



DIVISION OF POLYMERIC MATERIALS: SCIENCE & ENGINEERING

Cooperative Research Award in Polymer Science and Engineering

Sponsored by the Eastman Kodak Company

2004 Award Winners

Krzysztof Matyjaszewski
Carnegie Mellon University



The 2004 winner 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) is Professor Krzysztof (Kris) Matyjaszewski, JC Warner Professor of Natural Sciences and Director, Center for Macromolecular Engineering at Carnegie Mellon University. Dr. Brian Benicewicz, 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.

Professor Matyjaszewski won the 2004 award for his highly productive and sustained collaborative endeavors with a number of leading researchers working at a spectrum of industrial organizations in the area of controlled/living radical polymerization (CRP). Kris formed two research Consortia namely, the Atom Transfer Radical Polymerization (ATRP) Consortium (1996-2000) and the CRP Consortium which started 2001, to cooperate with a range of industries that would benefit from improved control of processes used for preparation of materials based on radically (co)polymerizable monomers. Both consortia were set up to address the industrial sponsors' primary concerns with this new technology and expedite the transfer of knowledge on the fundamentals of CRP to industry. The primary industrial concerns were elucidation of all aspects of the mechanism and process, preparation of higher activity catalysts, catalyst removal, catalyst recycle, an extension of the range of monomers that could be copolymerized by a controlled radical polymerization process and correlation of the molecular structure of the new materials prepared by CRP with their properties.

A close relationship has been sustained for over eight years with several corporations because Kris has addressed the issues that the corporations felt were important, thus allowing them to quickly and efficiently gain an understanding of the mechanism, catalyst and process variables and concentrate internal research on development of viable products for commercialization in their specific markets. The fact that a large number of focused patent applications have issued to consortia[um] members is a direct result of this approach to cooperative research. Thirteen consortia members have over 100 patents and published patent applications, based on the fundamental work conducted in Kris' group. Several of his former students and post-docs have been active in applying the

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knowledge gained in Kris' lab to their industrial research programs targeting new materials desired by their companies while maintaining cutting edge skills through continuing interaction via the Consortia; eleven former group members have filed applications for their present employers in the field of CRP. Members of the ATRP and CRP Research Consortium have included 3M, Akzo, Asahi, AtoFina, Bayer, BF Goodrich, Boston Scientific, BYK, Cabot, Ciba, Degussa, Elf, GIRSA, Geon, JSR, Kaneka, LG Chemical, Mitsubishi Chemical, Mitsui, Motorola, Nalco, Nippon Synthetic Chemical, Nitto Denko, PPG, Rohm & Haas, RohMax, Sasol, Solvay, Teijin and Zeon.

Kris has participated in various professional activities directed towards the transfer of knowledge from academia to industry. He is the co-editor of "Progress in Polymer Science" and serves on the editorial boards of ten other polymer journals. He is currently an adjunct professor at Polish Academy of Sciences and University of Pittsburgh. His contribution to education includes supervising over 100 graduate students and postdoctoral fellows. He has organized five ACS Symposia, and two workshops for industry on the topics of controlled polymerizations. Several of his papers and patents are amongst the most cited publications in the field of radical polymerization, (one of the first papers on ATRP, published in JACS in 1995, has been cited over 800 times and the fundamental patent on ATRP, which issued in June 1998 as 5,763,548, had been cited over 70 times. Kris has received several awards including American Chemical Society (ACS) Creative Polymer Chemistry Award (1995), Humboldt Award for US Senior Scientists (1999), ACS Pittsburgh Award (2001) and ACS Polymer Chemistry Award (2002).

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 honoring Krzysztof Matyjaszewski" at the 227th American Chemical Society meeting in Anaheim, California (March 2004).