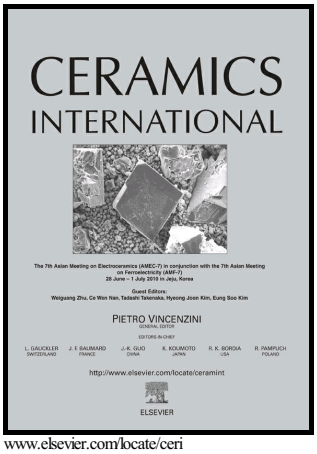

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Novel interconnected nanochannel hydroxyapatite ceramic: in situ synthesis, microstructure, and permeability

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ABSTRACT

Uniform interconnected micro/nanoporous ceramic with good mechanical properties holds universal applications in biomedical and engineering fields. Herein, using hydroxyapatite (HAP) microtubes as the raw material instead of traditional nanoparticles, a novel interconnected nanochannel hydroxyapatite ceramic was fabricated successfully through one-step microwave sintering method without the addition of pore generators. The tubular structure of the HAP microtube remains even after microwave sintering, which endows the ceramic with uniform interconnected nanochannels and 3-D porous structure. The HAP microtube nanochannel ceramic has a narrow pore size distribution from 400 nm to 600 nm, and exhibits well permeability, brilliant adsorption/desorption ability. The porosity is about 30 %, the HAP microtube