

**MATERIALS**  
**ENGINEERING**  
**SEMINAR**

**Date: Friday,**  
**September 30, 2011**  
**Time: 3:30 refreshments**  
**3:45 - Seminar**  
**Place: ARMS 1010**

**Purdue Materials:**  
**Infinite**  
**Possibilities**



# Phase Behavior of Disordered Drug Systems

by

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## ABSTRACT

In an era of drug discovery where the number of poorly water soluble compounds is increasing dramatically, pharmaceutical scientists are being challenged to develop solubility enhancing formulations. Amorphous solid dispersions, which are intimately mixed blends of a drug with a polymer, are an attractive option since substantial transient increases in solution concentration can be often achieved making them useful for toxicological studies, early phase clinical trials, and in some cases, commercial product. However, their utility is tempered by concerns about conversion of the metastable amorphous drug to the less soluble crystalline form during production, storage and delivery. Of critical importance is the addition of polymers to enhance stability to crystallization. In this presentation, the ability of various polymers to mix with, and inhibit crystallization of drugs will be discussed. The role of the polymer in facilitating the enhanced dissolution of amorphous solid dispersions will also be considered. Finally, the inherent properties of the drug will be evaluated in terms of the potential success of a solid dispersion formulation approach.

## Short Bio:

Lynne S. Taylor is currently an associate professor in the Department of Industrial and Physical Pharmacy and an associate professor of Chemical Engineering (by courtesy) at Purdue University. Prior to moving to academia, she spent 5 years working at AstraZeneca in Sweden where she was an associate principle scientist within the Solid State Analysis group. Lynne graduated with a Bachelor of Pharmacy degree from the University of Bath and a PhD in Pharmaceutical Technology, from the University of Bradford, UK. In between her degrees, she spent some time working in pharmacy in both the UK and Zimbabwe. After her PhD, Lynne was a postdoctoral researcher with Professor Zografi at the School of Pharmacy, University of Wisconsin-Madison. Her current research interests center around the investigation of phase transitions in amorphous systems, water-solid interactions, and the application of spectroscopic techniques to probe the solid state. She has more than 100 peer reviewed publications related to these research areas. She has received several awards including the AAPS New Investigator Grant, the AACP New Investigator Award and the Journal of Pharmaceutical and Biomedical Analysis Outstanding Manuscript award. Lynne is a member of the Editorial Advisory Board for the Journal of Pharmaceutical Sciences and Pharmaceutical Development and Technology and is a Fellow of the Royal Society of Chemistry.