined the General Electric Corporate Research and Development Center in 1966 and was for several years a research project manager. His fields of activity include: organic nitrations, oxidations, and arylations, polyimides, silicones, and new photo- and thermal initiators for cationic and free radical polymerizations. In 1980, he was elected a Coolidge Fellow by the staff at GE Corporate Research and Development and spent the 1986-87 year as a visiting scientist at the University of Mainz with Prof. Helmut Ringsdorf in the Federal Republic of Germany.

He joined the faculty at the Rensselaer Polytechnic Institute in 1988 as professor and currently he directs a number of graduate students and postdoctoral associates in various aspects of research in the synthesis of polymers and copolymers by cationic, free radical and transition metal catalysis.



Dr. JAMES O. STOFFER is the Curators' Professor Emeritus of Chemistry at the University of Missouri-Rolla (UMR). He received his B.S. from Mount Union College, his Ph.D., from Purdue University and did Postdoctoral studies at Cornell University. Dr. Stoffer's research activities are centered in the area of Polymers and Coatings Science. For over forty years, he has taught Organic Chemistry and Polymer Chemistry at UMR where he has had the privilege of graduating some 28 PhD students and 25 MS students. For many years, he has taught in UMR's paint short course program and the ACS Coatings short course. He has authored some of the earliest papers on microemulsion polymerization,



ultrasonically initiated free radical catalyzed polymerizations and microwave initiated polymerizations. With fellow co-workers, he has prepared the first transparent composites for use as aircraft windows.

Recently, working with fellow co-workers, he has developed rare earth materials as replacements for highly toxic chromium as the corrosion inhibitor for aluminum. Chromium VI is toxic and must be removed from the work place and in/on products of commerce. UMR's non-chrome coatings do pass these Mil specs and requirements for the Air Force. This will have a major impact on the aircraft industry since the Federal Government spends over two billion dollars each year just painting and repainting aircraft, mostly related to corrosion protection. Deft, Inc. of Irvine, CA has licensed the Rare Earth Primer technology from UMR and has obtained qualification as a primer to meet military specifications. The Air Force is using the Deft 02-GN-084 on all F-15's. Full QPL listing is done and it is approved for the new joint strike force aircraft.

Dr. Stoffer has been active in the St. Louis Federation of Societies for Coatings Technology (FSCT). He has also been on the FSCT education Committee. He was on the executive Committee of PMSE for several years. He has received five outstanding

teacher awards and two faculty excellence awards at UMR.

DR. WEN-LI WU is a NIST Fellow and the Senior Scientist in the Polymers Division of NIST in Gaithersburg, MD. He earned a B.S. (Mechanical Engineering) in 1967 at the National Taiwan University and a Ph.D. in 1972 at Massachusetts Institute of Technology. After working for Monsanto for six years he joined NIST in 1979. His research interests include the applications of x-ray and neutron scattering/reflectivity to probe polymer interfaces and thin films. He has over one hundred ninety publications on topics including scattering theory, molecular network structure, wear behavior of dental composites, molecular dynamics in confined geometry and electronic application of polymers. He was awarded the U.S. Department of Commerce Gold Medal in 1992, Samuel Wesley Stratton Award in 1997 and William P. Slichter Award in 2001. He became a fellow of the American Physics Society in 1992.



Chair's message, continued from p. 1

social events, including a welcome reception Saturday night before the meeting, a joint award reception, a break room close to the session rooms with coffee and a place to meet, and a hospitality suite. Join us at one or all of these events when you come to the meeting.

As you can tell, there is no end to the number of worthwhile activities the division can be involved in. This can make it hard to decide where to best put our resources. In order to obtain the guidance we need, this year the division is undergoing a strategic planning exercise. This effort grew out of training on strategic planning held by ACS last spring that was attended by myself, Julie Jessop, and Qinghuang Lin on behalf of the division. The three of us have now organized a planning session for the division, which will be held this spring. We have invited current members of the PMSE Executive Committee, other PMSE members, researchers active in the field but not PMSE members, and graduate students. We hope that with this broad participation from across the community we can craft a plan that will ensure the health and vitality of the division for the next several years. We expect to have a draft plan ready for discussion at the fall 2007 meeting in Boston. Your participation in this process is important, and I ask you to provide me your input on the future direction of the division. We are revising the PMSE Business Meeting at the national meeting to make it more accessible to you. The Business Meeting will be held on Monday evening between the technical sessions and the awards reception. At this meeting I will give a Chair's Address to inform you about important issues affecting the division, and I invite you to attend and give me your views. You can also email me at edoug@mse.ufl.edu. I look forward to working with you to maintain the vitality of the division and make it even more responsive to your needs.

