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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Thermodynamics and kinetics of the hydrolysis of atmospherically relevant organonitrates and organosulfates" *by* K. S. Hu et al.

Anonymous Referee #1

Received and published: 30 June 2011

General Comments:

Hu et al. utilized electronic structure analysis and NMR to examine the thermodynamic and kinetic properties of the hydrolysis of a range of organonitrate and organosulfate compounds. The presence of organosulfate compounds in SOA is of great interest to the atmospheric community and thus this manuscript should help to guide field measurements of SOA components and aid in interpretation of results. In particular, the discussion in the manuscript is excellent and describes the conditions (timescales, pH) under which the hydrolysis of certain compounds is expected to occur. Trends in the hydrolysis of different compounds allowed basic structure activity relationships to be

identified. This is an excellent contribution to ACP. The manuscript is well written with an excellent discussion of the results; only a few minor revisions are suggested below.

Specific Comments:

- Conclusions: Since a major goal of the work was to identify structure activity relationships associated with the hydrolysis of organonitrate and organosulfate compounds, it may be useful to include bullet points in the conclusions section clearly stating these structure activity relationships for future reference for others. The conditions under which hydrolysis is expected to occur in the atmosphere could also be summarized similarly for greater clarity.

- Page 14404, Lines 20-22: What characteristics would these other tertiary organosulfates be expected to have?

- Tables 1 & 2: Please clarify in the text how delta(Hexp) and –Tdelta(Sexp) were obtained.

- Figure 1: This figure is only referred to in the introduction and does not appear to be revisited in the remainder of the manuscript; thus, it could be removed from the manuscript, as it was published in a previous paper.

Technical Comments:

- Page 14384, Lines 20-23: Please clarify sentence.

- Figure 3: Clarify the y axis.

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 14383, 2011.