

Toluene oxidation over the perovskite-type metal oxide prepared by using mesoporous silica

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Perovskite-type oxides have high potential in various oxidations. The perovskite-type oxides prepared by the classical methods have low surface area due to high calcination temperature for forming the perovskite structure.

A new synthesis route using mesoporous silica as a host was investigated to produce perovskite-type oxide with high surface area. It was characterized with XRD, N₂-adsorption/desorption, EDX and TEM. The perovskite-type oxide prepared by the new synthesis using the mesoporous silica showed the crystallite size of 7 nm and the surface area of 140 m²/g. The small crystallite size was caused by forming the perovskite-type oxides of metal precursors inside mesopores of silica. The perovskite-type oxide prepared by the new synthesis using the mesoporous silica showed higher activity in the toluene total oxidation than those prepared by classical methods.