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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Volatility of secondary organic aerosol during OH radical induced ageing" *by* K. Salo et al.

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1. I feel the authors need to clearly define a term SOA aging used in this study. What the authors demonstrate here is the importance of the gas-phase aging. It is not clear from the manuscript if the authors mean the gas-phase aging, particle-phase aging or a combination of the both.

Answer:

With the methods used in this work it was primarily the changes in particle properties that were studied. However, the observed changes in particle ageing were a result of processes evidently taking place mostly in the gas phase and to limited extent also in the condensed phase. For SOA the partitioning of compounds occurring between

the condensed phase and the gas phase is important and processes in both phases are central. Consequently, we define SOA ageing as a term to describe all processes affecting the particle properties as a function of time by adding one sentence at the end of the first paragraph in the introduction.

"Consequently, the term SOA ageing is a change of SOA properties with time and corresponding ageing processes may take place both in gas and condensed phase."

2. Page 19515, line 4: Can the particle bounce off the sole reason for this discrepancy? Is ionization efficiency the same for ammonium nitrate and organics? Collection efficiency and ionization efficiency are two separate properties. One expects ionization efficiency (or collection efficiency) to change as the composition (i.e. the volatility) of SOA changes. How does the discrepancy between the SMPS derived mass and AMS organics change when SOA is more volatile or less volatile?

Answer: see Response to anonymous referee #1, point 4.

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 19507, 2011.