Dear Reviewers:

Thank you for your comments concerning our manuscript entitled “Mechanical properties and microstructures of laser-TIG welded ME21 rare earth Mg alloy” (ID: materials-538660). Those comments are all valuable and very helpful for revising and improving our paper, as well as the important guiding significance to our further researches. We have studied comments carefully and thought them over, and have revised the manuscript according to the comments. The corresponding revisions are highlighted in yellow color in the revised manuscript.

The main corrections in the paper and the responds to the reviewer’s comments are as flowing:

Response to Reviewer #1:

Comment 1: Although this manuscript is well organized and the methods are suitable, I do not find any scientific novelty in this paper.

Response 1: Thank you very much for the kind suggestion. I will introduce the scientific novelty in this paper from the following aspects: Firstly, the same and different rare earth Mg alloy sheets were welded by pulsed laser-TIG hybrid heat source, and achieved good welding forming. Secondly, the properties of the same and dissimilar Mg alloy joints were analyzed, such as tensile strength and microhardness. Finally, we found the weak zone of ME21/ME21 and ME21/AZ31 joints, and explained the reason for its formation and deterioration. These may provide a way to further improve the weldability of rare earth Mg alloy.

Comment 2: In some sentences there is a lack of verbs, for example “However, very few research on welding of rare earth magnesium alloy sheet (1.4 mm thickness) for automobile.”

Response 2: However, few researches on welding of rare earth magnesium alloy sheet (1.4 mm thickness) for automobile is carried out.

Comment 3: “tensile strenth”?

Response 3: Thank you very much for the kind suggestion. We have corrected it and changed into ”tensile strength”

Comment 4: Some sentences are grammatically incomprehensible, for example:
"The tensile samples shown in Fig.9 and a constant crosshead speed of 0.5 mm/min at room temperature, and the test results are the average of three samples."
"The fracture surfaces of AZ31/AZ31 welding [...]”?

Response 4: Tensile sample size was shown in Fig.9 and the stretching speed was 0.5 mm/min at room temperature.
The fracture surfaces of AZ31/AZ31 joints are shown in Fig.11c and d.

Thank you very much for the reviewer’s valuable comments. We have made a lot of changes in the language of this manuscript (highlighted in yellow color), and wish to meet the publishing requirements.