
Seminar

Nano-Catalysis: Fibrous morphology makes the difference in catalytic activity and stability

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We have recently reported the synthesis of a new class of fibrous nano-silica (KCC-1) based materials. Such a fibrous morphology observed in these nanospheres has not been seen before in silica materials. The material exhibits excellent physical properties, including a high surface area, a good thermal, hydrothermal, and mechanical stability.

We also showed successful utilization of nano-silica KCC-1 as efficient nanocatalysts for various important reactions such as hydro-metathesis, hydrogenolysis, solid base catalyzed reactions and also in various C-C coupling reactions, with extraordinary activity and stability. E.g. The KCC-1/Ru catalysts showed multifold increase in its activity and stability as compare to MCM-41/Ru and SBA-15/Ru. TaH supported on fibrous silica nanospheres (KCC-1) also catalyzes a new hydro-metathesis reaction of olefins with remarkable catalytic activity and stability. On similar line KCC-1 based solid base showed multifold enhancement in activity than the known catalysts. Notably, KCC-1 material was also found suitable for CO₂ capture.

In this presentation, I will present our newly discover fibrous nano-silica (KCC-1) and then discuss its application in various catalytic applications as well as in CO₂ capture.

Thursday, Apr 10th 2014

11:30 AM (Tea/Coffee at 11:15 AM)

Seminar Hall, TCIS