عنوان مقاله:

Microwave-Assisted Two-Step Sintering of Al/۸wt%TiC Composite Prepared by Powder Metallurgy

محل انتشار:

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خلاصه مقاله:

In this work, two-step sintering (TSS) of Al/۸wt%TiC with microwave heating has been performed successfully. The composites were fabricated by uniaxial pressing of mixed Al and TiC powders and subsequent sintering in an argon atmosphere at different sintering schedules. The observational studies show a well-dispersed TiC reinforcement in the Al matrix. According to the results, relative density and strength increased from about ۹۵.۵% and ۹۰ MPa to ۹۷% and ۱۰۰ MPa for sintered composites at ۶۴۰ °C for ۲ h and ۶۰۰ °C for ۱۰ h with single step sintering by a conventional method, respectively. Also, applying the TSS method enhanced the values from ۹۷% and ۱۰۱ MPa for conventional TSS (T۱=۶۴۰, T۲=۶۰۰ °C) to ۹۸% and ۲۱۱ MPa for microwave-assisted TSS technique. It can be related to the more effective activation of the surface mechanism during fast microwave heating than the tube furnace dilatory heating. .Consequently, decreasing the sintering temperature (T۲) can proceed with densifying mechanisms

کلمات کلیدی:

Al/TiC composites, microwave sintering, TSS method, Bending Strength