Elliott Douglas
PMSE Chair

Cooperative Research Award Winners

The 2007 winners of the Cooperative Research Award in Polymer Science and Engineering are Professor Alec Scranton, Univ. of Iowa; Professor Christopher Bowman, Univ. of Colorado; Dr. Joe Oxman, 3M Corp; Dr. Michael Idacavage, Cytec Surface Specialties; Dr. John Woods, Henkel Corp.; and Dr. Don Herr, National Starch and Chemical. Professor David Schiraldi, Chair of the PMSE Cooperative Research Award Committee, announced the award, which is endowed by the Eastman Kodak Company, and has been presented annually since 1992. This multi-location team won the 2007 award for their highly productive and sustained collaborative efforts in the area of photopolymerizations.



Prof. Alec Scranton, Univ. of Iowa (L);
Prof. Christopher Bowman, U. Colorado (R)

Professors Scranton and Bowman are internationally-recognized contributors to the fundamental understanding of kinetics, mechanism, structure and properties of photopolymerization systems, resulting in over 100 and 175 peer reviewed publications in the field, respectively. These two academicians have long-standing ties with one another, resulting in numerous collaborative grants and research projects. In 2000, Professors Scranton and Bowman formed an IUCRC center to better invite participation by industrial sponsors and collaborators. This center has successfully translated academic research into a number of practical, commercial applications of photochemistry. The IUCRC center has produced more than 65 collaborative publications and 12 patent disclosures over the past 4 years.



Dr. Joe Oxman, 3M Corp., (L); Dr. Michael Idacavage,
Cytec Surface Specialties (R)

Industrial Collaborators Joe Oxman, Michael Idacavage, John Woods, and Don Herr lead the group that translates academic discoveries into commercially-valuable products and processes. These inventions include a new class of fast reacting, food safe monomers licensed to Cytec for use in food packaging inks, hybrid cationic/radical polymerization systems which use staged curing steps for products under development at 3M and Henkel, thiol-ene and thiol-ene-acrylate materials and other materials used by National Starch & Chemical and by Henkel for UV curable adhesives.

The award, which includes a \$3,000 prize, will be presented at PMSE's awards reception and will be recognized by the Symposium "Fundamentals and Applications of Photopolymerizations" at the 233rd American Chemical Society meeting in Chicago, Illinois (March 2007).



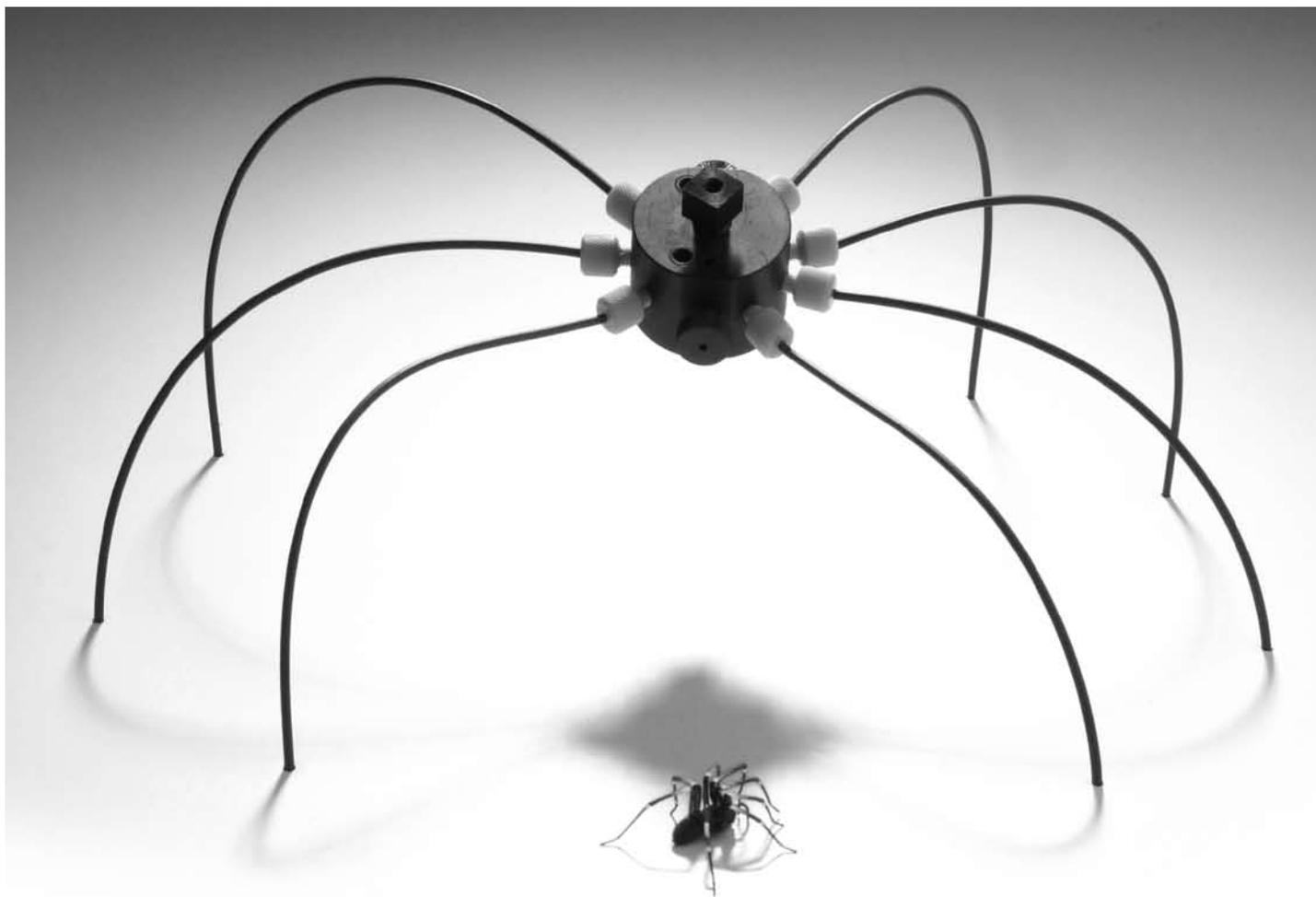
Dr. John Woods, Henkel Corp. (L); Dr. Don Herr,
National Starch and Chemical (R)

