

Synthesis and Characterization of a Bioactive Silicate Ceramic from SiO₂ nanoparticles

Reference	Presenter	Authors (Institution)	Abstract
01-199	Sonia Mello-Castanho	Yamagata, C. (Instituto de Pesquisas Energéticas e Nucleares); Rodas, A.C. (Universidade Federal do ABC, Santo André, (SP), BRAZIL); Higa, O.Z.(Instituto de Pesquisas Energéticas e Nucleares); Mello-Castanho, S. (Institute of Energetic and Nuclear Research, IPEN);	Sol-gel and co-precipitation techniques have been used for synthesis of multiphase silicate ceramic from SiO ₂ nanoparticles. Non-aggregated colloidal SiO ₂ nano particles were initially prepared from a sodium silicate solution, by surfactant template sol-gel method. Afterward, calcium and magnesium hydroxides were co-precipitated on colloidal SiO ₂ nanoparticles surface. CaO-MgO-SiO ₂ sintered ceramic obtained from the synthesized powders were characterized by SEM,XRD and FTIR. In vitro tests were performed by soaking the sintered samples in the simulate blood fluid (SBF, at pH 7.25 and 37 °C) to observe its bioactivity. After 7 days of immersion in SBF, the FTIR spectra analysis revealed that the material is bioactive, by the formation of hydroxyapatite on the surface of the sample. No toxic effect was found in the cytotoxicity tests with CHO (Chinese hamster ovary) cells.

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