PMSE NEWS

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

SPRING 2006

Message From Our Chair, Ron DeMartino

Dear PMSE Members and Friends,

It is my distinct honor to serve as the Chair of the PMSE Division of the American Chemical Society in 2006. I would first like to thank my predecessor, Professor Benny Freeman, and his recent predecessors, Dr. Jay Dias and Dr. Paul Valint, who have guided PMSE through a period of rapid change and have poised the division for future growth. As you may know, we have completed the transition of the PMSE Preprints to electronic medium delivery. This transition has been very smooth, and it has involved the work of a number of current and former PMSE Executive committee members. Jay and Paul have launched an initiative in long range planning for the division that has provided valuable feedback to help guide our activities into the future. We hope that this committee and feedback from members will enable PMSE to continue to be a premiere outlet for technical information regarding polymeric materials.

Arguably, the most visible product of PMSE is the scientific program at the national meetings. Our program chairs, Dr. Abhimanyu Patil, Dr. Darin Pochan, and Dr. Zhenan Bao, have done an excellent job in assembling a very exciting program for the spring meeting in Atlanta, and, on behalf of the Division, I offer them our thanks for this strong program. As PMSE seeks to remain an outstanding location for the presentation of new research and new research activities related to polymer and polymer based materials, we need help from you, the membership, to understand and program in areas that allow us to maintain this leadership. In this regard, we strongly invite and encourage you to provide input to our program chairs with your thoughts about topics that should be addressed in future PMSE sessions. Moreover, we strongly encourage you to consider becoming involved in PMSE and organizing a symposium in a cutting edge area of research. Information about symposia that are currently scheduled and contact information for our program committee is available at the meetings section of the PMSE web site: http://membership.acs.org/P/PMSE/meetings/future.html

The spring meeting is always a busy one for PMSE, and this spring in Atlanta will be no exception. The Atlanta meeting offers a full slate of programming from PMSE, including a total of twelve symposia sponsored either by PMSE alone or sponsored jointly with other divisions of ACS. Programming covers a wide array of cutting edge topics, including: assembly, structure and dynamics of tethered polymer systems, complex fluids in confined spaces, electrostatic polymer processing, highly branched and 3-dimensional polymers and interfaces, micro- and nano-scale patterning via multi-photon activated processes, polymer bioconjugates for therapeutics and biotechnology, polymers in microelectronics and optoelectronics and polymers, nanoparticles and composite materials in nanoscience.

