

Liquid Crystalline Self-Assembly in Bio and Nano Materials

Shanju Zhang

School of Polymer, Textile and Fiber Engineering
Georgia Institute of Technology, Atlanta GA, 30332-0295

Abstract

Liquid crystals have been recognized to play an important role not only in the information display field but also for biological organization as well as in nano-device fabrication. With recent developments for liquid crystal material applications in bioscience and nanotechnology, liquid crystal science is undergoing a modern-day revolution for future applications. Liquid crystal route is poised to become an efficient method to control ordered assemblies. In this talk, I present experimental studies on liquid crystal ordering and its applications in bio and nano materials. I first describe a nano-strip technique to study topological defects and their interactions in a side-chain system. Particular attention is given to understand some important physical issues such as elastic constants and inner core structures. Then I investigate liquid crystal routes for stabilization and organization of carbon nanotubes and colloidal particles in biological systems. The resulting novel materials show promising properties with potential biological applications.