

**North Carolina Section of the American Chemical Society  
ACS Polymer Discussion Group**



**Thursday November 18, 2004**

University Club: North Carolina State University

\*Social Hour: 5:30 PM

\*\*Dinner: 6:00 PM

Program: 7:00 PM

**NANOSTRUCTURED POLYMERIC MATERIALS VIA CONTROLLED/LIVING  
RADICAL POLYMERIZATION**

Krzysztof Matyjaszewski  
Carnegie Mellon University,  
Center for Macromolecular Engineering  
Pittsburgh, PA, 15213, USA  
[matyjaszewski@cmu.edu](mailto:matyjaszewski@cmu.edu)

**Abstract:**

Copper-based ATRP (atom transfer radical polymerization) catalytic systems with polydentate nitrogen ligands such as bpy and aliphatic polyamines is among most efficient controlled/living radical polymerization systems.<sup>1,2</sup> ATRP of acrylates, methacrylates, styrenes, acrylamides, acrylonitrile and many other vinyl monomers provides polymers with molecular weights in a large range  $200 < M_n < 20,000,000$  and with low polydispersities. Polymers can be formed quantitatively in bulk, in solution and in emulsions. Block, graft, star, hyperbranched, gradient and periodic copolymers as well as molecular brushes have been prepared.<sup>2</sup> The (co)polymers made by ATRP have many potential applications as components of coatings, elastomers, adhesives, surfactants, dispersants, lubricants, additives, but also as specialty materials in biomedical and electronic areas and will affect the market of ~\$20 billion/year. Examples of design, synthesis, characterization and applications of nanostructured multicomponent polymeric materials prepared via ATRP will be presented.

(1) Matyjaszewski, K., Davis, T. P., Eds. *Handbook of Radical Polymerization*; Wiley, Hoboken 2002; (2) Wang, J. S., Matyjaszewski, K. *J. Am. Chem. Soc.* **1995**, *117*, 5614; Matyjaszewski, K., Xia, J. *Chem. Rev.* **2001**, *101*, 2921; Matyjaszewski, K. et al. US 5,763,548; US 5,789,487; US 5,807,937; US 5,945,491.

\* Social hour will consist of a cash bar.

\*\* Contact Russell Gorga at (919) 515-6553 or [regorga@ncsu.edu](mailto:regorga@ncsu.edu) (email preferred) for dinner reservations by noon on Tuesday November 16, 2004, to guarantee a reservation for dinner. If you are unable to make a reservation by that time, check with Russell regarding the availability of places. Dinner is \$15 for Members and \$8 for students. Reservations are *not* required to attend the seminar without dinner.