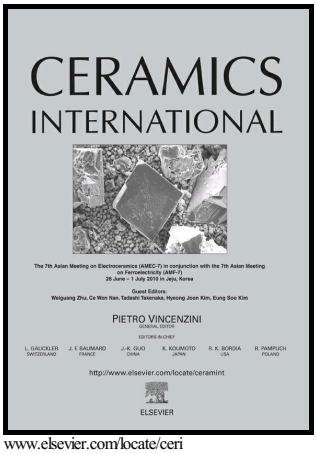

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Effect of Cr_2O_3 on the crystallization behavior of synthetic diopside and characterization of Cr-doped diopside glass ceramics

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ABSTRACT

Diopside is the main crystalline phase in silicate materials such as ceramics and glass-ceramics. Herein, the effect of Cr_2O_3 on the microstructure and crystallization behavior of synthetic diopside, as well as the solubility of Cr_2O_3 in diopside is discussed. Samples were prepared by the melting method and characterized by X-ray diffraction, scanning electron microscopy, energy dispersive spectrometry, and confocal laser scanning microscopy. Results show that the maximum achievable solubility of Cr_2O_3 in diopside is between 1 and 3% by weight, and that the magnesiachrome spinel formed by Cr_2O_3 can act as a nucleating agent for the diopside phase. Glass ceramics was prepared by synthesis slag which simulates the chromium-containing waste. The activation