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.

Reviewer's Comments

Reviewer's comments on the Manuscript entitled "The Influence of Hot Extrusion on the Mechanical and Wear Properties of an Al6063 Alloy Reinforced with Silicon Carbide Particulates" authored by Abdul Nazeer et. al. submitted for publication.

The manuscript deals with the synthesis of the Al 6063 alloy reinforced with different weight fractions of silicon carbide using the stir casting technique. Some of the samples of the cast alloy and composites were subjected to hot extrusion at 500 degrees Celsius with an extrusion ratio of 9.0. The mechanical (hardness, tensile strength, and impact strength) and wear properties (sliding wear) of 'as-cast' and 'hot-extruded' matrix alloy and composites were studied. The addition of reinforcement has been reported to improve the mechanical properties such as hardness, tensile strength, and wear resistance. However, a reverse trend was observed in the case of impact strength. Further, the mechanical (hardness and tensile strength) and (sliding) wear properties of the extruded alloy and composite samples were found to be superior to those of the cast ones.

The results are on expected lines. However, the paper lacks in the following:

1. The factors responsible for controlling the sliding wear behavior and mechanical properties of composites from a material point of view are matrix microstructure, dispersoid/ matrix interfacial bonding, mode of distribution of the dispersoid phase in the alloy matrix, and compatibility of the dispersoid second-phase particles with the matrix. Hence, it is necessary to include the general microstructure of all the composites prior to and after extrusion, which will reveal the above features. The distribution of reinforcing particles in the composite samples over different heights should also be measured.
2. It would be better to substantiate the observed response of the composite samples through the study of the wear characteristics of the sub-surface regions and debris as well as the tensile fractured surfaces.
3. It would be nice if the wear rate is reported in terms of volume loss per unit sliding distance.
4. The size of the reinforcing particles has not been reported.

In view of the above, the manuscript is not worth considering for publication unless rewritten and presented well, taking care of the mentioned aspects.