Post-doctoral Opening – Polymer Chemistry at Yale Chemical Engineering

The Polymer Physics and Complex Fluids lab in Chemical Engineering at Yale University has an opening for a synthetic polymer chemist post-doctoral research associate. The group is focused on experimental approaches to topics in Soft Condensed Matter. We study self-assembly and basic structure-property relationships in colloids, liquid crystals, polymers and biological materials. Research is broadly centered on understanding and controlling supramolecular ordering and dynamics in soft materials and on the development of microfluidic colloid and polymer science as a platform for model studies of locomotion and transport in artificial biological systems. We employ custom synthesis of homopolymers, block copolymers, liquid crystals and nanoparticles using well established methods where appropriate. Experimental methods include optical microscopy, electron microscopy, IR spectroscopy, isothermal and scanning calorimetry (ITC, DSC) rheology and x-ray scattering.

Research projects are currently in 2 broad areas:

1. Guided self-assembly and structure-property relationships in block copolymer systems: We are studying the basic physics of directed selfassembly employing external stimuli such as electric fields and flow fields on bulk and thin film block copolymers to realize new applications. Topics of interest include kinetics of ordering and the inclusion of 2nd phase materials to improve coupling between polymer microstructure and the external field.

2.**Complex fluid structure and dynamics**: Research here is concerned with investigations of rheology and structure of associating colloidal and polymer gels and melts. Topics include time-dependent stresses and aging in colloidal gels, particle-tracking micro-rheology of complex fluids, polymer-surfactant and colloid-surfactant interactions, and the control of fluid rheology through manipulation of those interactions.

Particularly attractive candidates are experimentalists with a background in polymer chemistry who are comfortable with small scale synthesis of new materials for fundamental studies as well as development of technological applications.

Interested candidates should contact Chinedum Osuji – <u>chinedum.osuji@yale.edu</u> or visit <u>http://www.eng.yale.edu/polymers</u>