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研究论文

用冰模板法制备羟基磷灰石多孔陶瓷

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摘要： 使用水基羟基磷灰石(HA, Ca5(PO4)3OH)浆料, 用冰模板法制备定向层状多孔HA陶瓷, 研究了浆料中HA陶瓷颗粒含量和冷端温度的影响。结果表明: 随着浆料中HA陶瓷颗粒含量的提高, 浆料的粘度值增大, 层状多孔结构的层厚度相应增加, 孔道层间距减小甚至消失, 多孔材料的抗压强度从1.4 MPa提高到5.7 MPa, 孔隙率从76.2%降低到44.2%。降低冷端温度使片层状结构的层间距从大约20 μm减小到3--5 μm, 陶瓷层厚度从2--3 μm增大到15--20 μm。

关键词： 无机非金属材料 羟基磷灰石 冰模板法 取向多孔 微观结构

Porous Hydroxyapatite Ceramics Fabricated by an Ice Templating Process

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Abstract: The porous ceramics with unidirectional lamellar pore structures was prepared by icetemplating of aqueous hydroxyapatite (HA, Ca5 (PO4)3OH) slurry, and the effects of content of the solids loading and the temperature of the cold finger were investigated. The results show that the viscosity of the suspensions increased as content of the solids loading increased. The lamellar thickness increased along with the decreasing porosity from 76.2% to 44.2%. The compressive strength increased from 1.4 MPa to 5.7 MPa. With the decreasing temperature of the cold finger, the lamellar thickness of the porous architecture decreased from 20 μm to 3－5 μm, and the thickness of the ceramic wall improved from 2－3 μm to 15－20 μm.

Keywords: inorganic non-metallic materials hydroxyapatite ice-templating method oriented porous ceramics microstructure

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