

Interactive comment on “Influence of aerosol acidity on the chemical composition of Secondary Organic Aerosol from β -caryophyllene” by M. N. Chan et al.

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Received and published: 10 February 2011

Response to Reviewer # 1

We would like to thank the comments and suggestions raised by the reviewer.

The manuscript presents new and important data on formation of SOA from oxidation of the sesquiterpene beta-caryophyllene. The manuscript is very well written and results are presented in a clear and concise way with relevant references to some of the related work.

The main problem with the manuscript is that the tables and schemes are almost un-

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readable, even in the online version. Some of them had to be viewed with 200% zoom. The text font in tables and schemes should be larger and the schemes improved in collaboration with the publishers. Otherwise I congratulate the authors with a very nice and interesting paper.

Response:

We have revised the tables and schemes to improve their quality.

Specific comments:

Page 29251 Line 18: "identified" is a strong word - "suggested" is more appropriate

Response:

The sentence has been changed.

P29252 L2: toward -> towards

Response:

The sentence has been changed.

P29254 L2: The filter sampling should be described. Please add information on filter type, sampling volume and other relevant information.

Response:

We provide the filter type, sampling air volume, and the amount of aerosol mass collected on each filter in the revised manuscript.

“For the chemical analysis, aerosol was collected on Teflon impregnated glass fiber filters (Pall Gelman Laboratory, 47 mm diameter, Teflon impregnated). To collect sufficient aerosol mass for the analysis, about 0.7-1.0 mg was collected on each filter and the sampling air volume was about 15.4 – 16.3 m³.”

P29254 L3: Is it important whether the distilled water was also deionized?

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Response:

Under neutral condition (pH = 7), the calculation shows that the distilled water gives the $[H^+]_{air}$ value of $\sim 0.6 \text{ nmol H}^+ \text{ m}^{-3}$, which is much lower than the $[H^+]_{air}$ values measured in the experiments (112 - 1150 $\text{nmol H}^+ \text{ m}^{-3}$). The deionization of distilled water was not significant in the $[H^+]_{air}$ measurements.

P29255 L11-13: The sentence is not clear.

Response:

We have not measured the OH level in our experiments. If we assumed an OH level of $10^6 \text{ molecules cm}^{-3}$, we show that the reaction rate of beta-caryophyllene with O₃ is much faster than that with OH. Beta-caryophyllene is likely reacted with O₃ in our experiments. We have revised the sentences to clarify this point.

“At an assumed OH level of $10^6 \text{ molecules cm}^{-3}$, the ratio of the rates of β -caryophyllene reaction with O₃ to OH at the O₃ levels in the reaction chamber is about 36.”

P29256 L29-next page: This is not clear - does the SCIs react with carbonyls or form carbonyls?

Response:

We have clarified this sentence.

“The stabilized CIs can react with H₂O, NO₂, and carbonyls.”

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 29249, 2010.

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