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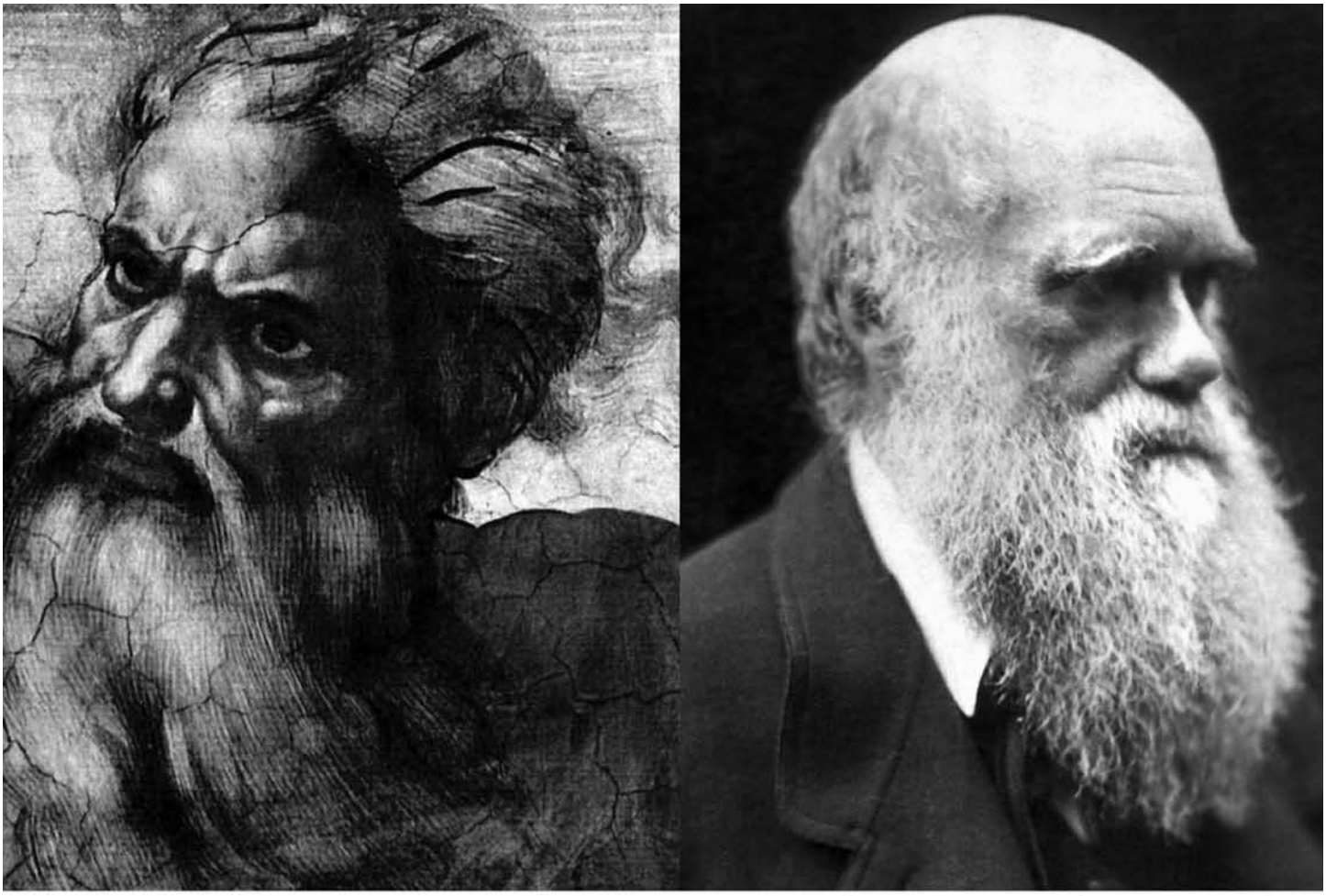

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Program For Atlanta

March 26-30, 2006

Assembly, Structure, and Dynamics of Tethered Polymer Systems. S. Michael Kilbey II, Dept. of Chemical Engineering, Clemson University Phone: (864) 656-5423, mkilbey@clemson.edu; Igor Luzinov, School of Materials, Clemson University. Phone: (864) 656-5958, luzinov@clemson.edu; Sergiy Minko, Department of Chemistry, Clarkson University. Phone: (315) 268-3807, sminko@clarkson.edu.

Complex Fluids in Confined Spaces. Case Western Reserve University, Department of Macromolecular Science and Engineering, (216) 368-5861, patrick.mather@case.edu; Andrey V. Dobrynin, University of Connecticut, Storrs, 860-486-9061, savd@ims.uconn.edu; Michael Graham, University of Wisconsin, 608/265-3780, graham@engr.wisc.edu.

Cooperative Research Award in Honor of Richard Spontak and Steven Smith. David Schiraldi, Case Western Reserve Univ., (216) 368-4243, das44@po.cwru.edu.

Electrostatic Polymer Processing. Gary Wnek, Case Western Reserve Univ., (216) 368-2728, gew5@case.edu; Suresh L. Shenoy, Department of Chemical Engineering, Case Western Reserve University (216) 368-0075, suresh.shenoy@case.edu

Highly Branched and 3-Dimensional Polymers at Interfaces. Craig J. Hawker, IBM Almaden Res. Ctr., (408) 927-2377, hawker@almaden.ibm.com; Sergey Sheiko, Dept. of Chem., Univ. of NC, (919) 962-2388, sergei@email.unc.edu; Vladimir V. Tsukruk, Mats. Sci. & Engg. Dept., IA State Univ., (515) 294-6904, vladimir@iastate.edu.

Micro- and Nano-Scale Patterning via Multi-Photon Activated Processes. Stephen M. Kuebler, Department of Chemistry and College of Optics & Photonics: CREOL & FPCE, University of Central Florida, (407) 823-3720, kuebler@mail.ucf.edu; Joseph W. Perry, School of Chemistry & Biochemistry, Georgia Institute of Technology, 404-385-6046, joe.perry@chemistry.gatech.edu; Kevin D. Belfield, Department of Chemistry, University of Central Florida, (407) 823-1028, kbelfiel@mail.ucf.edu

Polymer Bioconjugates for Therapeutics and Biotechnology. Heather D. Maynard, Dept. of Chem. & Biochem., Univ. of CA, (310) 267-5162, maynard@chem.ucla.edu; Roeland J.M. Nolte/Jeroen Cornelissen, Institute for Molecules and Materials, Radboud University, Nijmegen, The Netherlands, +31 24-3652143, r.nolte@science.ru.nl, j.cornelissen@science.ru.nl.

