

Review of: "Investigating the Mechanical and Tribological Effects of MoS₂ Reinforcement in AZ91 Magnesium Alloy: A Comprehensive Experimental Study"

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Potential competing interests: No potential competing interests to declare.

The work highlights Friction Stir Processing of AZ91/MoS₂ targeting mechanical and tribological applications. In line with stated objectives, the manuscript needs to be improved on the following points:

1. Abstract should be qualitative (include result values) along with quantitative discussion.
2. What was the motivation to choose MoS₂?
3. Include the specifications of MoS₂ and the as-received MoS₂ SEM image.
4. Generally, Vickers hardness load will be put in grams. 50 kg load is suspicious. Clarify these lines and mention the make and model of the machine.
5. Mention the location of hardness indentations taken, whether at the center of the stir zone, AS, or RS? What was the inter-distance maintained between two indentations?
6. In the stress-strain curve in Figure 3, why are more fluctuations seen? It looks like the sample slipped multiple times from the grip of the machine during the tensile test.
7. Were the tests carried out in constant strain rate conditions? Was the machine load applied in hydraulic mode or servo controlled? Mention the specifications of the machine, make, and model.
8. Results and discussion section needs to be more elaborated: Hardness, tensile test, and SEM analysis (very poorly discussed). Refer to the article for in-depth understanding: <https://doi.org/10.1080/10426914.2019.1605181>
9. In the SEM analysis, it's mentioned that Figure 7 depicts EDS results, but EDS maps are not included. Images in Figure 7 are merely the SEM fractograph images.
10. The mode of fracture is not clearly evident through fractography, like the presence of dimples, pull-out mechanism, cleavage fracture, etc.
11. The conclusion is too shabby. Needs to be re-written in short.