

유기용매 재분산성 루틸 TiO₂ 나노입자
Redispersible Rutile TiO₂ Nanocrystals in Organic Medium

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Rutile TiO₂ nanocrystals attract a great deal of interest as components in environmental catalysts, optoelectronic devices, ultraviolet ray blocking additives for cosmetics, and reflective index modifiers for organic-based materials. Rutile TiO₂ nanocrystals have been prepared previously elsewhere by hydrothermal reaction in acidic aqueous mediums, but they generally suffer from low processabilities. Processable nanoparticles would be of particular interest as the active materials in inorganic/organic hybrids or polymer-based nanocomposites. In general, metal oxides nanoparticles are not redispersible in organic solvents because of phase separations. Here, we report the redispersible rutile TiO₂ nanocrystals in organic mediums. The average particle size in 50 nm with rutile phase were prepared by TTIP/H₂O/H₂O₂ system, and then they were surface modified by hydrothermal reaction in aqueous Ba(OH)₂ solution. The characteristic variations of the nanoparticles induced by surface modification were investigated by TEM, XRD, ED-XRF, XPS, and DLS.