

عنوان مقاله:

PRESSURELESS SINTERING OF B₄C-NANOTiB₂ NANOCOMPOSITE BY ADDITION OF Fe AND Ni AS SINTERING AIDS

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تعداد صفحات اصل مقاله: 7

نویسندگان:

M. M. Mohammadi Samani - Malek-Ashtar University of Technology, Tehran, Iran

H. R. Baharvandi - Malek-Ashtar University of Technology, Tehran, Iran

H. Abdizadeh - School of Metallurgy and Materials Engineering, University of Tehran, Tehran, Iran

J. Rezapour - Malek-Ashtar University of Technology, Tehran, Iran

خلاصه مقاله:

B₄C and its composites with TiB₂ as second phase continues to be extensively used as the preferred ceramic material in military applications as armor systems for absorbing and dissipating kinetic energy from high velocity projectiles. It also exhibits a high melting point (۲۴۲۷ °C), and high neutron absorption cross section. Pressureless sintering of the B₄C-nanoTiB₂ nanocomposite using small amount of Fe and Ni (≤ 3 Wt%) as sintering aids was investigated in order to clarify the role of Fe and Ni additions on the mechanical and microstructural properties of B₄C-nanoTiB₂ nanocomposites. Different amount of Fe and Ni, mainly ۱ to ۳ Wt% were added to the base material. Pressureless sintering was conducted at ۲۱۷۵, ۲۲۲۵ and ۲۳۰۰ °C. It was found that Addition of ۳ Wt% Fe and ۳ wt% Ni and sintering at ۲۳۰۰ °C resulted in improving the density of the samples to about ۹۹% of theoretical density. The nanocomposite samples exhibited high density, hardness, and microstructural uniformity.

کلمات کلیدی:

B₄C, TiB₂, Pressureless Sintering, Nanocomposite, Sintering Aid

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