Supplement of


Qi Yuan et al.

Correspondence: Weijun Li (liweijun@zju.edu.cn)

The copyright of individual parts of the supplement might differ from the article licence.
Figure S1. Weather conditions during sampling period, including relative humidity (RH), temperature (T), wind speed (WS) and wind direction (WD).
**Figure S2.** The correlation of equivalent circle diameter (ECD, d) and the equivalent volume diameter (EVD, D) obtained by AFM.
Figure S3. (a) Relative abundance of soot-containing particles at Mt. Emei site during the eastern basin trajectories prevailing. (b) Relative abundance of soot-containing particles at Mt. Emei site during the western TP trajectories prevailing.
Figure S4. The other two major types of individual particles besides soot-containing particles in this study. (a) S-rich, which is mainly produced by SO$_2$ conversion and appears as cystose mass under electron beam. (b) S-OM-coating, which appears a core-shell structure with a sulfate core and an OM-coating. All the conceptual graphs are placed in the top right corner of each image. The yellow circles and blue rings represent sulfate and OM-coatings, respectively.