

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 purpose of the study is not mentioned. What motivates this research? The expected outcome or the problem it aims to address is not clear.

While many similar studies exist in the literature, how this study differs from them is not specified.

The sentences lack coherence, and the relevance of certain statements is unclear. Additionally, the connection between the literature cited in numbers 5 to 12 in the introduction and the topic "AZ91/MoS₂ surface composite by friction stir processing" is not apparent.

There is no scale in either the macrostructure or microstructure images.

Although the researchers mentioned in the introduction that MoS₂ is used as a lubricant, the tribological properties of the surface composite have not been investigated.

While the researchers stated that the highest hardness values were in the surface composite, no hardness distribution is presented, making it impossible to see the hardness change from the main material to the surface composite.

Therefore, the effect of the main material's hardness on the study's results is unclear.

The method used in the study is friction stir processing (FSP); thus, the sentence beginning with "The hardness was measured at various locations in the weld zone" should be corrected to reflect the correct context of hardness measurement.

Approximately the same hardness values were measured in FSP processes performed with different parameters, but the reasons for this were not examined.

The dimensions of the tensile test samples are not provided, nor is there a figure showing the areas from which the tensile samples were taken. The tensile test results should be shown on the same diagram for comparison.

Microstructure examinations should be detailed with a cause-effect analysis, but such an analysis was not conducted in this study.

The analysis of fractured surfaces is insufficient, and the effects of FSP parameters on these surfaces have not been discussed

The overall methodology of the study is weak, and the discussions of the results are insufficient.