Atmos. Chem. Phys. Discuss., 5, S5387–S5389, 2005
www.atmos-chem-phys.org/acpd/5/S5387/
European Geosciences Union

Atmospheric Chemistry and Physics Discussions

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: 5 February 2006

In this paper, the authors examine the hygroscopic growth and CCN activity of mixtures containing inorganic salts (ammonium sulfate, ammonium nitrate, and sodium chloride) and three model organic compounds (levoglucosan, succinic acid and fulvic acid). Surface tension as a function of carbon concentrations were measured using a bubble tensiometer. The authors then i) use the measurements to develop a parameterization of water activity with respect to molality, ii) test the (ZSR) method for predicting water update, and, iii) predicting critical supersaturations based on the wa-

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ter activity parameterization.

These are interesting measurements - clearly more of these kind are needed for expanding our understanding of the role of water-soluble organics on CCN activation. I recomment publication provided that the following minor comments are addressed:

1. using ZSR to predict water uptake has been used by the group of S.Pandis for mixed organic inorganic aerosol, e.g.

Cruz CN, Pandis SN Deliquescence and hygroscopic growth of mixed inorganic-organic atmospheric aerosol ENVIRONMENTAL SCIENCE & TECHNOLOGY 34 (20): 4313-4319 OCT 15 2000

Alternate approaches have also been used for water uptake calculations, e.g.,

Ansari AS, Pandis SN Water absorption by secondary organic aerosol and its effect an inorganic aerosol behavior ENVIRONMENTAL SCIENCE & TECHNOLOGY 34 (1): 71-77 JAN 1 2000

I would have liked to see some of this explicitly mentioned in the manusript introduction, as well as to point out why using ZSR is the method of choice.

2. Much of the paper is based on the effect of solubility on CCN activation and hygroscopic uptake. Again, there has been some experimental work published in the literature, and I would have liked to see some of these cited in the manuscript introduction. For example:

Raymond TM, Pandis SN Formation of cloud droplets by multicomponent organic particles JOURNAL OF GEOPHYSICAL RESEARCH-ATMOSPHERES 108 (D15): Art. No. 4469 AUG 12 2003

Raymond TM, Pandis SN Cloud activation of single-component organic aerosol particles JOURNAL OF GEOPHYSICAL RESEARCH-ATMOSPHERES 107 (D24): Art. No. 4787 DEC 26 2002

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3. The figure lines need to be thicker in Figs. 2, 3, 5

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