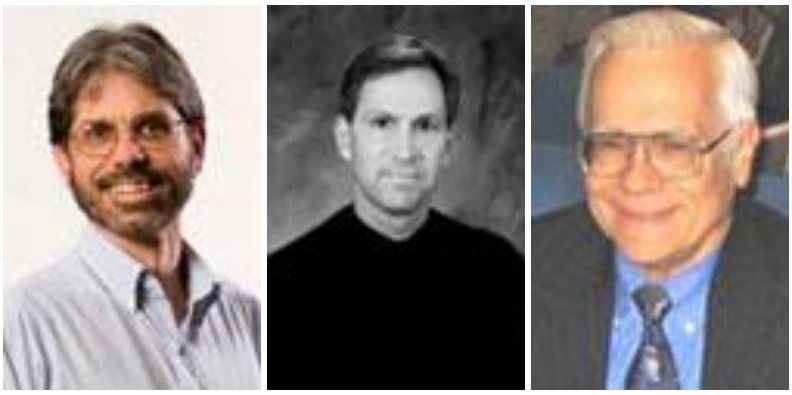
DIVISION OF POLYMERIC MATERIALS: SCIENCE & ENGINEERING

Cooperative Research Award in Polymer Science and Engineering

Sponsored by the Eastman Kodak Company



2008 Award Winners

Frank S. Bates

University of Minnesota

Glenn H. Fredrickson

Edward J. Kramer

University of California, Santa Barbara

Dennis A. Hucul

Stephen F. Hahn

Dow Chemical Company

The 2008 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 Professor Frank S. Bates, University of Minnesota [row 1, right]; Professors Glenn H. Fredrickson and Edward J. Kramer, University of California, Santa Barbara [row 1, center and left]; Dr. Dennis A. Hucul, and Mr. Stephen F. Hahn, Dow Chemical Company. Professors David Schiraldi and Kurt Wiegel [row 2, right and left], Co-Chairs 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 three-location team won the 2008 award for their highly productive and sustained collaborative efforts in the area of poly(cyclohexylene) (PCHE) block copolymers, thermoplastic materials that exhibit excellent optical transparency, high modulus and toughness, high glass transition temperatures, low moisture uptake and low birefringence, representing potentially breakthrough products for optical media, and components in advanced lighting, displays, and materials for precision molding applications. Research in this family of polymers began over fifteen years ago independently at Dow and the University of Minnesota. Dow developed catalytic technology necessary for the hydrogenation of polystyrene homopolymer, producing high quality material which Hahn and Hucul began to develop for optical media applications.

The University of Minnesota catalyst proved not to be commercially viable, but provided Bates with a variety of polymers, especially PCHE-polyethylene (PE) copolymers, which serves as the basis of future materials of interest. These two organizations joined forces in 1995. Bates joined the effort, as part of Dow's Technical Advisory board,

working with Hahn to change the focus of the corporate research to PCHE block copolymer systems, then as a research collaborator in the team. Innovations in copolymer architecture followed, resulting in a PCHE-PE-CHE-PE-PCHE pentablock design. The hypothesis that the central PCHE block serves to bridge PE domains, increasing the effective entanglement and toughness of the materials was validated at Minnesota and Santa Barbara, with Kramer playing a major role in developing understanding the mechanisms of ductility in the new products.

In the current decade, the collaboration continues, and is playing an integral role with the much-expanded DOW R&T team, which is now moving this product line into the marketplace.

Professor Frank Bates, Distinguished McKnight Professor and Head of Chemical Engineering and Material Science at the University of Minnesota, is internationally known for his work in thermodynamics, dynamics, physics and chemistry of Polymers. Professor Glenn H. Fredrickson, Department of Chemical Engineering, University of California, Santa Barbara, is internationally known for his work in relaxation phenomena, microphase separation, statistical mechanics and thermodynamics, phase transitions, and structure-property relationships in polymers. Professor Edward Kramer, Department of Materials and Chemical Engineering, is internationally known for polymer thin films, interfaces, ordering and other properties of block copolymers, and incorporation of nanoparticles into polymeric systems.

Industrial Collaborator, Stephen Hahn, Senior Research Scientist, Dow Performance Business Development Group holds over 30 issued U.S. patents and 30 refereed journal papers, has contributed numerous conference proceedings and textbook/reference book chapters, and was named Dow Chemical Inventor of the Year in 1990 and 1996, among many honors. Dennis Hucul spent almost 25 years with the Dow Chemical Company before becoming a consultant to the industry, and holds 21 U.S. patents and 20 journal publications, and was the 2004 Giuseppe Parravano award for Excellence in Catalysis Research and Development.

The award, which includes a $3,000.00 prize, will be presented at PMSE's awards luncheon and will be recognized by the Symposium "Cooperative Research Award Symposium in Honor of Stephen F. Hahn, Dennis A. Hucul, Frank S. Bates, Glenn H. Fredrickson and Edward K. Kramer" at the 235th American Chemical Society meeting in New Orleans, Louisiana (April 2008).