Polymers in Microelectronics and Optoelectronics. Clifford L. Henderson, George Inst. of Tech., (404) 385-0525, cliff.henderson@chbe.gatech.edu.

Polymers, Nanoparticles and Composite Materials in Nanoscience . Todd Emrick, Dept of Polymer Science & Engineering, University of Massachusetts Amherst, 413-577-1613, tsemrick@mail.pse.umass.edu; Robert B. Grubbs, Department of Chemistry, Dartmouth College, (603)-646-9096, robert.b.grubbs@dartmouth.edu; Jeffrey Pyun, Department of Chemistry, University of Arizona, 520-621-6354, jpyun@email.arizona.edu.

Polymer Transducers (*co-sponsored with POLY. POLY is primary*). T. Long, Dept. of Chem., Virginia Polytechnic Inst. and State Univ.; Donald J. Leo, Dept. of Mechanical Engineering, Virginia Tech, Center for Intelligent Materials; Robert B. Moore, Dept. of Polymer Sci., The University of Southern MS; Mathew S. Bratcher, Multifunctional Materials Branch, U.S. Army Research Laboratory, AMSRD-ARL-WM-MA, 4600 Deer Creek Loop, Aberdeen Proving Ground, MD 21005.

Polymers for Enabling Nanoscale Patterning. (*co-sponsored with POLY. POLY is primary*). Kenneth R. Carter, Dept. of Polymer Sci. & Engg., Univ. of MA, Amherst

General Papers/New Concepts in Polymeric Materials. Elliot Douglas, Univ. of FL, Dept. of Mats. Sci. & Engg., (352) 846-2836, edoug@mse.ufl.edu.

Joint PMSE/POLY Poster Session: General Papers/New Concepts in Polymeric Materials. Elliot Douglas, Univ. of FL, Dept. of Mats. Sci. & Engg., (352) 846-2836, edoug@mse.ufl.edu.

PMSE Awards Luncheon - Monday March 27, 11:30-1:00 in OMNI Hotel Grand Ballroom D
PMSE Awards Reception - Monday March 27, 6:00-8:00 pm in OMNI Hotel Ballroom E

Visit http://membership.acs.org/P/PMSE/meetings/ for:
SAN FRANCISCO September 10-15, 2006
CHICAGO March 25-30, 2007

Program Committee

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Seventh Class of PMSE Fellows

FIVE SELECTED AS PMSE FELLOWS IN 2006

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 2006, and the following people have been chosen:

Richard Stein Anne Hiltner Robert Weiss

Robert Miller Donald Plazek

They will be inducted as the sixth class of PMSE Fellows during the Awards Lunch at the Atlanta ACS National Meeting on Monday, March 27th, 2006. 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.

DR. RICHARD S. STEIN was born in Far Rockaway, NY in 1925. His undergraduate studies were at Brooklyn Polytechnic where he made some of the first studies of the dimensions of polymer molecules in solution using light scattering. Graduate studies at Princeton with Tobolsky involved using birefringence and x-ray diffraction for following the orientation and relaxation of polymers. This was followed by a postdoctoral year at Cambridge University in which studies were extended through use of infrared dichroism. Stein joined the University of Massachusetts in 1950 as an Assistant Professor and initiated its polymer program and started its Polymer Research Institute which evolved into the Polymer Science and Engineering Department. He now serves as Emeritus Goessmann Professor of Chemistry. He has continued to develop and use rheo-optical techniques for studying orientation and phase transition phenomena in amorphous, crystalline and liquid crystalline polymers. These have more recently been supplemented by neutron scattering and reflectivity techniques. Stein's efforts have been recognized by awards from the American Chemical Society, the American Physical Society, the Society of Rheology, the Society of Plastics Engineers and the Society of Polymer Science, Japan. He has been elected to membership in the National Academies of Sciences and of Engineering and awarded honorary degrees by the Universitat Ulm and the University of Massachusetts.

