

Processing and Characterization of Functionally Graded Aluminum-Silicon Carbide Metal Matrix Composites

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ABSTRACT

Functionally graded metals and metal ceramic composites are becoming one of the prospective materials for the design and fabrication of innovative engineering components for advanced applications. Centrifugal casting technique is the simplest, economical and potential method for fabricating such functionally graded metal matrix composites. The present investigation is on the processing and characterization of functionally graded aluminum-silicon carbide composites fabricated by liquid metal stir casting technique followed by horizontal centrifugal casting method. The composite systems synthesized are based on 356 cast and 2124 wrought aluminum alloys reinforced with SiC particles of 23 μm average particle size. The microstructural and hardness of the resulting FGMMC are evaluated. The microstructural analysis has revealed the graded dispersion of SiC from the outer to the inner periphery of the casting.

Keywords: Functionally graded material (FGM), Metal Matrix Composites (MMC), Aluminum, Silicon carbide, Centrifugal Casting