Northeastern University
College *of* Engineering

Please join us for a

Chemical Engineering Special Seminar

Wednesday, February 22, 2012
108 West Village H
11:45 a.m. – 1:25 p.m.

"Production of bi-component fibers with advanced mechanical properties"

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ABSTRACT

The seminar illustrates how experiment and simulation are used to develop a process to produce bi-component plastic fibers with a shear-thickening core and a shear-thinning sheath. It is shown that by inducing interfacial instabilities between co-flowing liquids, a large interfacial area between the core and the sheath material can be obtained. Furthermore, rheological characteristics of complex fluids (e.g. polymer melts, liquid crystalline polymers, and polymer blends) will be discussed in connection with their internal microstructure. Based on a classification of the fluid microstructure, various types of flow theories for complex fluids will be presented. The physical content of these flow theories and their suitability for modeling the flow in the fiber spinning process will be analyzed. Finally, the potential benefit of using these flow theories in computational fluid dynamics simulations will be discussed.

Refreshments will be served.