

عنوان مقاله:

Synthesis and Characterization of Barium Aluminosilicate Glass as the Sealant for Solid Oxide Fuel Cell Application

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خلاصه مقاله:

In this study, barium aluminosilicate glass sealant was synthesized and characterized for Solid Oxide Fuel Cell (SOFC) applications. First, the stoichiometric amounts of powder were mixed and melted at 1330°C for 2h, followed by quenching in water. They were then pressed into cylindrical specimens under load of 200 MPa, followed by sintering at different temperatures. The phase content and microstructure of the samples were analyzed by X-ray Diffraction (XRD) and Scanning Electron Microscope (SEM) methods, respectively. Microhardness and toughness of the sintered samples were investigated by means of Vickers micro-hardness test. Young's modulus and nano-hardness of the glass sealant were measured by nano-indentation method. The thermal expansion coefficient of the specimens was estimated by a dilatometer. The results showed that after sintering at 750°C, sealants with homogeneous microstructure and high density were obtained. The sealants were characterized by mechanical and thermal properties appropriate for SOFC applications with a very low leak rate.

کلمات کلیدی:

Barium aluminosilicate, Glass Sealant, Solid oxide fuel cells, Mechanical properties

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