

One step production of ϵ -caprolactam from cyclohexanone over sulfated mesoporous TS-1

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Sulfated mesoporous TS-1 was prepared by attaching the thiol groups on the zeolite seeds and oxidizing with hydrogen peroxide as an oxidant during synthesis under the microwave irradiation. ϵ -caprolactam is an important intermediate in the manufacture of nylon 6 and 66. Conventional titanasilicate molecular TS-1 has received great interesting route of production cyclohexanone oxime which is produced between cyclohexanone and hydroxylamine. In order to avoid unwanted by-product such as ammonium sulfate, we described one-step production of ϵ -caprolactam using sulfated mesoporous TS-1 which could carry out direct synthesis from two processes of ammoximation and Beckmann rearrangement.

This catalyst which was developed the surface with sulfonic acid was successfully prepared by templating method to produce hierarchical structure with microporous zeolite.