

MAR14-2013-020132

Abstract for an Invited Paper
for the MAR14 Meeting of
the American Physical Society

Nanoscale Organic Hybrid Materials (NOHMs) – Structure and Dynamics¹

LYNDEN ARCHER, Cornell University

Polymer-particle composites are used today in virtually every field of technology. When the particles approach nanometer dimensions, large interfacial regions are created in their polymer hosts, which present opportunities and challenges for research, as well as for applications. This talk will focus on a novel class of polymer-particle composite fluids created by densely grafting short organic polymer chains or ionic liquid molecules to inorganic nanostructures. By manipulating the nanoparticle size, polymer molecular weight and surface chemistry, we show that it is possible to create self-suspended suspensions of nanoparticles in which each particle in suspension carries around a discrete share of the suspending medium. The talk will explore consequences of the self-suspended state on fluid structure, rheology, and tethered polymer & particle dynamics in these so-called *nanoscale organic hybrid materials* (NOHMs). The talk will also discuss particle and tethered polymer dynamics in single-component NOHMs and phase stability, structure, and rheology of NOHMs/polymer blends.

¹This presentation is based on work supported in part by the National Science Foundation, Award No. DMR-1006323