



## ~~Special Polymer Physics Seminar ~~

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**10:00 AM Tuesday**  
**February 22<sup>nd</sup>, 2011**  
**301 Steidle Bldg.**

### **Field-directed assembly of structured nanomaterials**

The use of external electric fields enables precise control over the energetics of assembly through a tunable order-disorder transition. In this talk, I will present recent studies that harness field-directed assembly to fabricate nanostructured materials with unique optical, mechanical and thermal transport properties. Second, I will discuss recent work investigating the polarization mechanism underlying the order-disorder transition of colloidal suspensions in AC electric fields. Understanding the polarization mechanism provides scalability of field-directed assembly across a vast parameter space of physico-chemical conditions, including particle size, shape, composition (dielectric properties), surface chemistry and solution conditions.