

***Interactive comment on “Analysis of the
hygroscopic and volatile properties of ammonium
sulphate seeded and un-seeded SOA particles” by
N. K. Meyer et al.***

Anonymous Referee #1

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General comments

The paper is very well written and presents experimental chamber data on aerosol particle volatility and hygroscopicity. The authors try to simulate atmospheric conditions in their chamber, and provide interesting results on organics and organic-inorganic interactions within the particles. The paper is suited for publication in ACP, but I do have some additional comments on the manuscript.

Specific comments

-8635, lines 20-21: Is the accuracy of both temperature and RH 2% ?

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-8636, line 10 (and later): The mode still clearly keeps growing even after 6h.

-8636, lines 11-12: "ageing processes become increasingly apparent". I'm sure this is true, but you do not discuss this in later sections. When doing the VH-TDMA scans later on, you should state how long it took. Is there a possibility that ageing changes the aerosol during the measurement so that you are looking at different particles at 40C and 200C? The HGF of the SOA should be increasing during the scans, so it wouldn't directly explain the decreasing HGF you observed, but are there possibly other effects of the ageing? Please add some short discussion on this.

-8636, line 20: Even with all the scatter, it looks to me as if the ammonium starts to increase when the sulfate starts decreasing. Since you later on use the SMPS mode diameter to calculate the volume fractions, add this line to the bottom graph of Fig. 2 as well.

-8636, lines 26-27: The AMS should have no trouble seeing organic sulfates, so why should this explain the reduction?

-Fig. 3: Why are there so few points in the lower panel? Generally, also add time resolution of instruments used in the study.

-8640, lines 5-7: If the HGF decrease is due to the Kelvin effect alone, HGF* should be constant in the unseeded case as well, but this isn't the case.

-Fig.4: I would also like to see seeded SOA at 85% and pure SOA at 75%. Since the authors can't adequately explain this behavior, giving more information to the reader might help the interpretation.

-8644, eq.3: epsilon_DAS is not explained in the text. I assume it is the same as ADVF, and in that case you should not use two different notations for the same term in the equation.

-8647, line 21 (and before): Do you have any theoretical explanation for the AS not dissolving completely?

Technical corrections

- Sometimes you use "un-seeded", sometimes "unseeded". Pick one.
- Fig.2: You have measured ammonium, not ammonia.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 8629, 2008.

ACPD

8, S5409–S5411, 2008

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