Dillion Medal Prize Lecture
VENKAT GANESAN, The University of Texas at Austin

Many aspects of polymer research have undergone a paradigm shift in the past decade, with an increased emphasis on technological applications which propose the use of materials and devices created by controlling matter from the atomic scales to the bulk commodity level. This talk will focus on multicomponent polymeric materials (block copolymers, rod-coil polymers and mixtures like polymer blends and polymer nanocomposites), which have played a central role in enabling this paradigm shift in the context of polymeric materials. In this talk, I will discuss our recent researches on developing simulation tools that can predict the structure, morphology and flow behavior of such multicomponent polymers. In contrast to conventional (“particle-based”) Monte Carlo and Molecular dynamics approaches, our methods work at a coarse-grained description of the system to predict the thermodynamics and dynamics of such multicomponent polymers. This talk will focus on an outline of the simulation strategies and present some results concerning both the equilibrium and dynamical properties of such materials.