

# **Characterisation of mechanical properties of aluminium composites fabricated by stir-casting and powder metallurgy**

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## **Abstract-**

**Light and strong metal matrix composites (MMC) are highly anticipated for aerospace and automotive industries. The MMC's application fields can be significantly expanded if they possess enhanced strength at elevated temperatures also. This paper aims to study about the mechanical characteristics of Metal Matrix Composite (MMC) of Aluminium fabricated by Stir Casting and by Powder Metallurgy. The MMC of Aluminium consists of Magnesium, Zinc, Graphite and Graphene. Microscopic and Spectrometer studies were done on all the specimens. The Static tests like Tensile, Compression, Bending and Hardness were done in order to characterise the properties of the MMC. Using Pin on Disc wear machine, the wear properties of the Specimens which are made out of Cast and Powder Metallurgy were found by changing the Load, Velocity and Distance. The Wear surfaces of the Cast and Powder metallurgy specimens were also studied with the microscope. A Pre-Cracked Fracture Mechanics and virtual wear mechanics study of the Specimens is developed in ANSYS 18 using the material data obtained from CESEDUPACK for the composite in order to obtain results about the crack propagation and wear in the MMC.**

**Index Terms- Stir Casting, Powder Metallurgy, Sintering, Fracture Growth.**

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## **Citation:**

*del Real-Romero, J.C.; Jiménez-Octavio, J.R.; Manoharan, R.; Muthuselvam, R.S.; Joseph, R.; Sakthi Sudhan, H.H. "Characterisation of mechanical properties of aluminium composites fabricated by stir-casting and powder metallurgy", International Journal of Mechanical Engineering and Technology, vol.8, no.6, pp.176-189, June, 2017.*