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## **Optimization on Stir Casting Process Parameters of Aluminium Alloy (AL6061) Nickel Coated Graphite (NCG) Metal Matrix Composite using Taguchi Based Rsm**

**Lakshmikanthan.P<sup>1</sup>, Prabu. B<sup>2</sup>**

**Department of Mechanical Engineering Pondicherry Engineering College,  
Pondicherry, India**

**Abstract :** The investigation presents the results of experimental investigations on mechanical property and optimization of stir casting process parameters of aluminium 6061 nickel coated graphite metal matrix composite using Taguchi based Response surface methodology (RSM). The investigation has been made the effect of casting parameters such as percentage of reinforcement, stirring time, stirring speed and casting temperature of Al6061-NCG metal matrix composite manufactured by pellet method. The responses considered for the analysis are Hardness and tensile strength. An empirical model has been developed for predicting the Hardness and tensile strength of aluminium 6061 nickel coated graphite metal matrix composite. Response surface model and analysis of variance (ANOVA) are used in order to study the effects of casting parameters. Optimum result in maximizing the Hardness and tensile strength are determined using desirability function approach. The influences of different casting parameters of Al6061-NCG particulate composite have been analyzed in detail.

**Keywords :** Al6061, Nickel coated graphite, stir casting, Anova, RSM.

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