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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Chemical ionization mass spectrometry (CIMS) may not measure all gas-phase sulfuric acid if base molecules are present" *by* T. Kurtén et al.

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I am a chinese PHD student who is currently working on a project regarding the effects of amines and ammonia on atmospheric nucleation. In my opinion, which maybe not so professional, i think the problem or the issue raised in this MS is very important, this maybe the reason that why some nucleation studies are sometimes not in consistent with each other.

Recently, i noticed two papers regarding atmospheric amines in AE (X.Ge, A. S. Wexler, S. L. Clegg, Atmospheric Environment. 45(2011),524-546; X.Ge, A. S. Wexler, S. L. Clegg, Atmospheric Environment. 45(2011),561-577.), which investigate the im-

portance of amines in gas/particle partitioning. Although it is based on equilibrium thermodynamics, it do prove that the common amines have a stronger ability to combine with acid molecules, such as nitric acid. Although no data regarding aminium sulfate is reported (Ge told me that it is because no solubility data for aminium sulfate is available, so no quantitative values can be estimated), it is highly possible that the bonding between H2SO4 and amines is stronger than that of HNO3 (as H2SO4 is one of the few atmospheric species with greater acidity than HNO3.)

This may make us imagine that in the existence of base molecules (ammonia or amines), that part of sulfuric acid would react with them and thus decrease the real concentration we need to measure, however a lot of other factors may influence the results, and it is hard to make an accurate calculation, But in this paper, it actually provide some quantitative evidence, although the authors hesitate to make such a conclusion, but i think it is definitely valuable to be published in ACP.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 30539, 2010.