

Preparation and characterization of mesoporous MO₂ (M = Ti, Ce, Zr, and Hf) nanopowders by a modified sol-gel method

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Abstract: Mesoporous high surface area and high crystallinity MO₂ powders (TiO₂, CeO₂, ZrO₂, and HfO₂) were synthesized by a modified sol-gel method using laurylamine hydrochloride, metal alkoxide and acetylacetone. The prepared MO₂ powders, characterized by XRD, nitrogen adsorption isotherm, SEM, TEM, and SAED, had crystalline size of about 5-15 nm, specific surface area of 44-80 m²/g, and a narrow pore size distribution with average pore diameter of about 3-6 nm. This synthesis method provides a new simple route to fabricate nanostructured materials under mild conditions. (c) 2004 Elsevier Ltd and Techna Group S.r.l. All rights reserved.

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