

STUDY OF THE DISPERSION BEHAVIOR OF AQUEOUS SUSPENSIONS OF TITANIA NANOPOWDER

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Titanium dioxide (TiO₂) is used for a wide range of applications in electronic, photocatalytic and electrochemical systems. The elaboration of ceramics based on titanium dioxide requires the preparation of stable concentrated suspension in which the dispersant enhances their colloidal stability. In this work, the effect of two kinds of dispersants (Tiron and dopamine) on the stability of TiO₂ suspensions was studied. Despite the chemical similarity between these two molecules, their effect on the surface chemistry of TiO₂ nanoparticles is different. Zeta potential, hydrodynamic size and rheological measurements were carried out in order to investigate the behavior of diluted and concentrated titania dispersion as function of dispersant ratio and suspension pH. It was proved that the viscosity of the titania dispersion is mainly governed by the nanoparticles size to which many parameters are involved. The studied dispersions were used to prepare granules, used in the ceramic elaboration process.