

Preparation and characterization of silica coated mesoporous TiO₂ sphere

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TiO₂ nanoparticles has long been utilized in various industrial application such assemiconductors, photocatalyst, optical coating due to its photonic band structure. Especially TiO₂ nanoparticle complex can be utilized in sun care products because of its UV-ray shielding performance and low absorption in the visible region. However, these TiO₂ nanoparticles have a crucial problem for Sunscreen because of the photocatalytic property and whitening effect. And the surface coating silica can be overcome this drawback.

In this study silica coated mesoporous TiO₂ were prepared by a sol-gel process. Mesoporous TiO₂ sphere was synthesized using hydrolysis of titanium butoxide as a precursor. The surface coated with tetraethylorthosilicate (TEOS) as the source of silica. Silica coated mesoporous TiO₂ powder were measured by transmission electron microscopy (TEM), X-ray powder diffraction (XRD), Scanning electron microscopy (SEM), and Nitrogen adsorption/desorption isotherm.