

Review of: "Investigating the Mechanical and Tribological Effects of MoS₂ Reinforcement in AZ91 Magnesium Alloy: A Comprehensive Experimental Study"

Silvano Santos¹

¹ Faculdade de Tecnologia do Estado de São Paulo (FATEC-SP)

Potential competing interests: No potential competing interests to declare.

The submitted manuscript investigates the Mechanical and Tribological Effects of MoS₂ Reinforcement in AZ91 Magnesium Alloy: A Comprehensive Experimental Study. Some of my comments are as follows:

1. What is the chemical composition of the AZ91 Mg alloy?
2. What equipment was used in the chemical composition analysis of Table 1?
3. Why did the authors choose these process parameters?
4. The increase in hardness is notable. The authors must explain why the processed alloy increased in hardness.
5. Please note that you mentioned "These results suggest a positive interaction between the AZ91 matrix and MoS₂ reinforcement, leading to an overall enhanced hardness compared with the non-reinforced material [4][6][16][18]." What is the main mechanism that resulted in improved hardness?
6. The authors should insert a schematic drawing of the samples used in tensile testing.
7. The micrographs (Figures 4 and 5) present poor resolution. The authors could replace the images.
8. EDS analyses were mentioned on page. Where are the EDS analyses?
9. The authors should insert a relative discussion of the fracture results.
10. Please note that you mentioned "The microstructure of the FSP-modified AZ91 magnesium alloy (AZ91-FSP) exhibited significant grain refinement compared with that of the fully annealed baseline material." Where are the images of the microstructures? How were the values of grain size obtained?
11. The Conclusions should be rewritten?