

## Liquid phase synthesis of ketones to lactam over sulfonic acid functionalized mesoporous TS-1

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The rearrangement of ketones to amides or lactams in the presence of catalysts like zeolite containing Ti site and acid site is a process commonly used for the preparation of caprolactam, the monomer used in the production of nylon 6. However, pore accessibility of zeolite does not allow large molecular size of oxime intermediates and large ketone. Attempts to overcome the diffusional limitation of reactants, strategies have been focused on increasing pore size. In present work, sulfonic acid functionalized mesoporous TS-1(SO<sub>3</sub>H - Meso TS-1) as a bifunctional catalyst was synthesized by using dual template of TPAOH as a molecular template and CTAB as a supramolecular template under the microwave irradiation. Thiol functionalized catalysts for getting SO<sub>3</sub>H - meso TS-1 as a Broensted acid catalyst by post synthetic grafting method for rearrangement of ketoximes was prepared. This catalyst contains both TiIV sites and Broensted acid site from sulfonic group for the Beckmann rearrangement. And the XRD pattern of this catalyst showed hierarchical structure possessing crystalline MFI-type zeolite structure and mesoporosity. The efficacy of SO<sub>3</sub>H - Meso TS-1 catalyst was investigated towards one-step synthesis of lactam from ketone in the liquid phase.