

Interactive comment on “The 2005 Study of Organic Aerosols at Riverside (SOAR-1): instrumental intercomparisons and fine particle composition” by K. S. Docherty et al.

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This is a very extensive paper, reports the OA measurements during SOAR-1 by various instruments. I am specially interested in the discussions regarding amines, i have a couple of suggestions, hope they are valuable.

(1)P6328L20: "For instance, characteristic mass spectral fragments have 20 been observed to indicate the presence of amines in particles sampled in a number of locations".

Our recent paper (Ge et al., Atmos. Environ., 45, 2011, 524-546) summarized the observation of particle amines, and indeed some of them came from Riverside studies.
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Sun et al. (Atmos. Chem. Phys., 11, 1581–1602, 2011) were able to separate a unique nitrogen-enriching OA from NYC aerosols with high correlation with C₂H₄N⁺, C₃H₈N⁺ and C₄H₁₀N⁺ which are clearly indicative of amines.

(2)P6333L1-5: "The influence of amines on the HR-AMS ion balance is unknown. Amines may contribute to fragments nominally assigned to NH₄ (e.g., m/z 16, 17, and 18) in which case they would artificially increase both measured “ammonium” and apparent particle basicity."

This is somehow in consistent with a recent paper (Hersey et al., Atmos. Chem. Phys. Discuss., 11, 5867–5933, 2011). They suggested the presence of amines led to the observation of significant excess of particulate ammonium.

(3)P6333L5: "amines can compete with NH₄ for particulate anions such as inorganic SO₄ and NO₃ forming salts..."

Our recent work (Ge et al., Atmos. Environ., 45, 2011, 561-577) proved that this could be true for a lot of amines based on thermodynamic calculations. Also, there are some other related studies might also be valuable: Barsanti et al. (Atmos. Chem. Phys., 9, 2949-2957, 2009) and Rehbein et al., (Environ. Sci. Technol., dx.doi.org/10.1021/es1042113.)

At last, about Section 2. In my opinion, if the title is changed to "...Overview of results and instrumental intercomparison....", then the lengthy Section 2 will be inside the scope of the paper.

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Best Regards

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 6301, 2011.