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Characterization and application of nanoalumina prepared by different routes

Nelcy D. S. Mohallem

Universidade Federal de Minas Gerais, Brazil

Abstract

Recently, syntheses of nanoparticulate oxide materials have been the subject of many works, where nanoparticles with different size and shape, such as nanospheres, nanotubes, nanowires, nanorods, nanoribbons and nanoplates have been developed. Due to their different morphologies and textures, these nanoparticles have interesting properties, leading them to various applications in diverse fields of knowledge. In this work, nanoparticulate alumina was obtained by precipitation and sol-gel processes, whose as-synthetized powder were dried by lyophilization, supercritical and spray drying, aiming to obtain products with better properties and features for nanotechnological use. The control of the homogeneity, purity, texture, morphology and structure of the nanoparticulate alumina was obtained until in industrial scale with good efficiency and reproducibility. The nanoparticles presented different characteristics, such as high thermal stability in intermediate structural phases, high surface area and porosity even at high temperatures, and have been tested in the preparation of thin films, colloidal alumina, nanoabrasives, molecular sieves for heavy metal adsorption, material to controlled release of drugs, among others.

Biography

Nelcy Della Santina Mohallem, is PhD in Applied Physics, author of about 75 scientific publications, professor of physical-chemistry and material science in the Universidade Federal of Minas Gerais, UFMG, Chemistry Department, since 1992. Actually she is vice-director of the Center of Microscopy of UFMG. She supervised directly 14 PhD students and 7 Master Degree Students. Current supervision of 2 PD, 2 PhD and 2 Master Degree. She has large experience in coordination of several academic projects, including projects in collaboration with Brazilian companies.