

# 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.

Key observations and suggestions:

1. Overall structure and content: The article is well-structured with clear sections for introduction, methods, results, discussion, and conclusion. The content appears relevant and in-depth for the topic of friction stir processing (FSP) of AZ91 magnesium alloy reinforced with MoS<sub>2</sub>.
2. Abstract: The abstract provides a good overview but could be more concise. Consider reducing its length by focusing on the key methods, results, and conclusions.
3. Introduction: The introduction provides good background on magnesium alloys and FSP. However, it could benefit from a clearer statement of the study's specific objectives and hypotheses.
4. Methods: The experimental procedures are generally well-described. Consider adding more details on sample preparation for microscopy and tensile testing.
5. Results and Discussion:
  - The results are presented clearly with appropriate figures and tables.
  - The discussion of hardness and tensile test results is thorough.
  - The SEM/EDS analysis section could be expanded to provide more interpretation of the elemental composition results.
  - Refer to these papers and modify the discussion for the alloys and cite if needed:  
<https://iopscience.iop.org/article/10.1149/1945-7111/abb34f/meta> and <https://doi.org/10.1007/s12034-019-1907-0>
6. Figures and Tables:
  - Ensure all figures and tables are numbered consecutively and cited in the text.
  - Some figure captions could be more descriptive (e.g., Figures 3-5).
7. Conclusion: The conclusion summarizes the key findings well. Consider adding brief suggestions for future research directions.
8. References: The reference list appears comprehensive. Ensure all citations in the text are included in the reference list and vice versa.
9. Minor language and formatting issues:
  - Check for consistency in spelling (e.g., "centrifuged" vs "processed" in results section)

- Review formatting of units (e.g., use consistent spacing between numbers and units)
10. Originality statement: Consider adding a statement about the originality and significance of this work compared to existing literature.

Overall, this article presents valuable research on FSP of AZ91 magnesium alloy with MoS<sub>2</sub> reinforcement. With minor revisions addressing the points above, it should be suitable for publication.