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Interactive comment on “Glyoxal uptake on ammonium sulphate seed aerosol: reaction products and reversibility of uptake under dark and irradiated conditions” by M. M. Galloway et al.

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In addition to the formal reviews, we would like to make a few comments on the Galloway et al. paper.

This is an interesting work, directly relating to our recently published study of the reaction of glyoxal in ammonium solutions (Noziere, Dziedzic, Cordova, J. Phys. Chem. A, 113, 231, 2009). Both studies complement each other well as the approaches are very different (SOA growth in this work vs bulk liquid-phase kinetics in our case). Our results reinforce those in this manuscript by demonstrating that glyoxal reacts in ammonium solutions independently from any acid catalysis pathway. We thus strongly encourage

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Interactive Discussion

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the authors to quote our work, as we will quote this work in our future papers.

Although our work first reported the reaction of glyoxal in ammonium solutions, this manuscript reports the determination of imidazole derivatives. For information, some works (Prasanthi, V., et al., Asian Journal of Chemistry, 19, 5778, 2007 and reference therein) have previously studied the formation of imidazole derivatives from glyoxal in ammonium sulfate, and report a yield of 4 to 9 percent for glyoxal concentrations lower than those of ammonium.

We also have two questions:

The abstract (li 8) states that the "analysis provides evidence for the irreversible formation of C-N products". What is the experimental evidence supporting the fact that this formation is irreversible ?

Similarly, the formation of organosulfates in some of the experiments is presented as a main result of this work. Yet, there does not seem to be any direct evidence for organosulfates in the analysis. If anything, the high-resolution MS analysis demonstrates that organosulfates were not present and that masses previously attributed to such compounds were, in fact, non sulfate-containing compounds. What are the evidences supporting this major claim (or can they be made clearer) ?

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 20799, 2008.

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