

ABSTRACT

The feasibility of microwave heating SiC preforms to fabricate SiC composites was studied. Preforms were produced by electrophoretically infiltrating SiC fiber (Nicalon) preforms with SiC powder. Samples were heated to 1600 °C in a matter of minutes and held at temperature for 5 min to minimize fiber degradation. To achieve densification, heated preforms required the application of a uniform load. Bulk densities increased from ~0.8 g/cm³ for the as-infiltrated preforms to over 1.9 g/cm³ for microwave heated samples. Microstructural analysis revealed the presence of pores and cracks in the matrix; however large areas of dense SiC matrix material are apparent.