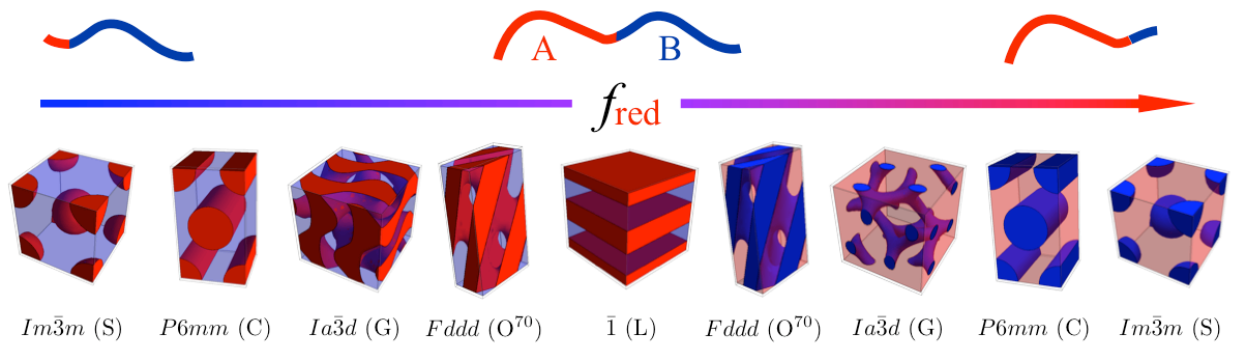


Physics Department Seminar

Friday March 6th, 2009

11:00am in PhSc 108



“Molecular Architecture and Self-Assembly in Polymeric Materials”

Dr. Richard Elliott

Materials Research Laboratory
UC Santa Barbara

Abstract:

Diblock copolymers, long chain molecules with two chemically distinct portions, arrange into structures and networks in a process called self-assembly. These melts assemble into cubic, cylindrical, and lamellar phases, as well as a few other exotic morphologies. Copolymers span the interfaces, placing a block on either side, and the phases gain and lose stability depending on the block size and their associated entropy. A theory constructed to describe this assembly effectively must include a reasonable model for molecular architecture since it plays an essential role in the stability of the morphologies. I'll give a short overview of self-assembly in copolymers and go over a few potential engineering ramifications, but also give a quick glance into the theory of polymeric melts, how molecular architecture is included, and a few of its primary successes.