

## ***Interactive comment on “Hygroscopic growth and critical supersaturations for mixed aerosol particles of inorganic and organic compounds of atmospheric relevance” by B. Svenningsson et al.***

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Received and published: 6 June 2005

1) The authors may find the following papers useful for comparison with their measurements of levoglucosan particles:

Mochida, M., and Kawamura, K.: Hygroscopic properties of levoglucosan and related organic compounds characteristics to biomass burning aerosol particles, *J. Geophys. Res.*, 109, D21202, doi:10.1029/2004JD004962, 2004.

Chan, M. N., Choi, M. Y., Ng, N. L., and Chan, C. K.: Hygroscopicity of water-soluble organic compounds in atmospheric aerosols: Amino acid and biomass burning derived

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organic species, Environ. Sci. Technol., 39, 1555-1562, 2005.

2) The authors have found that the MIXSEA measurements have lower growth than the ZSR predictions.

Would the reaction of  $2\text{NaCl} + (\text{NH}_4)_2\text{SO}_4 = \text{Na}_2\text{SO}_4 + 2\text{HCl}$  be important?

In fact, volatilization (i.e., decrease in particle mass) from mixed  $\text{NaCl}-(\text{NH}_4)_2\text{SO}_4$  particles has been observed by Cohen et al. (1987). Furthermore, chloride depletion in MOUDI samples can be resulted from such artifact reactions (Yao et al. 2001). Did the authors observe any decrease in particle size during the course of experiments?

3) For the ZSR, data of pure ammonium sulfate and sodium chloride were used as inputs in the calculation. As discussed by the authors (page 2851, paragraph 2) and represented by the above reaction equation, ammonium chloride and sodium sulfate can possibly be formed. The use of ammonium sulfate and sodium chloride data as inputs may not fully represent the mixture of inorganic salts. The authors may want to use AIM for estimating the water uptake of the inorganic fraction in MIXSEA.

#### References

Cohen, M. D., Flagan, R. C., and Seinfeld, J. H. Studies of concentrated electrolyte solutions using the electrodynamic balance. 2. water activities for mixed-electrolyte solutions, J. Phys. Chem., 91, 4575-4582, 1987.

Yao, X., Chan C. K., and Fang M.: Experimental study of the artifact of chloride depletion from collected sea-salt aerosols in sampling, Environ. Sci. Technol., 35, 600-605, 2001.

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Interactive comment on Atmos. Chem. Phys. Discuss., 5, 2833, 2005.

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