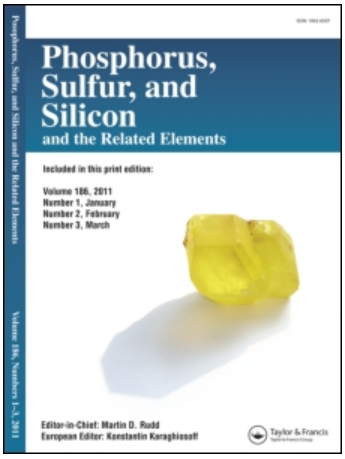

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Characterization of Fine Hydroxyapatite Powders Synthesized by Wet Process

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CHARACTERIZATION OF FINE HYDROXYAPATITE POWDERS SYNTHESIZED BY WET PROCESS

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We prepared fine hydroxyapatite powders by dropping ammonium biphosphate into a calcium acetate solution and by vigorously stirring at 30°C. We measured the powders' specific surface area to be 290 m^2/g by the BET technique. The powders were monodispersed ultrafine particles by transmission electron microscopy investigation. No phase other than hydroxyapatite(JCPDS: 9-432) was revealed by X-ray diffractometry. A quantitative chemical analysis gave a Ca/P ratio very close to the exact hydroxyapatite stoichiometry(Ca/P: 1.67). Shrinkage started up to 800°C according to a dilatometric measurement and the dense products were obtained when heated at 1000°C for 2 h in air. We used a quadrupole mass spectrometer to monitor the gases desorbed from the hydroxyapatite powders at a constant heating rate of 5°C/min in a high vacuum. It is noted here that there were two peaks of H_2O and CO_2, respectively, and that we observed an increase in desorption of H_2. The two peaks were explained clearly with an infrared spectrometry analysis and a thermal analysis we made separately.