

عنوان مقاله:

Effect of castings modulus on the microstructure of Al/ SiCp metal matrix composites; fabricated via Narrow Melt Stream (NMS) method

محل انتشار:

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تعداد صفحات اصل مقاله: 6

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خلاصه مقاله:

In this study, for the first time Narrow Melt Stream (NMS) as a relatively new semi solid technique was utilized for producing globular structures in Al/SiCP metal matrix composites. Al-10 vol. %SiC composite reinforced with 76 μm sized SiC particles produced by SL version of compocasting was used as the starting material. These ingots were re-melted and poured at 660°C through a 10 mm sized nozzle into three cylindrical shaped cast iron moulds with an identical volume of 200 cm³ and various modulus of 1, 1.2 and 1.3 cm, located at 1500 mm under the crucible. The as-cast composites exhibited non-dendritic microstructure which could be converted into a globular structure after partial re-melting. It was concluded that by decreasing the casting modulus, more spherical globules with smaller average sizes were generated. Also, the decreased casting modulus resulted in a more uniform distribution of SiC particles in the matrix alloy at the expense of higher porosity levels.

کلمات کلیدی:

Narrow melt Stream (NMS) method; Al-10vol. %SiCp; castings modulus; globular structure

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