Review of: "The Influence of Hot Extrusion on The Mechanical and Wear Properties of an Al6063 Metal Matrix Composite Reinforced With Silicon Carbide Particulates"

Akhileshwar Nirala[1]

1 Galgotias College of Engineering and Technology (GCET)

Potential competing interests: No potential competing interests to declare.

This article extensively investigates the wear and mechanical properties of hot-extruded Al6063 alloy reinforced with varying proportions of silicon carbide. The research examines adhesive wear resistance, hardness, density, porosity, tensile, compression, and impact strength, employing stir casting and hot extrusion to create composites. The introduction emphasizes the significance of lightweight composite materials and justifies the use of ceramic particle reinforcement in aluminum alloys. The literature review provides a solid foundation, and the well-organized experimental section clarifies testing rules and parameters. Results and commentary present findings systematically, with clear graphs illustrating mechanical and tribological performances. The conclusion summarizes the positive impact of SiC reinforcement on mechanical properties and wear resistance, highlighting porosity reduction and fine-grained refinement. The work is well-written, scientific, and contributes to lightweight composite materials, making it suitable for publication with minor changes.

However, the article could benefit from comparative studies to enhance its field contribution. Additionally, a more extensive discussion of drawbacks, including fabrication affordability, mass production scalability, and reinforcement selection issues, would improve the paper. Further investigation into wear mechanisms, particularly for hot extrusion, is recommended to deepen understanding. Despite these considerations, the article is recommended for publication, provided these suggested changes are implemented.