

Development of High Temperature Eutectic Oxide Ceramic Matrix Composites

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Abstract : Eutectic oxide based ceramic matrix composites have a unique microstructure that does not include grain boundary in the form of a continuous network. Because of this, these materials have the properties of perfect high-temperature strength, creep strength, and high oxidation strength. Mechanical properties of them are much related to occurring solidification structures during eutectic reactions. One of the most important production methods of this kind of material is the process of vacuum arc melting. Within scope of this studying, it is aimed to investigate the production of Al_2O_3 -YAG-based eutectic ceramics by Arc melting and Spark Plasma Sintering methods for use in aerospace and defense industries where high-temperature environments play an important role and to examine the effects of ZrO_2 and LiF additions on microstructure development and mechanical properties.

Keywords : alumina, composites, eutectic, YAG

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