

Internal Seminar

Fibrous Nanosilica: Tunable Synthesis, Its Applications and Novel Materials Design

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Nanospheres have wide applications in materials science as exceptional building blocks for the fabrication of an assortment of valuable materials. Silica is a well-established example due to its useful properties such as low density, low toxicity with good biocompatibility, ease of surface modification, stability, and cost-effectiveness. With the emergence of mesoporous silica such as the MCM-41 and SBA-15 enormous efforts have been put together to synthesize different types of high surface area silica materials. The demand for silica nanospheres with different sizes, dimensions, and morphology is continuously growing in catalysis and petrochemical industries because modern industries have shown tremendous interest for such high surface area silica nanomaterials.

Although KCC-1 nano-spheres possess unique textural and physical properties and showed a dramatic enhancement in activity, the control over their particle size, fiber density and textural properties (surface area, pore volume, pore size) was not achieved, despite they being critical parameters for the successful development of KCC-1-supported catalysts and CO₂ sorbents. In addition, use of KCC-1 protocol to make different morphology of silica such as two-dimensional silica sheets or its use as hard template was not explored. In this seminar, I will focus on three aspects of KCC-1, i) Size and fiber density controlled synthesis, ii) application in catalysis, iii) application in CO₂ capture, iv) use of KCC-1 protocol for silica sheet synthesis, v) use of KCC-1 as hard template for synthesis of carbon nanocages.

Tuesday, Oct 17th 2017

4:00 PM (Tea/Coffee at 3:45 PM)

Auditorium, TIFR-H (FReT-B)