

Synthesis of Mg₂Si magnesium matrix in-situ composites

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During the past decade, considerable research effort has been directed towards the development of in-situ metal matrix composites (MMCs), especially in Magnesium Metal Matrix Composites in which the reinforcements are formed in-situ by exothermal reactions between elements or between elements and compounds. SiC can be used as a reinforcement which takes part in in-situ reaction with Magnesium. The main objective of this experiment was to produce magnesium silicide (Mg₂Si) since this gives better microstructural and mechanical properties than the magnesium alloy itself. For

better results, SiC was heat treated at different temperatures for a different amount of times to remove any contaminations on the SiC particles and make the surface properly active. SiC mixed with pure magnesium chips and magnesium alloy blocks and heated in the furnace with argon gas to prevent oxidation of the magnesium. Heating of the mixture was done at different temperatures for different time periods. Among the trials, pure Mg and Mg alloy combined with SiC produced mentionable result at 900°C for 1 hour time period.

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