



## CNMS DISCOVERY SEMINAR SERIES

Joint Meeting with the

**CHEMICAL SCIENCES DIVISION**

Friday, June 1, 2007

11:00 am

Iran Thomas Auditorium, 8600



**“Self-Assembly of Block Copolypeptides,  
The Role of Chain Conformation”**

**Timothy J. Deming**

University of California, Los Angeles

### Abstract:

The use of low-valent metal complexes for the polymerization of alpha-amino acid-N-carboxyanhydrides (NCAs) will be presented. Using these initiators, we have prepared block copolypeptides containing a variety of both hydrophilic and hydrophobic domains. The hydrophilic chains are composed of either cationic, anionic, or custom non-ionic residues and the hydrophobic chains are composed of natural non-polar amino acid residues such as leucine, valine and phenylalanine. We have focused our efforts on the self-assembly of block copolypeptides in solution, primarily employing water as the solvent. By working with polypeptides, we expected that the secondary structures present in the block domains would substantially alter the structures of the polymers. The controlled aggregation of block copolypeptides into discrete ordered structures would yield materials valuable for biomedical and materials applications. Examples would be drug and gene delivery, where the shape of the complexes would favor selective interactions with different biological surfaces. Two distinct classes of amphiphilic block copolypeptides, vesicle and hydrogel formers, will be discussed.

Contact: Jamie Messman ([messmanjm@ornl.gov](mailto:messmanjm@ornl.gov)), 865.576.2394