DR. ANNE HILTNER, the Herbert Henry Dow Professor of Macromolecular Science & Engineering at Case Western Reserve University, received a B.A. in Chemistry from Reed College, and a Ph.D. in Physical Chemistry from Oregon State University. In the years since receiving her doctorate, Anne has become a world-renowned expert in the field of polymer creep/deformation/crack propagation/failure, wherein she has contributed to the very real development of new materials used in a host of applications, including gas distribution pipes. Anne is also very well-known for her leadership roles in the characterization and structure-property relationships in olefin copolymers, which contributed to the commercialization of these materials by Dow Chemicals, where they are now a multi-billion dollar product line. It is this collaboration that led to Anne and Dow's Dr. Steven Chum being awarded PMSE's Cooperative Research Award in 2001. Collaborations with the Hoechst Group led to Anne's major contributions in the area of structure property relationships governing gas transport properties in polyesters and polyester blends, which has in turn launched new products in the food/beer packaging field. Also of note is Anne's long-standing work in hierarchy and structure in polymer blends, composites, and in biopolymer systems. Anne has directed the NSF Center for Applied Polymer Research, served on numerous advisory and review boards for corporations, NSF, DOD, and a wide range of scholarly journals. Anne recently

became Editor-in-Chief of the *Journal of Applied Polymer Science.* She is also a Fellow of the American Physical Society, and the author of approximately 300 scholarly papers.

DR. ROBERT WEISS, is a Board of Trustees Distinguished Professor of Chemical Engineering at the University of Connecticut. He received his B.S. from Northwestern and Ph.D. from the University of Massachusetts, Amherst. His work on the use of ionomers to compatibilize blends, and more generally on the effect of ionomeric groups on miscibility, is outstanding and has opened up much new ground in this field. This could also be said about other areas in which he has contributed, such as the effects of shear on miscibility. Dr. Weiss's research has not only been of high quality, but the number of his publications and patents also attest to the extensive range of his interests. He also has shown the ability to find the key, critical experiment, particularly in terms of finding an answer to a particular question. This latter feature is one of the main reasons that his efforts have been so highly valued in the industrial research community. His widespread service record includes leadership roles in the PMSE and the Society of Plastics Engineers where he has served as editor of *Polymer Engineering and Science* for many years. In 2003 Bob was selected as a University of Connecticut Board of Trustees Distinguished Professor, the highest honor that the University bestows on faculty who have demonstrated excellence in teaching, research and service.

DR. ROBERT D. MILLER received his PhD in Organic Chemistry working with Professor A.T. Blomquist on the Stereochemistry of Functionalized Medium-Sized Rings. After a year of postdoctoral work at Union Carbide Research Institute in Tarrytown New York working on low temperature matrix isolation and characterization of highly reactive intermediates generated by flash vacuum pyrolysis, he joined the IBM Research Division in Yorktown Heights, NY as a member of the first basic studies group in Chemistry in the Research Division. In 1971, he moved to the San Jose Research Laboratory where he staffed and managed a group tasked with basic studies in Organic Synthesis and Reaction Mechanisms. He currently manages the Advanced Organic Materials group at the Almaden Research Laboratory.

His research activities have included: basic photochemical processes and mechanisms, radiation sensitive polymers and microlithography, synthetic methods utilizing multifunctional synthons, synthetic applications of strained ring materials, spectroscopy and chemistry of reactive intermediates, new polymeric materials for nonlinear optics, polymeric light emitting diodes, novel polymeric architectures, silicon and germanium containing polymers, functionalized organic and inorganic nanoparticles, organic materials for magnetic storage, polymeric electronic materials for semiconductors, and nanoporous thin films for Bioscience, Optics and Photonics. He is a member of the American Chemical Society and the Materials Research Society and serves on the editorial advisory boards of *Chemical Reviews*, *Journal of Inorganic and Organometallic Polymers*, and *Advanced Functional Materials*. During his career, he has received four IBM awards for outstanding technical achievements, 21 invention plateau awards and is a member of the IBM Academy of Technology. Dr. Miller is a co-inventor on more than 50 patents and patent publications and has published more than 325 articles in refereed technical journals. During his career at IBM, he has directly supervised the research of more than 25 postdoctoral fellows and numerous undergraduate and graduate students. He is currently an original member and principal investigator in the Center for Polymeric Interfaces and Macromolecular Assemblies which is a NSF-funded MERSEC center composed of members from Stanford University, UC Davis, UC Berkeley and the IBM Almaden Research Center and has served on the executive board of this organization.

