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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Molecular composition of aged secondary organic aerosol generated from a mixture of biogenic volatile compounds using ultrahigh resolution mass spectrometry" *by* I. Kourtchev et al.

Anonymous Referee #2

Received and published: 2 April 2015

Kourtchev et al describe a novel study in which biogenic SOA, produced from the ozonolysis of a mixture of BVOCs, was aged in a laboratory chamber through 3 different scenarios: 1) OH and UV, 2) UV only, and 3) O3. Then liquid chromatography and high resolution mass spectrometry was used to characterize the molecular composition of the resulting SOA. The title should be clarified to emphasize the unique aspects of this study – perhaps "Molecular composition of biogenic secondary organic aerosol following additional aging" or something that better describes the study? Also, the authors use the term "ultrahigh resolution" mass spectrometry; however, they use an

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Orbitrap with a resolution of 100,000 at m/z 400, which is typically not considered to be "ultrahigh", rather just "high resolution". This phrasing should be fixed throughout the manuscript so that it is not misleading. Otherwise, the manuscript is well-written.

I agree with many of the comments of referee #1. Here are additional comments:

Introduction: The intro is well-written and provides great justification for the study. In discussing oligomer content of a-pinene SOA, however, the authors should consider the work of Hall and Johnston (2011, Aerosol Sci. Technol.).

Page 5369, Lines 6-7: What fraction of peaks were shared between the spectra?

Page 5370, Lines 3-4: Odd phrasing.

Page 5371, Lines 5-7: What study is this result from? This is not clear.

Additional list of molecular formulae for fresh SOA: It would be useful to add an additional column to this to note if this peak has been observed previously in lab studies, and if so, what precursor(s) it is attributed to.

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 5359, 2015.