

Pengaruh Suhu Pemanasan dan Waktu Tahan terhadap Karakteristik Komposit Matriks Keramik SiC/Al Produk Directed Metal Oxidation (DIMOX)

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Abstrak

This research is to study the effects of firing temperature and holding time on characteristics of Directed Metal Oxidation (DIMOX) Ceramic Matrix Composites (CMCs) SiC / Al product. In this research, the firing temperature and holding time used are varied from 900° C to 1300° C with holding time 10 and 20 hours for each temperature. The characterizations of composite products are examined such as density and porosity test, micro hardness test, microstructure examination and chemical composition test. The results show that SiC preform has been infiltrated by Al liquid at firing temperature of 1100°C for 20 hours. Composite product with the highest density (3,54 gram / cm³) can be obtained at firing temperature of 1100°C for 20 hours. Porosity tends to increase with increasing firing temperature. Composite product with highest micro hardness (1820 VHM) can be obtained at firing temperature of 1300°C for 10 hours. At the same firing temperature, composite products micro hardness for 20 hours lower than composite product with holding time 10 hours. Distribution of SiC particles spread over quite uniform on SiC/Al composites product. Around SiC particles can be found Al, spinel (MgAl₂O₃), Al₂O₃, and possibility Mg₂Si.