

**UNIVERSITY OF SOUTH FLORIDA  
DEPARTMENT OF PHYSICS**

**COLLOQUIUM**

Friday, September 21, 2007

4:00 pm

PHY 130

**Liquid Crystalline Phases in the Lipid Bilayer**

**Prof. Linda Hirst**

Department of Physics  
Florida State University

**ABSTRACT**

The self-assembly of biological amphiphiles has proved a fascinating topic in recent years, the hollow cylindrical lipid tubule morphology being of particular interest due to its potential relevance to intercellular transporting channels and applicability to controlled-release systems, chemical micro-reactors and nano-conduits. Co-existence of the liquid-ordered and liquid-disordered phases in the lipid bilayer has recently been observed in biologically-relevant three-component giant unilamellar vesicles. We have generated stable, photo-induced micron-scale phase separation in lipid tubules formed from ternary lipid mixtures, inducing a new bilayer disc structure. This investigation not only aids in our understanding of lipid sorting phenomena in cell membranes (suggesting a mechanism for bilayer disc formation in retinal rod-cells), but may also provide a fascinating route to the generation of new, functional structures.