

The 265th MANA Special Seminar



Soft Confinement Effects for Designing Nanostructured Materials

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Non-ionic surfactants and metal salts can form lyotropic liquid crystalline (LLC) mesophases. In this self-assembly process, the salt species act as a solvent due to the confinement effect. The melting point of the salt drops and the solubility of salts enhances if the salt is confined in the hydrophilic domains of the LLC mesophase. The salt-surfactant mesophases are stable in a very broad temperature range, as low as -55°C to as high as 120°C. Even at lower temperatures, the LLC mesophase transforms to mesostructured solid. These unusual behaviors can be used to design materials, which cannot be realized through known approaches. We established a new synthetic approach to incorporate more than one metal oxide on the pore walls of mesoporous materials in one pot using above salt-surfactant LLC mesophases. In this new assembly process, salt species acts as a solvent, directing agent, and the metal oxide source. The LLC mesophases of various metal ion sources and new self-assembly process will be discussed using data from multianalytical techniques.

Venue: Auditorium, 1F, WPI - MANA Building

Date: June 5th, Tuesday Time: 15:30-16:15

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