Review of: "The Influence of Hot Extrusion on The Mechanical and Wear Properties of an Al6063 Metal Matrix Composite Reinforced With Silicon Carbide Particulates"

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Potential competing interests: No potential competing interests to declare.

Review Comments

This manuscript proposes different weight fractions of SiC in the Al 6063 matrix on mechanical and wear properties by Stir casting followed by hot extrusion techniques. The topic is interesting and certainly consistent with the contents to be proposed to the readers of the "Qeios Journal". However, the manuscript is not so well-written and should be improved to be read with pleasure: this represents an important aspect in the current scenario of publications in reputed journals. Overall, I think that this manuscript could be accepted if the Authors are able to take into account the following major revisions (in terms of microstructure, phase formation, grammar corrections, and content deepening):

Abstract

1. The author should mention the qualitative percentage of improvement in the mechanical properties with the addition of different weight fractions of the SiC reinforced Al 6063 alloy for as-cast and hot extruded samples.

Introduction

1. The language of the entire manuscript needs further refinement.
2. The introduction section of the paper does not suitably motivate the readers on the subject. I miss a more complete and better description of the problem context.
3. The author should enlighten the significance of SiC in the introduction section.

Experimental Analysis

1. The dimensions of the samples were not mentioned in the experimental section.
2. The author should include references for the different weight fractions for the selection of reinforcement.
3. The strain rate is not mentioned for the tensile and compression tests, and the dimensions of the samples were also not mentioned.
4. The microstructure and phase analysis have to be included to examine the influence of the SiC reinforcement on the Al 6063 alloy. It is also recommended to check for precipitate formation during the secondary operations.

Results and Discussion

1. The microstructure (SEM) results, along with EDS mapping for any one weight percentage of the as-cast and hot extruded samples, should be included in the manuscript for the view of the grains, grain boundaries, and secondary precipitates formed.
2. The author should emphasize the influence of the SiC weight percentage in the Al 6063 alloy.
3. All the mechanical property graphs should be modified properly.
4. The fractured SEM images of the tensile and compression tests have to be included for journal improvement.
5. Graphs 8 and 11 should be modified.
6. SEM micrographs of the worn surface are not clear. Kindly add images of proper quality. In addition, the micron size is not present in the SEM images.

Conclusion

1. The state of the art is missing in the "Conclusions" section, and the conclusion should highlight the unique contributions of the paper.