

## Synthesis and characterization of silica-coated TiO<sub>2</sub> nanoparticles prepared by sol-gel method

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Titanium dioxide has been used as photocatalyst in many fields. However, since its strong photocatalytic activity, the covering of the TiO<sub>2</sub> surface with nonactive oxide such as SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, and ZrO<sub>2</sub>, is important in suppressing its photoactivity and in increasing its dispersibility in liquid. In more detail, to decrease photooxidation from UV light in commercial film and to increase dispersibility of titania in solution, silica coating process is essential. In our present study, we prepared TiO<sub>2</sub>@SiO<sub>2</sub> using various precursors such as TEOS and sodium silicate and characterized silica coating layer using TEM, SEM, FT-IR, and BET. Silica coating layer is sensitive depending on titania surface charge and reaction time. Also, charging agent is very important for coating. Comparing to pure titania, TiO<sub>2</sub>@SiO<sub>2</sub> is well dispersed in coating solution for commercial film.