



## Supplement of

## Sensitivities to biological aerosol particle properties and ageing processes: potential implications for aerosol-cloud interactions and optical properties

Minghui Zhang et al.

Correspondence to: Minghui Zhang (minghui.zhang@uca.fr) and Barbara Ervens (barbara.ervens@uca.fr)

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**Figure S1.** Total absorption coefficient for different PBAP number concentrations. The detailed input parameters can be found in *Table 2*. The black, red, blue, and brown lines correspond to  $S_{opt1}$ ,  $S_{opt2}$ ,  $S_{opt3}$ , and  $S_{opt4}$  in *Table 2*, respectively. No obvious change was predicted for the absorption coefficient.



**Figure S2.** Total absorption coefficient for different PBAP diameters. The detailed input parameters can be found in *Table 2*. The black line, red line, blue line, and brown line correspond to  $S_{opt1}$ ,  $S_{opt3}$ ,  $S_{opt5}$ , and  $S_{opt6}$ , respectively. No obvious change was predicted when the diameter of PBAPs increased.



**Figure S3.** Percentage contribution of ice water content (%IWC, dashed lines) and liquid water content (%LWC, solid lines) to total adiabatic water content as a function of D<sub>PBAP</sub>.