



MceBi09-001

Synthesis and characterization of hydroxyapatite from chicken eggshell under different Ca-solvents

Mir Ihara, P.M.(1); Enciso Cerfoglio, F.G.(2); Duarte, R.E.(1); Espínola, M.(1); Ferreiro Balbuena, O.(1); Monteiro, M.(1);
(1) FPUNA; (2) FCQUNA;

Nowadays, searches for alternative and environmentally friendly materials are of fundamental interest and have increasingly attracted the attention of researchers and advanced materials processing centers. Within this context, the eggshell is considered a high-value waste and a natural source of calcium. It can be viewed as a very profitable source for applications in civil construction, even as a complement to human and animal health and soil recovery, and even as a precursor of calcium in the processing of bioceramics, providing a more straightforward and safer method than the processing of the bovine bone. This work analyzed the viability of the eggshell as a calcium precursor in synthesizing hydroxyapatite via the sol-gel method via sonochemical process, using three different Ca-solvents such as water, alcohol, and acid acetic. The calcium oxide and the HAP samples were characterized before and after the calcination. The calcination was carried out at 750 °C. Vibrational modes of the functional group were identified by FTIR, using the KBr pellet technique. Crystallographic characteristics were determined by x-ray powder diffraction, such as types and percentages of crystalline phases, crystalline size, and Ca/P relation from Rietveld refinement. This work aimed to find a simple and cheaper route to produce hydroxyapatite for environmental applications in the remediation of residual water. According to the results, all Ca-solvents presented adequate to synthesize hydroxyapatite, but it is possible to affirm that the water-solvent because it is considered more environmentally friendly.