Atmos. Chem. Phys. Discuss., 9, C4864–C4865, 2009
www.atmos-chem-phys-discuss.net/9/C4864/2009/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Toward a general parameterization of N_2O_5 reactivity on aqueous particles: the competing effects of particle liquid water, nitrate and chloride" *by* T. H. Bertram and J. A. Thornton

T. H. Bertram and J. A. Thornton

thbertram@ucsd.edu

Received and published: 15 September 2009

Response to comments from referee #2:

1. Does the size distribution consist entirely of particles with D<800nm, so that the authors are confident that the measured size distribution is an accurate reflection of the particle size distribution (PSD) within the aerosol flow tube (AFT)?

Size distributions were analyzed for each experiment. As noted in the text the mean Sa weighted size was 150-200nm and the full distribution was well within the D<800nm

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

sampling window for all experiments conducted. Extrapolating the tail of the distribution beyond 800nm would account for less than 5% of addition particle Sa. As shown in table 1, the wt % of the solutions was on average 0.07-0.08 wt.%. Size distributions recorded in this study were comparable to those shown in Figure 2 of Thornton et al. [2003] for the 0.1 wt.% malonic acid solutions.

2. How was molarity calculated from molality?

The only experiment where our conclusions necessitate knowing the molarity is for the H2O dependence. In the other studies we are only dependent on the molar ratio of H2O, NO3 and Cl. Calculating molarity from the AIM output requires an estimate of the particle density. In this study we assume the density of the particle to be a linear combination of the respective densities of the particles chemical constituents. Again, the only conclusion subject to this estimate is the value of the fitted rate coefficient for the H2O dependence (k2f). We have added the typical density used in this analysis to the text for future comparisons.

3. Is it possible to compare the ratio k3/k2b to previous studies?

Yes, we have added a comparison of this number to that used by Griffiths et al. to describe the nitrate effect in g(N2O5). The number reported here 6.0±1.0 x 10-2 is in reasonably good agreement to that found by Griffiths et al. [2009] 3.3 x 10-2.

4. Figures: gray symbols hard to pick out, redo?

We will address this (alongside comment 19 from reviewer 1) with the editorial staff of ACP at the proof stage of final manuscript preparation.

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 15181, 2009.