

Understanding of Aging step in TiO₂ Sol Preparation for the Synthesis of High Activated TiO₂ Nanosized Particles and Its Mechanism

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In this study, we investigated the effects of sol preparation process variables in order to control microstructure characterization of high activated Anatase type TiO₂ particles. Using TTIP as a starting material, we prepared TiO₂ sol solution through the process of hydrolysis/polycondensation, aging, peptization. As a result of this study, we knew that aging among the sol preparation step had an influence upon characterization of calcined TiO₂ particles as well as hydrous TiO₂ particles. According to aging, we could control the crystallinity and microstructure of TiO₂ sol particles and calcined TiO₂ particles. And we could also control the size distribution of average hydrous TiO₂ sol particles. The microstructure of TiO₂ sol particles controlled by aging had an influence the microstructure of calcined TiO₂ particles. Hence, we knew that the aging was the most important step to control microstructure of calcined TiO₂ particles and films.