

MAR10-2009-000150

Abstract for an Invited Paper  
for the MAR10 Meeting of  
the American Physical Society

### **Design and applications of functionalized polymer brushes**

SERGIY MINKO, Clarkson University

Response to stimuli is one of the major life processes, by which living systems interact with the external environment. Advances in nanotechnology have focused on designing “responsive to stimuli” or “smart” materials that mimic many processes found in living systems. The talk addresses our recent results on the synthesis, study, interesting applications and prospects of functionalized polymer brushes for the fabrication of smart responsive surfaces, sensors with various transduction mechanisms, micro/nanoactuators, and electrochemical gating devices. We also use surface modification of nanoparticles with polymer brushes for a new intriguing opportunity to turn on and off and tune interactions between nanoparticles, allowing control of the directed self-assembly with external stimuli/signals. The stimuli responsive polymeric and hybrid systems demonstrate strong advantages for the fabrication of robust multifunctional and multiresponsive materials and nanodevices.