

Development of the Porous Bioceramics *via* Highly Viscous Mass Foaming.

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Calcium phosphate ceramics like hydroxyapatite (HAp) and tricalcium phosphate (TCP) are good candidates for a bone substitute due to their chemical similarity to the natural bone mineral. As the structure of natural bone is porous several methods for the different porous calcium phosphate bioceramics production are developed.

In current research a new method for manufacturing of porous hydroxyapatite ceramics using highly viscous mass foaming was created.

In this research hydroxyapatite synthesized by wet precipitation reaction between calcium hydroxide and phosphoric acid was used. The precipitate was dried overnight and then milled to obtain a fine powder. Powder was mixed with an organic additive (polyol) to attain a highly viscous/plastic mixture. H_4NHCO_3 was

added to the plastic mass as pore forming agent.

Prepared mass was placed in cylindrical moulds and then heated increasing temperature from 40 to 110 °C for proceeding the foaming process and particular release of organic additive from the sample. It was established that by varying amount of pore forming agent in the plastic mass from 0,56wt% to 1,68wt%, it is possible to achieve the porosity in range from 52 to 61% after sintering. Samples were sintered at 1150 °C for two hours. The porosity was determined using Archimedes method. The morphology of the obtained ceramics was examined by scanning electron microscopy and phase composition was determined by X-ray diffractometry.