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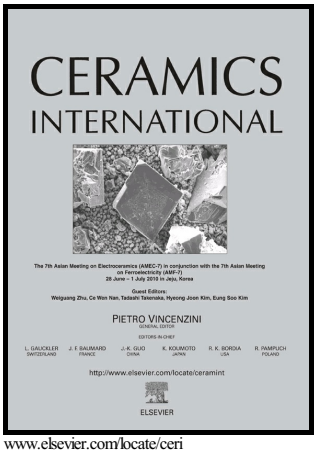

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Fabrication of porous fibrous alumina ceramics by direct coagulation casting combined with 3D printing

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ABSTRACT

A novel forming method for preparing porous alumina ceramics using alumina fibers as raw materials by direct coagulation casting (DCC) combined with 3D printing was proposed. Porous fibrous alumina ceramics were fabricated through temperature induced coagulation of aqueous-based DCC process using sodium tripolyphosphate (STPP) as dispersant and adding K_2SO_4 as removable sintering additives. The sacrificial coated sand molds was fabricated by 3D printing technology, followed by the infiltration of silica sol solution for the subsequent suspension casting. Stable alumina suspension of 40 vol% solid loading was obtained by adding 2.0 wt% STPP and 40 wt% K_2SO_4. The controlled coagulation of the suspension could be

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