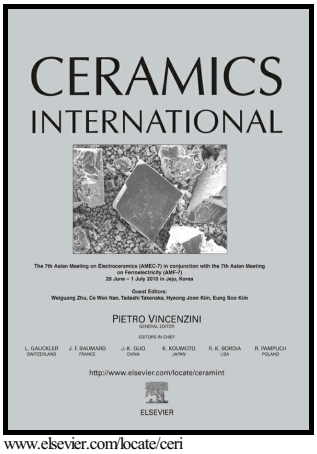

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TEM characterization of spark plasma sintered ZrB_2–SiC–graphene nanocomposite

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Abstract

The interfacial behavior of spark plasma sintered ZrB_2–SiC nanocomposite doped with graphene nano-platelets was investigated by transmission electron microscopy (TEM). A powder mixture including ZrB_2 matrix, 20 vol% SiC and 10 vol% graphene was used as the starting material. X-ray diffraction analysis did not exhibit any *in situ* phase formation in the prepared nanocomposite. TEM observations verified the diffusion-controlled sintering. This study clarifies that graphene nano-platelets additive in the prepared nanocomposite did not engage in reactive sintering process, unlike many previous research studies addressing reactive sintering role for carbon additives.

Keywords

Ceramic; Graphene; Nanocomposite; Spark plasma sintering; Transmission electron microscopy; ZrB_2–SiC