



PL-2

**FUNCTIONAL POLYMERS: THE IMPORTANCE OF FUNCTIONALITY, TOPOLOGY, AND TOPOGRAPHY,**

JM. J. Fréchet

*King Abdullah University of Science and Technology, Thuwal, Saudi Arabia and College of Chemistry, University of California, Berkeley, CA, 94720-1460*

This lecture will utilize several case studies to illustrate the importance of polymer topography, functionality and topology on the functional properties of specialty polymers and polymeric surfaces.

The first illustrating example will focus on the design of superhydrophobic surfaces where both topography and functionality play major roles. Therefore, the preparation of surfaces with both microscale and nanoscale topological features will be described as will the chemical modification of these surfaces to prepare microfluidic “channels” with virtual channel walls consisting of zones of contrasting hydrophobicities

The second example will explore the use of localized functionality or the control of blend morphology for the direct conversion of solar light into work or other form of energy.

Finally, the third illustration will examine the concept of site isolation within organic nanoparticles originally developed for catalysis but explored here for the emission of white light from a single layer of polymer.