



DIVISION OF POLYMERIC MATERIALS: SCIENCE & ENGINEERING

Cooperative Research Award in Polymer Science and Engineering

Sponsored by the Eastman Kodak Company

2003 Award Winners

Craig Hawker

IBM Almaden Research Center

Thomas Russell

University of Massachusetts, Amherst



The 2003 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. Craig Hawker of the IBM Almaden Research Center in San Jose, CA, and Professor Thomas Russell of the Department of Polymer Science and Engineering, University of Massachusetts, Amherst, MA. Dr. Brian Benecewicz, Chair of the PMSE Cooperative Research Award Committee, announced the award, endowed by a gift to PMSE from the Eastman Kodak Company, which has been presented annually since 1992.

Dr. Hawker and Dr. Russell won the 2003 award for their highly productive and sustained collaborative endeavors in the area of functional polymers and nanostructured materials. Their joint work spans a broad area of polymer science including innovative synthetic chemistry broadly applicable to polymeric nanomaterials, the development of multiple instrumental techniques and novel protocols for the study of block copolymer films and their properties, the development of strategies for the assessment and control of surface interactions in ultra-thin polymer films and their use in unique nanostructured materials.

A hallmark of the collaborative work of Russell and Hawker has been the influence that each has had on the other's research programs. This synergistic relationship combining outstanding creativity in the area of molecular design and novel synthetic approaches with unusual insight into physical and functional properties has led to important fundamental as well as practical advances in polymeric materials and nanotechnology. For example, their seminal demonstration of the use of living free radical procedures to prepare well-defined random copolymers with unique properties was exploited in an elegant demonstration of the preparation of neutral surfaces by controlling polymer surface interactions with random copolymer brushes. They were among the first to recognize the potential impact that such strategies could have on the preparation of robust nanostructures by a process involving the thermodynamically driven, self-assembly of block copolymers in ultra-thin films and have developed innovative techniques for the manipulation and practical exploitation of these initial thermodynamically produced nanostructures. Similarly, their important work on polymer brushes and surface initiated polymerizations has now been widely duplicated and is key to important technological advances.



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Since its inception in 1995, the collaborative research of Russell and Hawker has resulted in 24 publications in high profile journals such as Science, Nature, Advanced Materials, Physical Review Letters, and Macromolecules. Dr. Hawker, an Editor of the Journal of Polymer Science and a recognized leader of the field of synthetic polymer chemistry has made many seminal contributions in the design of macromolecules with controlled architecture, and the development of innovative and practical methods for their synthesis documented in more than 220 publications and 23 patents. His highly creative work with dendrimers and living free-radical polymerization has received particular attention and earned him the Carl S. Marvel Creative Polymer Chemistry Award in 2001. In addition to his seminal contributions to fundamental science, Dr. Hawker has advanced the field of nanotechnology with numerous inventions of particular relevance and great practical value to the microelectronics industry. Dr. Russell, an Associate Editor of Macromolecules, is at the top of the field of polymer physics where he has made numerous highly significant and pioneering contributions, particularly in the area of thin film and interfacial behavior of block copolymers. Dr. Russell has pioneered the use of various scattering, ion beam and reflectivity techniques to quantitatively investigate polymer structure and dynamics at interfaces, the role of interfacial interactions, the influence of confinement, and routes to manipulate the thin film morphology of polymers. His research reported in over 350 publications and 7 patents has inspired and stimulated much theoretical research on polymers. Both Dr. Russell and Dr. Hawker are previous and separate recipients of PMSE's A.K. Doolittle Award.

The awards, which each include a \$1,500.00 prize, will be presented at PMSE's awards luncheon and will be recognized by the Symposium "Cooperative Research Award honoring Craig Hawker and Tom Russell" at the 225th American Chemical Society meeting in New Orleans, LA, (March 2003).