

Spray pyrolysis synthesis and characterization of mesoporous γ -Al₂O₃, SiO₂ and TiO₂ particles

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Alumina (γ -Al₂O₃), Silica (SiO₂) and Titania (TiO₂) have been widely used as adsorbents or catalyst/catalyst supports for dehydrogenation and desulfurization because of their high surface area, high thermal and chemical stability. In this study, γ -Al₂O₃, SiO₂, TiO₂ particles were synthesized by spray pyrolysis combined with sol-gel process. The spray pyrolysis method has advantages of synthesizing spherical nano- or micron-sized particles in one step and controlling the size and morphology of the product particles. Also, mass production is possible with this method as it is a continuous reaction process. In order to control specific surface area and pore structures, the particles were prepared by adding CTAB as a template. The product particles were analyzed by BET, XRD and FE-SEM.