

عنوان مقاله:

The Effect of Al Additive and Arc Melting Time on Synthesis of Ti_3SiC_2 MAX Phase using Ti/SiC/Al/Graphite

محل انتشار:

مجله مکانیک سازه های پیشرفته کامپوزیت، دوره 9، شماره 2 (سال: 1401)

تعداد صفحات اصل مقاله: 10

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خلاصه مقاله:

In this study, the effect of different molar ratios of primary powders and arc melting setting time on the synthesis of Ti_3SiC_2 powder has been investigated. For this purpose, Silicon Carbide (SiC), Titanium (Ti), graphite (C) and aluminum (Al) powders with molar ratios of $3Ti:1.2SiC:0.8C$, $3Ti:1.2SiC:0.8C:0.1Al$ and $3Ti:1.2SiC:0.8C:0.3Al$ were mixed by a planetary mill under an argon atmosphere for 5h. The resulting mixture was formed with a press and subjected to arc melting at 1, 3, 5, and 10s. In samples containing Al additive, the purity of Ti_3SiC_2 increases with increasing arc melting setting time up to 5s, and the purity decreases with increasing the arc time. The best result was obtained in the sample $3Ti:1.2SiC:0.8C:0.1Al$ containing 83.6 wt% of Ti_3SiC_2 , which was obtained during the 5s arc melting.

کلمات کلیدی:

MAX phase, arc-melting method, Ti_3SiC_2 , aluminum

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