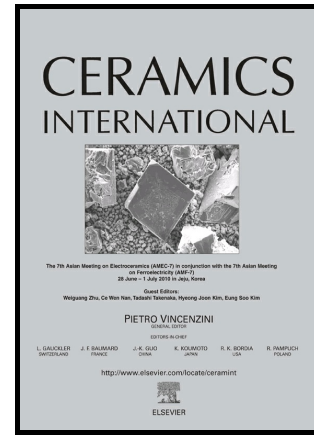


# Author's Accepted Manuscript

Effect of titanium diboride on the homogeneity of boron carbide ceramic by flash spark plasma sintering

Jiawei Wu, Bo Niu, Fan Zhang, Liwen Lei, Jinyong Zhang, Lin Ren, Weimin Wang, Zhengyi Fu



[www.elsevier.com/locate/ceri](http://www.elsevier.com/locate/ceri)

PII: S0272-8842(18)31325-7  
DOI: <https://doi.org/10.1016/j.ceramint.2018.05.179>  
Reference: CER118354

To appear in: *Ceramics International*

Received date: 18 April 2018  
Revised date: 18 May 2018  
Accepted date: 20 May 2018

Cite this article as: Jiawei Wu, Bo Niu, Fan Zhang, Liwen Lei, Jinyong Zhang, Lin Ren, Weimin Wang and Zhengyi Fu, Effect of titanium diboride on the homogeneity of boron carbide ceramic by flash spark plasma sintering, *Ceramics International*, <https://doi.org/10.1016/j.ceramint.2018.05.179>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

# Effect of titanium diboride on the homogeneity of boron carbide ceramic by flash spark plasma sintering

Jiawei Wu, Bo Niu, Fan Zhang<sup>\*</sup>, Liwen Lei, Jinyong Zhang, Lin Ren<sup>\*</sup>, Weimin Wang  
and Zhengyi Fu

State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan

University of Technology, Wuhan, 430070, China

zhfan@whut.edu.cn (F. Zhang),

renlin19850514@163.com (L. Ren)

<sup>\*</sup> Corresponding author: Tel.: +86 13986082496;

## Abstract:

A novel method, namely flash spark plasma sintering (FSPS), combining flash sintering and electric field assisted sintering, was utilized to densify boron carbide/titanium diboride ( $B_4C/TiB_2$ ) composites. Further, sintering homogeneity of the composites with different contents of  $TiB_2$  was systematically investigated and theoretical model was built. Results indicated that addition of 50 wt.%  $TiB_2$  led to the densification of  $B_4C/TiB_2$  composite by up to 97.7% with regional range 1.9% at 1872 °C under pressure of 4 MPa in 60 s. The preferential pathway of  $TiB_2$  network proves to disperse the central current and distribute thermal flow throughout the specimen possibly via tunneling, electronic field emission effect at first stage and

---

Download English Version:

<https://daneshyari.com/en/article/7886220>

Download Persian Version:

<https://daneshyari.com/article/7886220>

[Daneshyari.com](https://daneshyari.com)