

## **Review of Microstructure, Mechanical and Corrosion Behavior of Aluminum Matrix Composite Reinforced with Agro/Industrial Waste Fabricated by Stir Casting Process**

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**Abstract :** Aluminum matrix composites have gained focus on research and industrial use, especially those not requiring extreme loading or thermal conditions, for the last few decades. Their relatively low cost, simple processing and attractive properties are the reasons for the widespread use of aluminum matrix composites in the manufacturing of automobiles, aircraft, military, and sports goods. In this article, the microstructure, mechanical, and corrosion behaviors of the aluminum metal matrix were reviewed, focusing on the stir casting fabrication process and usage of agro/industrial waste reinforcement particles. The results portrayed that mechanical properties like tensile strength, ultimate tensile strength, hardness, percentage of elongation, impact, and fracture toughness are highly dependent on the amount, kind, and size of reinforcing particles. Additionally, uniform distribution, wettability of reinforcement particles, and the porosity level of the resulting composite also affect the mechanical and corrosion behaviors of aluminum matrix composites. The two-step stir-casting process resulted in better wetting characteristics, a lower porosity level, and a uniform distribution of particles with proper handling of process parameters. On the other hand, the inconsistent and contradicting results on corrosion behavior regarding monolithic and hybrid aluminum matrix composites need further study.

**Keywords :** microstructure, mechanical behavior, corrosion, aluminum matrix composite

**Conference Title :** ICMMSE 2024 : International Conference on Metallurgy, Materials Science and Engineering

**Conference Location :** Toronto, Canada

**Conference Dates :** June 13-14, 2024