

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.

In this paper, the author fabricated magnesium matrix nanocomposites using the friction stir process. The microstructure, microhardness, and tensile tests of three specimens were studied. The paper has some interesting results. However, the results and discussion parts are very weak, and organizing the manuscript, the way of presenting the images with scale needs to improve. I regret to inform you that the review recommends are against publishing your manuscript and must therefore reject it. My comments are given below.

1. In section 3, Hardness Heading: The hardness testing specimen is shown in Figure 2. However, there is no scale in the images, which is required to assess the size of the specimen. There is no indentation impression image which is needed to understand the difference in the hardness of the specimen with respect to the rotational speed.
2. In section 3, Hardness Heading: Why did the author use different indentation sizes to measure the hardness? What is the need to use different indentation sizes? Moreover, the results from different indentation sizes are not included in Table 3.
3. It is specified as "As shown in Table 3, the average grain size within the stir zone (SZ) of the AZ91-FSP specimens was reduced to approximately $1.4 \pm 0.5 \mu\text{m}$, compared to the $7.4 \pm 1.0 \mu\text{m}$ of the full-annealed samples". On what basis has the author written it? In Table 3, the hardness value is given but the author discussed the microstructure size. Please carefully check it.
4. In Table 3, there is no significant difference observed among the hardness of different specimens. It shows that the rotational speed did not affect the hardness of the specimens.
5. The result and discussion (R and D) part is very weak. Always the R and D part should be greater than the introduction and experimental parts. In-depth analysis is required.