

CuO/ZnO Nanoparticles in a Matrix of Amorphous Silica as High-Surface Precursors for Methanol Synthesis

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An intimate mixture of CuO/ZnO nanocrystals was prepared by an easy sol-gel synthesis (precipitation in methanol by hydroxide in the presence of a silane). The organic substituents of the silane were almost completely removed by a subsequent photochemical oxidation. The resulting amorphous SiO₂ prevented the growth of the catalytically active particles to larger crystals. The coating layer of silica can easily be penetrated by gaseous reactants, as shown by the high spe-

cific surface area of about 110–130 m²g⁻¹ (probably due to both silica and nanocrystalline CuO/ZnO) and the good catalytic activity in methanol synthesis from CO/CO₂/H₂ synthesis gas (7 to 37 %, compared to an industrial standard methanol catalyst). The ratio of CuO to ZnO can be easily varied by the used preparation method.

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