

Interactive comment on “Terpenylic acid and related compounds: precursors for dimers in secondary organic aerosol from the ozonolysis of $\vec{\alpha}$ - and $\vec{\beta}$ -pinene” by F. Yasmeen et al.

Anonymous Referee #1

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General comments

The manuscript deals with the interesting topic of identification of reaction products from ozonolysis of alpha- and beta-pinene, more specifically structure elucidation of compounds with higher molecular weights. Generally the manuscript is well-written and presents the results in a straight-forward way. The manuscript is very focused on detailed chemical analysis and it could be improved, especially for the audience of ACP, by a somewhat broader discussion of the atmospheric relevance of the work.

Specific comments

Page 10867 lines 4-7 The sentence is a bit unclear and the statement is not fully qual-
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ified by the data. How does mass spectrometric evidence for deprotonated molecules lead to the conclusion that diaterpenylic acid is a key monomeric unit?

Introduction: The first paragraph should be rewritten to give a broader introduction to the general reader (including a few references).

p. 10869 L 14-16: The words about “major” and “minor” products should be rephrased since I assume that the authors refer to compounds with major/minor intensity in the LC-MS chromatograms.

Experimental: Details of filter sampling at IfT are missing (e.g. air volume and filter type).

10871 L 15-17: This paragraph seems to be out of context.

10872 L7: What is an isobaric compound?

10872 L21: This is unclear and not precise.

10872 L27-> The structure and interpretation of MS spectrum of homoterpenylic acid should be in the paper, not supporting material, since this compound, to my knowledge, has not been studied previously in aerosols.

10874 L17: The mass of [M-2H + Na] must be m/z 379, which is actually not seen in the mass spectrum. Please clarify

10874 L21-23: This sentence is unclear and the statements should be discussed a bit more thoroughly.

10876: The statements on unique dimer-forming properties of both terpenylic and terebic acid are too strong. How do we know that there are not other, maybe yet un-identified, compounds with this property? But it seems that terpenylic acid forms dimers more readily than nor-pinic acid. Structures of terebic and diaterbic acid as well as interpretation of mass spectra should be in the paper, not supporting material.

10877 L10-20: This paragraph is difficult to read due to long and unclear sentences.

10877 L26: "lends support" please change to for example "is in line with previous results" or "supports previous findings".

10878 L8-11. This sentence is unclear - both the words and the physical meaning of the sentence.

Figure 1. There is too little information in the figure text.

Figure 3. Were these MS spectra obtained with standards? What are the retention times?

Scheme 1: Proposed MS-fragmentation, I assume?

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