

# **MATERIALS SCIENCE AND ENGINEERING**

## **SEMINAR**

### **“The Effect of Phase Separation on the Performance of Polymer-Based Solar Cells”**

By

Zizhao Zhao  
Purdue MSE PhD Prelim 1  
Professor R. Edwin Garcia

### **ABSTRACT**

The relationship between phase morphology and device performance is discussed for the F8BT: PFB copolymer system by starting from available experimental data. Here, the phase separation that occurs in this system is used to make natural heterojunction or interdigitated architecture that can be readily used for photovoltaic applications. Phase field simulations demonstrate that for an average PFB composition of  $\varphi^0 = 0.5$ , the polymer blend phase transforms to an optimal microstructure after 55 s to deliver the highest exciton dissociation efficiency. Processing parameters for nanoimprint lithography and spin coating techniques are proposed to verify the appearance of an optimal realizable efficiency.

Date: Thursday, May 12, 2011

Time: 10:30am

Place: ARMS 1103

**PURDUE MSE**

