

## ***Interactive comment on “Common inorganic ions are efficient catalysts for organic reactions in atmospheric aerosols and other natural environments” by B. Nozière et al.***

### **Anonymous Referee #4**

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I have been asked to provide an additional, independent comment on the discussion of the ACPD manuscript by Noziere et al. As far as I can see, the authors have not convincingly replied to the main point of criticism from the reviewers: How can the experiments prove that the increased production of colored species is due to catalysis by ammonium and not due to production of N-containing products. In their reply, Noziere et al. write:

"Note that this kinetic analysis was based on non-nitrogen containing products (2,4,6-octatrienal) and is therefore safe from artifacts from non-catalytic pathways."

However, in the paper, it is explained that the kinetics are derived from the absorbance

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of colored products. 2,4,6-octatrienal is not mentioned in the kinetics section. I agree that HRMS spectra can identify individual products but how can measurements of absorbance be specific to 2,4,6-octatrienal?

To summarize, I think it is still possible that the reaction rate increases mainly because the aldehydes react with ammonium, forming some colored, N-containing products. If the experiments can indeed rule out this possibility, it should be explained in detail in the manuscript.

Further comments:

It would be useful to show examples of an aldol condensation and an acetal formation as a chemical equation in the introduction.

Page 3, lines 21-22: What is the meaning of "concentrations ... were introduced"? Are the numbers given here the concentrations of the added solution or of the final mixture?

Section 2.1: Why is epsilon in equation (1) called "extinction coefficient" and in equation (3) "absorbance"? Why is there no concentration term in the Beer-Lambert law? Did you include the concentration into epsilon?

Page 6, lines 23: Noziere et al. 2008 is missing in the list of references.

Page 11, lines 14: What is an "apparent" Henry's law constant? I am not aware of such a quantity. Did you mean "effective"?

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Interactive comment on Atmos. Chem. Phys. Discuss., 9, 1, 2009.

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