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 paper is addressing an interesting problem, and the experiment was quite well planned. However, the paper is very badly organized and should be re-written.

In the Abstract, one does not need so many details concerning mechanical processing; instead, some information presenting achieved advancement in this field is required. A similar situation is with the Introduction section; i.e., in the last part, please describe only your aim and the methods you planned to use.

The description of the physical/chemical properties of MoS2 in the Experimental section is totally out of place; that type of information should be placed in the Introduction section. However, most of it is well/generally known, while other data like band gap or conductivity has no connection with the aims of the authors' study, i.e., wear rate improvement.

Slipping in sentences like “Hardness measurement is a vital tool in materials research, offering a quick assessment of material properties and the effectiveness of processing parameters. It also provides insight into the evolution of the microstructure [17] .” is also totally out of place. The Results section should present results(!) and not method descriptions/significance for the material research field.

The authors should add at least two schemes, i.e., one presenting the spacing of the holes filled with the MoS2 and the path of the drill, while the other should show the places chosen for light/scanning electron microscopy observations.

The results (including mechanical properties) obtained by the authors should be compared with data obtained by other researchers, like in the case of the application of the “groove” method. The paper simply is in need of the Discussion section. Readers should know what kind of progress in this area was achieved.

Taking into account all the deficiencies of this paper, I recommend rejecting the paper.