

Effect of different nickel content on the mechanical properties of hydroxyapatite-ni composites from coated powders

Abstract

HA-Ni composites were fabricated by uniaxial pressing from coated powders, in which HA particles were successfully coated with nickel precursor by the electroless deposition method. The compacted powders sintered at temperature 1200°C for 1h. Decomposition of hydroxyapatite into α -TCP (α tricalcium phosphate) and TTCP (tetracalcium phosphate) were not occurred in any different nickel content before and after sintering. The Ni peaks sharply increased with increasing of Ni content indicate that high crystallinity of metal and confirmed the existence of nickel in the composites. Compared with that of pure HA, the fracture strength of HA improved by almost 200% by adding 1wt% Ni due to the increase of the composites density. The enhancement in mechanical properties of HA-Ni composites was found to decrease with increase of Ni content, which attributed to the size effect of nickel grains and higher porosity percentage of composites.

Keywords; Electroless, Hydroxyapatite (HA), Nickel, Sintering