DR. DONALD J. PLAZEK, Professor of Materials Science and Engineering of the University of Pittsburgh, has research interests in the rheology and viscoelastic properties of polymers and other organic glass-formers in addition to the structure-property relations of polymers. He has made extensive measurements over wide ranges of time and temperature on numerous linear and cross-linked polymers.

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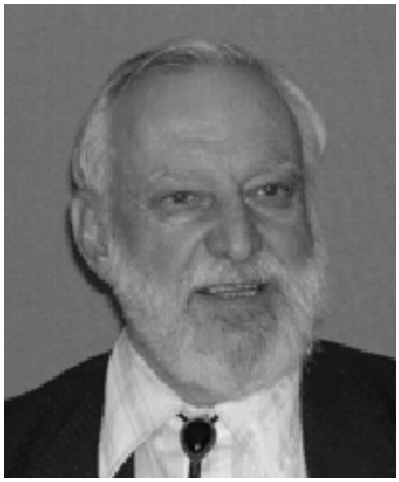
PMSE Fellows, Continued



Studies above the glass temperature as well as below where physical aging occurs have been made. Several instruments were developed to carry out the investigations including the first creep apparatus utilizing a “drag-cup motor” and a magnetic bearing.

After receiving a PhD in 1957 at the University of Wisconsin, studying under John D. Ferry including a year of Post-Doctoral study, Dr.Plazek spent nine years as a Fellow in Independent Research at the Mellon Institute in Pittsburgh. In 1967 he moved to the Metallurgical and Materials Engineering Department of the University of Pittsburgh. He became a Professor in 1975 and Emeritus Professor in 1993. He has served as an Adjunct Professor in the Chemistry Department of Carnegie-Mellon University since 1987. From 1993 to 1998 he served as an Associate Editor of Rubber Chemistry and Technology. He also served as a member of the Advisory Board of the Journal of Polymer Science (Physics) from 1991 to 1999.

In 1993 he received the George Stafford Whitby Award from the Rubber Division of the American Chemical Society. He was awarded the Bingham Medal in 1995 by the Society of Rheology. He is a member of the American Chemical Society, the American Physics Society (Fellow) and the Society of Rheology. During 1976-1977 he was a Senior Visiting Research Fellow at The University in Glasgow and during 1987-1988 he was a Japan for the Promotion of Science Fellow at Kyoto University in Uji,Japan. Dr. Plazek has over 150 publications.

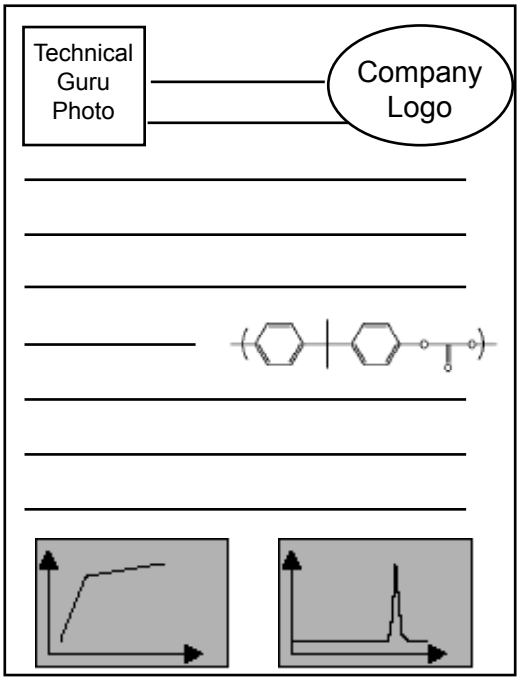
PMSE News *invites you to highlight your cool technologies*

As a new offering, the Fall 2006 PMSE Newsletter will accept advertisements with a technical report format. These ads should be one page in length and read like a technical paper.

This new format will provide advertisers with an opportunity to highlight more technical aspects of their products, whether they are materials, services or laboratory equipment.

This is a great opportunity to complement a more traditional ad in the Newsletter or to simply elaborate on a particular technical aspect of your product portfolio.

