MAR07-2006-002540

Abstract for an Invited Paper
for the MAR07 Meeting of
the American Physical Society

**Using Liquid Crystallinity to Design Interfaces between Synthetic and Biological Materials.**

NICHOLAS ABBOTT, University of Wisconsin-Madison

This presentation will discuss the spontaneous assembly of amphiphiles and biological macromolecules at interfaces between thermotropic liquid crystalline phases and aqueous phases. This assembly process gives rise to patterned orientations of the liquid crystals that reflect the spatial and temporal organization of the amphiphiles and macromolecules. Strong and weak specific binding events involving proteins at these interfaces drive the reorganization of phospholipids and trigger orientational transitions in the liquid crystals. Because these interfaces are fluid, processes involving the lateral organization of proteins (e.g., formation of protein and phospholipid-rich domains) are also readily imaged via the orientational response of the liquid crystal, as are stereospecific enzymatic events. These results suggest new principles for designing interfaces between synthetic and biological polymers.