Response to referee #1

We are grateful for referee #1's comments. Those comments are all valuable and helpful for improving our paper. We answered the comments carefully and have made corrections in the submitted manuscript. The corrections and the responses are as following:

In the revised manuscript, the red color was marked as the revised places.

Comment #1: Line 75: Change "scanning electron microscope" to "scanning electron microscopy"

Reply: We appreciate the reviewer's comments. We revised the word in the manuscript.

In context, line 75: "In this study, individual particle collection, transmission electron microscopy (TEM), scanning electron microscopy (SEM), and atomic force microscopy (AFM) were comprehensively employed to investigate the mixing structures of soot particles at a mountain site on the eastern fringe of the TP."

Comment #2: In Fig. 7, the SEM images (Fig 7c and d) look different. At least the type of substrate is different. Are they the same samples?

Reply: We appreciate the reviewer's comments. The SEM images presented in Fig. 7c and 7d were obtained from different samples collected during the sampling period on Mt. Emei. Our intention was to visually demonstrate the distinct surface morphologies of sulfate, organic, and soot particles through SEM analysis. We added the detailed information in the method section.

In context, line 105-108: "A DKL-2 sampler (Genstar Electronic Technology, China) was used to collect individual aerosol particles on copper TEM grids covered by carbon film (carbon type-B, 300-mesh copper; Tianld Co., China) and silicon wafers (thickness: 500±10 μm, size: 3×3 mm; LIJINGKEJI, China). We also collected individual aerosol particles onto 47 mm diameter polycarbonate filter membranes (600 nm pore size, Whatman Inc., USA) via a Mini-Vol Sampler (Airmetric, USA) for SEM analysis."

In context, line 111-112: "The copper grids, silicon membranes, and

polycarbonate filter membranes were stored in the dry, clean, and airtight containers at 20-25% RH until analysis."