A Point-by-Point Response to the Reviewers

Title: “Synergistic effect of a dual functional SbB-g-GMA compatibilizer and Cloisite 30B on the functional properties of PET and PS blends for recycling applications purpose”

by F. Tahmasebi et al. (Ref: Submission ID 09ef1189-8409-42ae-adeb-f1df87a80420)

Reviewer 1

We appreciate the reviewer’s positive and constructive comments. The followings are our point-by-point responses to the comments:

Comment 1: The scientific issues that the study must solve are not addressed in the "Abstract" or "Introduction" portions of the paper, which is often the main concern. It is recommended that the manuscript's "Abstract" and "Introduction" stress the importance and significance of this work.

Answer: There exist numerous scientific concerns related to the utilization of our recently synthesized multi-functional compatibilizer. This novel material exhibits the potential to enhance both the interfacial properties and mechanical strength of blends, while also serving as an effective dispersant for clay nanoparticles within PET/PS blends. Consequently, this innovative approach facilitates the development of high-performance compatibilized PET/PS/clay nanocomposites through melt processing of two prevalent thermoplastics, namely PS and PET. The ultimate objective is to create new materials with superior thermal and mechanical properties, thereby exploring the feasibility of recycling these commonly used plastics.

The above statements have been added to the manuscript both in Abstract and Introduction section.

Comment 2: Figure comments are proposed for the two data points on the right side of Figure 1. Furthermore, the scale bar in the SEM image is unclear, and the font size should be increased.
Answer: As suggested the figure’s labels have been placed on the right side of Figure 1. The scale bar on the SEM images have been enlarged for better clarity.

Comment 3: Because PET/PS blends are prepared by melt cooling, and micro segregation of PET and PS may occur during the cooling process, resulting in non-uniform distribution of PET and PS inside the bulk material, information about the effect of C30B on the degree of dispersion of PET/PS blends is incomplete if only the bulk material's surface morphology is observed. As a result, it is advised that the brittle fracture of the block samples be observed.

Answer: We have used cryogenic fracture surfaces of sample to study the morphology. This information was added to the experimental and results and discussion sections.

Comment 4: Figure 4's concerns are consistent with Figure 1.

Answer: The scale bar of Figure 4 was enlarged for better clarity. Similar to Figure 1, the figure’s labels have been placed on right side of the Figure 4.

Comment 5: It's too lengthy in the "Conclusion" section. The "Conclusion" section should focus more on the analysis's findings than its methodology.

Answer: We have shortened the "Conclusion" section from 659 to 417 words, focusing more on the analysis's findings.

Comment 6: There are many typos throughout the manuscript, such as There should be a space between "200" and "°C" in Line 200. "Fig." and "Figure 7" are the figure numbers in the figure notes, and so on.

Answer: We corrected the space between "200" and "°C" in line 200. Furthermore, Other similar cases were also checked. The text below the figures were unified.
Reviewer 2:

**Comment**: We appreciate the reviewer’s positive and constructive comments. The followings are our point-by-point responses to the comments:

**Comment 1**: The language of the full text needs polishing.

**Answer**: The whole text was reviewed and edited in terms of language flaws.

**Comment 2**: The conclusion is too long and needs to be reduced.

**Answer**: The conclusion was rewritten and shortened.

**Comment 3**: The full text is not uniform, such as Fig.6 and Figure 7.

**Answer**: The full text has been unified in terms of using Fig and Figure. The "Fig" has been used for figure captions and the "Figure" for the references to the figures in the main text.

**Comment 4**: Line 17: tensile tests, and Izod impact tests. The microscopic images revealed that the addition of the SbB-

**Answer**: It was corrected.

**Comment 5**: Lines 119 and 120: The thermal stability of the blends was evaluated using Thermogravimetric analysis (TGA) and Differential Scanning Calorimetry (DSC)

**Answer**: The thermal characterization (lines 119-122) has been replaced with following text: “Thermogravimetric analysis (TGA) and Differential Scanning Calorimetry (DSC) measurements were performed on an SDT Q600 V20.9 Build 20 instrument under argon atmosphere by heating rate of 10 °C/min in the temperature range of 25-600 °C to evaluate the thermal properties of the blends. Three samples were measured and averaged. “

**Comment 6**: Line 166: At first the, the influence of C30B on size reduction of the dispersed phase domains…….

**Answer**: The following text has been replaced and added to the main text.
“Firstly, the influence of C30B on the size reduction of the dispersed phase domains of the PET/PS blend was studied by comparing the surface morphology of PET/PS (70/30) with that containing 1 phr of C30B.”