For questions: malenfan@research.ge.com



Message From the chair, continued from p. 1

We will also have two award symposia: one in honor of Professor Christopher Ober, who is the recipient of the ACS Award in Applied Polymer Science, and the Cooperative Research Award in honor of Richard Spontak and Steven Smith. We will be honoring our newest PMSE Fellows: Ann Hiltner, Robert Miller, Donald Plazek, Richard Stein and Robert Weiss and our Distinguished Service Award Winner, Dr. Richard Turner. Please join me in congratulating these recipients.

Additionally, we have our traditional awards reception and awards luncheon to honor PMSE awardees and PMSE fellows, and you are invited and encouraged to attend these events. The awards reception can be attended at no charge, and it is held on Monday evening of the spring meeting. Tickets to attend the Monday awards luncheon can be purchased in advance or during registration at the meeting or at the PMSE table at the meeting. We invite you to attend both of these of these events and to help us celebrate the accomplishments of our award winners. These symposia are organized by volunteers who provide a considerable amount of time and effort to maintain our programming at the leading edge of the field, and I want to offer thanks on behalf of the entire Division to them for this. The social and technical program organized by PMSE would not occur without the concerted effort of the Vice-Chair, who makes all on-site arrangements for the technical program and social events. In this regard, I would like to thank Dr. Elliot Douglas on behalf of the Division for his work in organizing these events at the upcoming Atlanta meeting. Additionally, our administrative efforts continue to be handled very efficiently by Ms. Eileen Ernst, and I would like to thank Eileen for her contributions.

PMSE is continuing to grow. As we offer increased services to our current members, we are also initiating activities that, not only offer more to our present members, but hopefully will attract new members. We are expanding sponsorship of technical symposia to include the various regional and local section meetings that would have polymer-based topics. This year, we will sponsor symposia at the Central and Middle Atlantic Regional Meetings as well as the North Jersey Local Section. Please watch for announcements of these events.

We continue to organize joint social activities with the Polymer Division (POLY). In this regard, we will host a joint hospitality suite with the Polymer Division on Tuesday evening at the Atlanta meeting. Information about the hospitality suite, which is open to all members and potential members and where students are particularly encouraged to come and meet officers, award winners and other members of the polymer community, will be available at the PMSE and POLY membership desks at the National Meeting.

We have hosted at several recent meetings a joint discussion/networking area with the Polymer division. This area has typically been a room near the technical sessions where folks who are attending or participating in POLY and PMSE programming can go to sit down and chat, have a cup of coffee and, in general, relax, network, and pursue business outside the confines of the session rooms. We plan to have this joint POLY/PMSE meeting room available to you again at the upcoming national meeting, and we encourage you to take advantage of it. Information about its location and hours of operation will be available at the PMSE or POLY desks at the national meeting.

Finally, the PMSE Division can only continue to thrive as a result of the efforts of the volunteers who staff the PMSE desk at the national meeting, organize and execute the technical programming, manage the awards process, keep track of Division activities and educational efforts and so many other activities that are required to allow the Division to function effectively. We need volunteers to continue these activities, so I strongly encourage you to contact any member of the membership team or to drop by the PMSE desk during the national meeting and let us know of your interest in becoming involved with PMSE to help carry the Division forward into the future. Contact information for all of the PMSE officers is available on the PMSE web site:

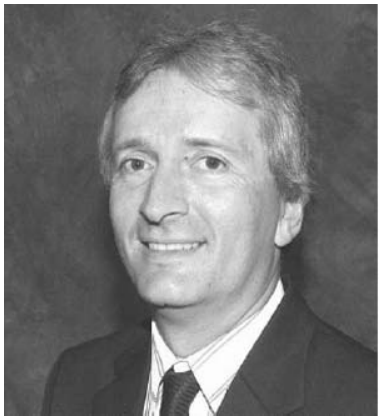
http://membership.acs.org/P/PMSE/.

I look forward to seeing you and visiting with you in Atlanta.

Ronald N. DeMartino

PMSE Chair

2006 Cooperative Research Award



Steven D. Smith

Richard J. Spontak

The 2006 winners of the Cooperative Research Award in Polymer Science and Engineering presented by the American Chemical Society's (ACS) Division of Polymeric Materials: Science and Engineering (PMSE) are Dr. Steven D. Smith, Principal Scientist, Procter and Gamble Company (and Adjunct Professor at both North Carolina State University and the University of Cincinnati), and Dr. Richard J. Spontak, Alumni Distinguished Professor in the departments of Chemical and Biochemical Engineering and Materials Science and Engineering at North Carolina State University.

