

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.

This manuscript studies "Investigating the Mechanical and Tribological Effects of MoS₂ Reinforcement in AZ91 Magnesium Alloy: A Comprehensive Experimental Study." However, the manuscript needs a major revision before the final decision.

1. Firstly, many symbols and terms presented in the manuscript are not defined in the text. It is important for the author to define all symbols and terms used in the manuscript to ensure clarity and understanding for the readers.
2. The authors mentioned many papers that focused on experimentation, using different welding techniques to make welded joints of magnesium alloy combinations. However, compared to these works, it is important to explain why your research is essential and what the limitations or shortcomings of previous research are. Additionally, the introduction should discuss the novelty of the present study.
3. In the FSW process, several studies have been published to improve the mechanical properties of the weld joints. What is the main contribution of your work compared to the results existing in the literature?
4. The author needs to explain the basis for choosing the optimization parameters.
5. Please be advised to review the manuscript for any grammatical errors and revise them accordingly.
6. The abstract of the paper should be improved by adding the concluding findings of the study, and authors should clarify it as the abstract of a review paper.
7. The author must present more details on the experimental protocol (photos of the experimental steps...).
8. The tool material properties used for FSW are not mentioned.
9. The manuscript does not clearly present the objective of the work. The author must support his work with more results.
10. The manuscript does not contain real pictures of the various steps of the experimental protocol.
11. It is advised to utilize well-designed, high-quality photos.
12. It appears that there are certain figures and tables in the manuscript that have not been thoroughly analyzed. I recommend revisiting these figures and providing detailed explanations in order to enhance the overall clarity and impact of your research findings.
13. The conclusion of the paper is very long. The authors should improve it by adding the concluding findings of the study.

14. The literature review should be rewritten by citing more recently published papers in the field of FSW process optimization. It is recommended to cite the following references suggestions:

<https://doi.org/10.1007/s40799-021-00515-8> <https://doi.org/10.1016/j.jmapro.2018.07.002>

<https://doi.org/10.1007/s40799-022-00573-6> <https://doi.org/10.3176/proc.2021.4.20>

<https://doi.org/10.1016/j.ijpvp.2022.104879>

DOI 10.1088/1757-899X/1140/1/012050

<https://link.springer.com/article/10.1007/s00170-023-12518-3>

<https://www-scopus-com.sndl1.arn.dz/record/display.uri?eid=2-s2.0-85163582248&origin=resultslst>