

Ti-BASED NANOCOATINGS ON CERAMIC DISPERSED POWDERS

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The preparation of nanoscale materials has attracted increasing interest because of their technological potential. The surface modification is an adequate processing method to control the sintering behaviour and thereof the microstructure of electroceramics. Recently most attention has been paid to the development of functional coatings on particles for different purposes. Meanwhile the processing of monodispersed nanopowders has been attempted in last years, the methods to obtain nanocoating are not well developed up to now.

The aim of this work is to study the formation of Ti-based nanocoatings on dispersed particles by homogeneous precipitation. The thickness and uniformity of Ti-based coating was controlled by adjusting the conditions of the precipitation. Using a high precursor concentration, the process drives to classical nanoparticles precipitates of titania in spite of coatings. However, the use of urea as solvent and a low precursor concentration leads to an homogeneous precipitation producing the nanocoating of the ceramic powders.

The samples were characterized using a Potentiometric and Conductimetric Titration, Fourier Transform Infrared (FTIR), DTA, TGA, Scanning Electron Microscopy (SEM) and Transmission Electron Microscopy (TEM).

Figure1. Al₂O₃ ceramic particle coated by a Ti-based precursor

