

# Review of: "Investigating the Mechanical and Tribological Effects of MoS<sub>2</sub> Reinforcement in AZ91 Magnesium Alloy: A Comprehensive Experimental Study"

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**Potential competing interests:** No potential competing interests to declare.

The introduction effectively outlines the context and significance of magnesium alloys in the transportation industry. However, the transition to the specific focus on friction stir processing (FSP) could be smoother. Consider providing a clearer transition.

Ensure that each section is clearly demarcated and logically follows the previous one. The introduction of MoS<sub>2</sub> and its properties might be better suited for the materials and methods section rather than the introduction.

The study mentions the use of a 2 mm drill technique instead of the more common groove method. Could you elaborate on why this technique was chosen and what specific advantages it offers over the groove method?

The study mentions the use of a tungsten carbide tool material but later describes an H-13 tool for securing the workpiece. Clarify if different tools were used for different stages or if there is an inconsistency.

Explain how the 42 holes filled with MoS<sub>2</sub> were distributed over the AZ91 plate. Was there a specific pattern or arrangement?

The process of grinding MoS<sub>2</sub> particles is mentioned, but the final particle size and its distribution are not specified. Including these details would strengthen the methodology.

Ensure that all numerical data (e.g., tensile strengths, elongation values, and hardness measurements) are double-checked for accuracy. Discrepancies or inconsistencies in reported values should be resolved.

There seems to be a discrepancy in the reported rotational speeds. The hardness test section mentions 1100 rpm, 900 rpm, and 700 rpm, but the tensile test section uses "sample centrifuged" terminology which is not standard. Ensure consistent terminology and parameters throughout the paper.