Prof. 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. The team of Smith and Spontak have collaborated for the past 15 years in the area of block copolymer materials, leading to over 40 scholarly publications in journals including *Science*, *Advanced Materials*, and *Macromolecules*.

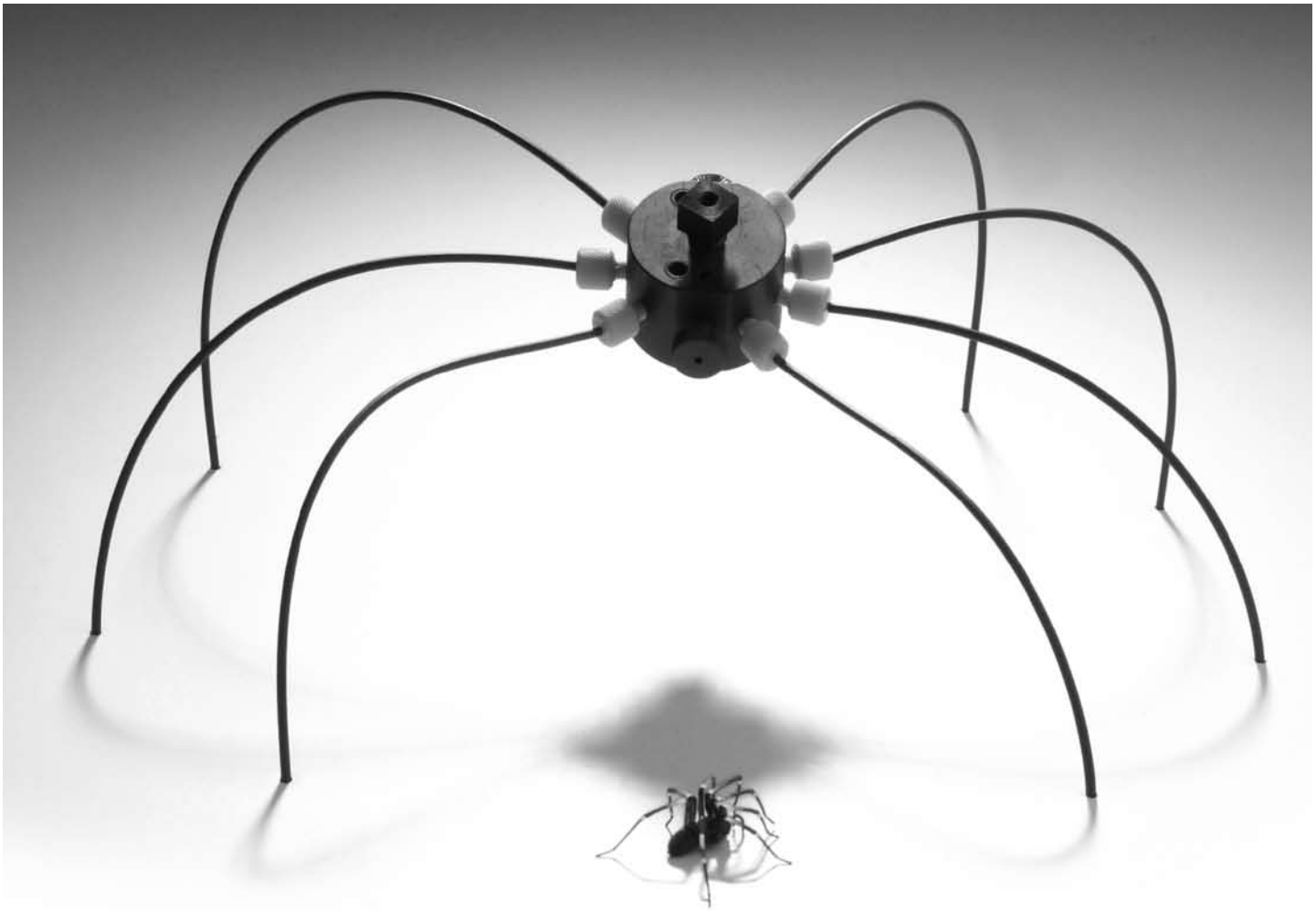
The idea of incorporating random blocks into copolymers yielded triblock copolymers of the form A(A/B)B, which were found to possess unusual rheological properties, and generated bicontinuous sponge-like morphologies. The complex morphologies of these new materials led Smith and Spontak to develop the cutting edge analytical technique known as transmission electron microtomography (TEMT), which yielded unprecedented information, such as curvature/coordination distributions of the materials, information that is not otherwise obtainable.

