

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.

1. Magnesium is highly reactive and prone to oxidation and corrosion, especially in humid or saline environments. This limits its long-term durability and requires protective coatings. MoS₂ can also degrade in oxidizing environments, reducing its effectiveness over time. What is the author's comment on this?
2. While adding MoS₂ can improve certain mechanical properties, it might also reduce others, such as ductility. Please comment.
3. How do the authors verify the uniform distribution of MoS₂ in the magnesium matrix?
4. MoS₂ can be relatively expensive, and incorporating it into magnesium can increase the overall cost of the composite material. Justify.
5. The title shows a comprehensive study, but the experimental results have not given enough justification for the title "Comprehensive." Need to add a more detailed study.
6. Though the FSP is shown to have improved certain properties, considering the mass manufacturing aspect, FSP seems to be laborious and costly. Please comment on this.
7. Why in Fig. 3 is the tensile stress-strain plot not following the common trend (i.e., zigzag)?
8. The tensile strength of most of the commercially available Mg is more than 200 MPa, but the present study has not even achieved that. Why?

Overall, a detailed investigation is needed to fully understand the nature of the research work, and novelty is also lagging.