

## ***Interactive comment on “The ozonolysis of primary aliphatic amines in single and multicomponent fine particles” by J. Zahardis et al.***

### **Anonymous Referee #2**

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#### General Comments:

The authors describe results of laboratory studies of the products and mechanisms of the reactions of submicron alkyl amine aerosol particles with ozone. The experiments were carried out in a flow tube and the products were monitored in real time using a particle mass spectrometer that employs electron attachment ionization to minimize fragmentation. For the most part, the interpretation of the results seems quite reasonable and they are in agreement with established organic chemistry for bulk solutions. This is a class of reactions for which there seems to be very little data with regards to aerosol chemistry, and so adds to the value of the work. The Introduction section and Conclusions & Implications section make a strong case for the potential relevance of this chemistry to the atmosphere, especially considering the growing interest in the

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role of amines in new particle and SOA formation. The manuscript is well written and is a good length, and the figures, tables and references seem appropriate.

#### Specific Comments:

1. Page 14610-14611: The, although the almost exclusive detection of NO<sub>2</sub>, NO<sub>3</sub>- and HNO<sub>3</sub> for reactions of pure alkyl amines with ozone seems rather bizarre. I assume that this due to the high electron affinities of these species and so is a matter of instrument selectivity? If so, perhaps this should be mentioned.
2. Page 14615, lines 1-5: Is anything known about the kinetics of imine formation from an acid and amine? It would surprise me if it were sufficiently fast to react on this short time scale.
3. Page 14616, Step 3): For the oleic acid reaction with ozone the carboxylic acid group can also react with the SCI to form a hydroperoxide.
4. Page 14612: Have you tried adding mixing NO<sub>2</sub> with O<sub>3</sub> in humid air to see if the R3 chemistry still occurs?
5. Has any thought been given to studying this chemistry in bulk solutions? It seems like it should be similar and that some more powerful off-line chromatography-mass spectrometry techniques could be employed for identifying products.

#### Technical Comments:

None

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Interactive comment on Atmos. Chem. Phys. Discuss., 7, 14603, 2007.

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