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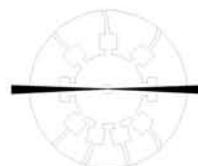
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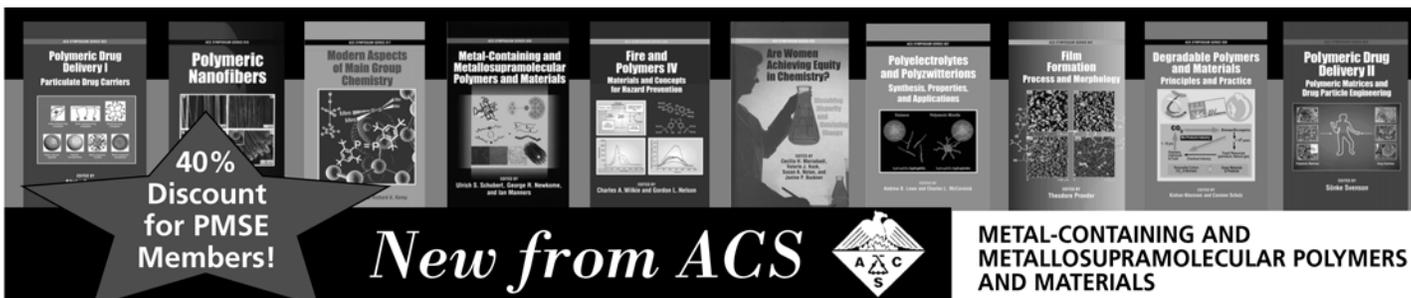
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Scenes from the Fall 2006 Meeting

San Francisco, September 2006

2006 ICI Student Award in Applied Polymer Science



From Left to Right: Samuel W. Thomas III, Megan Ruegg, Daniel B. Drazkowski, Rebecca Boudreaux Breitenkamp, Anzar Khan, David A. Olson

Six finalists presented papers at the ICI student award symposium at the Fall National ACS meeting in San Francisco, CA. The finalists were chosen from twenty-nine competition papers submitted by students from twenty-four different universities. The finalists were Daniel Drazkowski (Michigan State University); Anzar Khan (Free University Berlin, Germany); Rebecca Boudreaux Breitenkamp (University of Massachusetts, Amherst); David A. Olson (University of North Carolina at Chapel Hill); Megan L. Ruegg (University of California, Berkeley) and Samuel W. Thomas III (Massachusetts Institute of Technology).

All finalists receive \$750 to defray their travel expenses and a complimentary one-year membership in the PMSE Division. The winner receives \$1600 and a plaque, to be presented at the awards reception at the Spring 2007 national meeting, plus \$750 towards travel expenses to the Spring 2007 national meeting.

2006 Roy. W. Tess Award in Coatings



Dr. Jonathan W. Martin (R) of the National Institute of Standards and Technology receives the Roy W. Tess Award in Coatings for 2006 from PMSE Division chair **Ron DeMartino** (L) at the award symposium in San Francisco.

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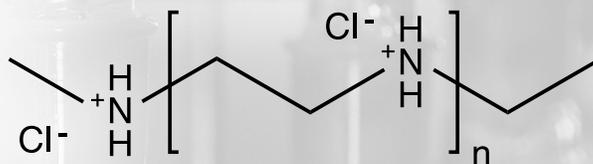
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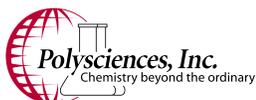
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