

Synthesis of spherical titania particles by controlled hydrolysis

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TiO₂ particles have been considered as a good candidate for a variety of optical application due to their high refractive index. Because of technological importance of TiO₂ particles, tailored particles with spherical shapes have been studied by lots of research groups. One of the typical approaches is precipitation of TiO₂ precursor in aqueous alcohol solution. However, hydrolysis rate of titania precursor is so fast that the nucleation and growth steps in particle formation cannot be separated. Therefore, it is too difficult to make monodisperse TiO₂ particles via conventional hydrolysis. In this presentation, simple method for the preparation of monodisperse TiO₂ particles via controlled hydrolysis will be described. TiO₂ precursors are mixed with ethanol in the presence of a salt or a polymer in solution and the monodisperse TiO₂ particles were obtained through the sol-gel reaction.