This collaborative effort has consistently maintained a balance between fundamental and applied research, and has addressed issues such as molecular self-organization under non-equilibrium processing conditions, for example.

The synergy between academic and industrial participants in this team has provided many fresh insights into complex problems associated with new materials development, while maintaining the highest of scholarly standards. The scientific breakthroughs of the Smith and Spontak team have led to technological advances which in turn have generated new products in the areas of thermoplastic elastomers, hot-melt adhesives, physical gels, and nanostructured polymeric membranes. Many of these new products have been utilized and/or commercialized by Procter & Gamble.

The award, which includes a $3,000.00 prize, will be presented at PMSE's awards luncheon and will be recognized by the Symposium "Ordered Block Copolymers: Cooperative Research Award honoring Steven D. Smith and Richard J. Spontak" at the 231st American Chemical Society meeting in Atlanta, Georgia. The award symposium is Monday, March 27, 2006 from 8:30 - 5:30 in Intl. Ballroom C at the OMNI at CNN Center.

For more information, contact David Schiraldi, Case Western Reserve University, Chairman, PMSE Cooperative Research Award Committee, Telephone: 216-368-4243, das44@cwru.edu.



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2005 ICI STUDENT AWARD IN APPLIED POLYMER SCIENCE

Left to right: Bin Wei, Youngseon Choi, Kevin Calzia, Vahik Krikorian, Junsang Doh, and Jing-She Song

The Division is pleased to announce that Youngseon Choi is the winner of the 2005 ICI Student Award in Applied Polymer Science. This Award, sponsored by ICI and administered through the Joint Polymer Education Committee of the ACS Divisions of Polymeric Materials: Science and Engineering (PMSE) and Polymer Chemistry (POLY), is given annually for the best paper presented at the ICI Award Symposium as part of the PMSE program at the Fall ACS Meeting.

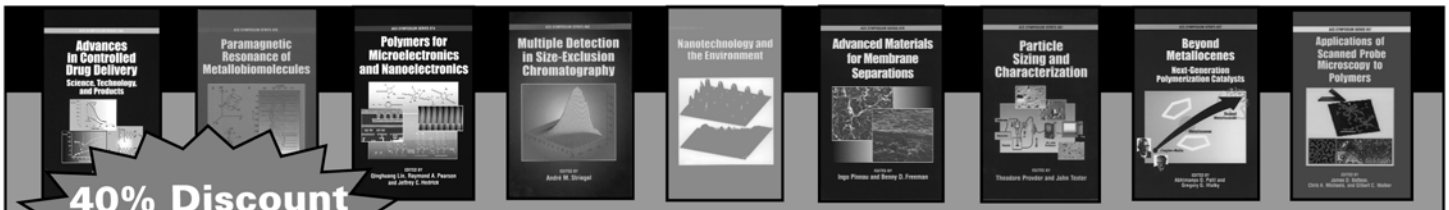
Dr. Choi completed his Ph.D. at the University of Michigan where his advisor was Professor James R. Baker Jr. The title of his paper, which was presented at the recent Fall ACS Meeting in Washington, D.C., was "DNA-Assembled Polyamidoamine Dendrimer Clusters as a Novel Mix-and-Match Drug Delivery System: Design, Synthesis and Biological Evaluation".

The other finalists who presented papers at the Award Symposium were: Kevin Calzia (University of Massachusetts Amherst); Junsang Doh (Massachusetts Institute of Technology); Vahik Krikorian (University of Delaware); Jing-She Song (University of Toronto); and Bin Wei (North Carolina State University).

The Award, consisting of $1600 and a plaque, will be presented to Dr. Choi at the PMSE Division Awards luncheon, Monday, March 27, at the Spring 2006 ACS Meeting in Atlanta, Georgia.

2005 ROY W. TESS AWARD IN COATINGS

Professor **J. Edward Glass** of the Polymers and Coatings Department at North Dakota State University receives the **Roy W. Tess Award in Coatings** for 2005 from PMSE Division chair Dr. Benny Freeman at the award symposium in washington.



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