

Interactive comment on “Photodegradation of secondary organic aerosol generated from limonene oxidation by ozone studied with chemical ionization mass spectrometry” by X. Pan et al.

Anonymous Referee #2

Received and published: 22 April 2009

General comments: The manuscript describes a study to measure photodegradation of limonene ozonolysis SOA using chemical ionization mass spectrometry. The authors' findings suggest that the photodegradation of biogenic SOA is not limited by the UV wavelengths and RO₂ + HO₂ or RO₂ reactions are the dominant route responsible for SOA formation under low NO_x conditions. While the results are certainly interesting, this reviewer is concerned about the way the filters were sampled. Particularly the authors have used extremely high concentrations of precursor VOC for some experiments, most likely leading to absorption of gaseous species to quartz fibre filters. Have

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the authors considered the use of an annular denuder or alternatively impactor sampling? The potential influence of filter artefact formation needs to be clarified before it can be finally accepted for publication.

Specific comments: Pp. 4728 L17: Please provide a reference for this number. There is a newer estimate available which the authors may want to cite.

Guenther, A., Karl, T., Harley, P., Wiedinmyer, C., Palmer, P. I., and Geron, C.: Estimates of global terrestrial isoprene emissions using MEGAN (Model of Emissions of Gases and Aerosols from Nature), Atmos. Chem. Phys., 6, 3181–3210, 2006.

Pp. 4730 L25–29: This paragraph is redundant and not necessary for this manuscript.

Pp. 4731 L6: ultrahigh purity (UHP) oxygen -> ultra-high purity (UHP) oxygen

Pp. 4731 L7: This reviewer is unable to find an ozone generator named "Ozonetech OZ2SS". Please provide a full name of the manufacturer and the model for this device.

Pp. 4733 L22: What do the authors mean by "normally not observed"?

Pp. 4740 L5 and many places elsewhere: The ACP citation style should be followed. e.g. by (Mang et al., 2008) should be by Mang et al. (2008).

Pp. 4741 L24: 7OH-limonaldehyde -> 7-hydroxy-limonaldehyde

Pp. 4743 onwards: This section is extremely densely written.

Pp. 4745 L21: Do the authors have evidence to back this statement up? 100 ppbv seems significantly higher than typical atmospheric concentrations of monoterpenes (<5 ppb).

Pp. 4760 Fig. 5: The authors may want to include the CIMS spectra for 0.1 ppm as well.

Fig. 11. limononic acid -> Limononic acid

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