

UNIVERSITY OF BELGRADE  
TECHNICAL FACULTY IN BOR



# BOOK OF ABSTRACTS

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## CONSIDERATION OF THE INFLUENCE OF STIR CASTING PROCESS PARAMETERS ON OBTAINING MMC CASTINGS

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**Mentor: Jasmina Petrović**

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### Abstract

Metal matrix composites (MMC) are materials in which metal represents the base to which various inorganic and organic materials (reinforcers) are added which contribute to the improvement of the properties of the base. The advantages of the Stir Casting process are reflected in its simplicity, flexibility and application possibilities in the production of MMC in industrial conditions. Obtaining a quality product by stir casting process is conditioned by numerous process parameters, which directly or indirectly affect the course of the process and the final characteristics of the composite. This paper presents an insight into the basic process parameters of the stir casting process and the characteristics of MMC castings.

Stir casting method implies adding the reinforcing particles into a melted metal by a mixing. During mixing, a vortex is formed which ensures the insertion of poorly wetttable particles into the melt and their uniform distribution. With the increase of the mixing speed, a more homogeneous composite is formed, because thanks to the mixing, a more even distribution of the reinforcing particles in the base alloy is performed. The time interval in which the composites are mixed should be as long as possible, in order to distribute the reinforcements evenly. As the process temperature increases, the viscosity of the melt decreases and the homogenization of the composite is better. Composites with a metal matrix are characterized by high values of hardness, strength, stiffness, good corrosion resistance, wear resistance, low density, the ability to work at elevated temperatures.

**Keywords:** *Composite, Stir casting, Process parameters*

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