Porosity reduction model in titanium - hydroxyapatite FGM composites using shrinkage measurement

Abstract

A multilayered titanium (Ti)-hydroxyapatite (HA) functionally graded material was produced via pressureless sintering at 1100°C. The initial and final porosities were determined via shrinkage measurements. The final porosity verification was carried out by the Archimedes method. The experimental porosity measurements were compared with two proposed models. The macroscopic and microstructure features and the measured porosities confirmed that the volume fraction porosity was associated with both matrix and reinforcing particles in all cases. The percolation threshold was observed at x = 0·75 in the xTi+(1−x)HA mixture.

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