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Atmospheric Measurement Techniques Discussions

Interactive comment on "Identification of Organic Hydroperoxides and Peroxy Acids Using Atmospheric Pressure Chemical Ionization – Tandem Mass Spectrometry (APCI-MS/MS): Application to Secondary Organic Aerosol" *by* Shouming Zhou et al.

Anonymous Referee #2

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Summary

This AMTD article a new analytical method that the author developed to identify organic hydroperoxides and peroxy acids. One of the unique properties of this technique is that it can direct analyze liquid samples using a positive-ion CI-MS/MS under atmospheric pressure. This study used pure standards first to verify the technique, and then measured ROOH in alpha-pinene ozonolysis SOA. Overall, the manuscript is sound

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Discussion paper

and after addressing the following issues, it is suitable to be published on AMT.

Comments

Page 3, section 2.3: the author described the method used to collect SOA filters. There is no SOA mass concentration nor the mass of SOA collected on the filter reported. Since the author mentioned “SOA generation is confirmed by a SMPS”, then number-diameter distribution of the SOA should be put in the SI. The author should also report the SOA mass concentration and estimate the mass of SOA collected on the filter so it will give readers a reference point about how much SOA mass was analyzed.

The author concluded in page 6, lines 20-23 that ROOH do not contribute significantly to the dimer and trimer SOA signals. Then in page 3, line 32, the author described :” vaporizer temperature and ion transfer tubing temperature are set at 200 °C”. Previous studies have shown that oligomers from alpha-pinene SOA can thermally decompose at 100 °C (Hall and Johnston 2012, Williams, Zhang et al. 2016). Because the author heated it to 200 °C, would be possible that a lot of oligomers are decomposed to form small ROOH molecules when passing through the vaporizer and the ion transfer tubing, leading to a bias of the current results?

References

Hall, W. A. and M. V. Johnston (2012). "The Thermal-Stability of Oligomers in Alpha-Pinene Secondary Organic Aerosol." Aerosol Sci. Technol. 46(9): 983-989. Williams, B. J., et al. (2016). "Organic and Inorganic Decomposition Products from the Thermal Desorption of Atmospheric Particles." Atmos. Meas. Tech. 9(4): 1569-1586.

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