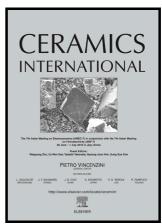
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TEM characterization of spark plasma sintered ZrB₂-SiC-graphene

nanocomposite

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Abstract

The interfacial behavior of spark plasma sintered ZrB₂-SiC nanocomposite doped with graphene

nano-platelets was investigated by transmission electron microscopy (TEM). A powder mixture

including ZrB₂ 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;

ZrB₂–SiC

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