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 work focuses on the effect of rotational speed on friction stir-processed (FSP) AZ91 and MS2 metal matrix composites. The work has merit as there is importance in defining what the optimum fabrication parameters are. The motivation for the work is clearly stated, as are the future applications. However, the work needs revision before publication. The following main points are given for the need of revision:

1. The abstract is long and does not highlight the novelty of the work. Optimum processing parameters are given, but only rotational speed is addressed in this paper.
2. The text refers to Table 1 as having “The atomic and molecular makeup values…” this is not the case, only content % is given.
3. Figure 1 gives no indication of the samples used in the test; more annotation is needed to understand the pictures, and a schematic would be beneficial.
4. It is unclear what Table 2 shows, as the values do not agree with processing parameters in the rest of the paper.
5. Figure 2 is unclear on what it shows; more annotation is needed.
6. Table 3 does not show grain size as indicated in the text. The text also states that Table 3 shows 1100rpm gives the greatest hardness. This is untrue, as the 700rpm case clearly has a higher average hardness value.
7. Figure 3 has no explanation as to why the stress-strain curve is so noisy compared with other results in Figures 4 and 5.
8. On page 8, it is stated the 700rpm case has the lowest elongation. The data shows this is not true, and the 900rpm case, in fact, has the lowest elongation.
9. Figure 6 does not have EDS spectra as suggested by the text. The axes and annotation are too blurry to read, and so it is hard to interpret the results.
10. There are several mentions of enhancement throughout the paper, but no data is given for just the AZ91 material, so this conclusion cannot be made.
11. The paper results seem to disagree with the abstract and conclusion – the 700rpm case has the highest hardness and tensile strength. No explanation is given as to why the 1,100rpm case is stated as optimum.
12. In general, there is no discussion or explanation given of the results presented within this paper. The paper is written in a way that suggests there was minimum communication between whoever conducted the experiments and whoever

wrote the work up.