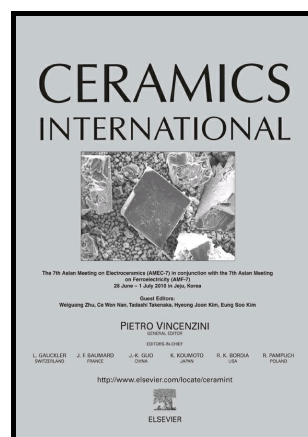


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Bio-inspired modification of silicon carbide foams for oil/water separation and rapid power-free absorption towards highly viscous oils

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Abstract

A bio-inspired strategy for the fabrication of superhydrophobic silicon carbide (SiC) ceramic foams (SCFs) using commercially available melamine foam (MF) as the template and vinyl-containing hyperbranched liquid polycarbosilane (VHPCS) as the binder was developed. The pre-oxidation process and crystallization degree during the sintering were monitored by Fourier transform infrared spectroscopy and X-ray diffraction. A plausible reaction was proposed and the thermogravimetry analysis results indicated that VHPCS was more suitable for the adhesive agent of SiC powders. By optimizing the mass ratio of VHPCS and SiC, a maximum compression

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