

Atmos. Chem. Phys. Discuss., referee comment RC2
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Comment on acp-2021-150

Anonymous Referee #2

Referee comment on "Varying chiral ratio of Pinic acid enantiomers above the Amazon rainforest" by Denis Leppla et al., Atmos. Chem. Phys. Discuss.,
<https://doi.org/10.5194/acp-2021-150-RC2>, 2021

The manuscript presents interesting novel results on the enantiomeric ratio of pinic acid in aerosol samples collected in the Amazon forest at different heights. The manuscript is generally well written and presents the results in a straight-forward way. The presentation focuses only on pinic acid concentrations and comparison with previous work by the same research groups, and the manuscript would benefit from comparison with measurements of e.g. ozone during the sampling periods and possibly previous studies of SOA in the region.

Specific comments:

Line 44-45: "Although chiral molecules play a critical role in insect and plant communication (Phillips et al., 2003; Mori, 2014), they are rarely distinguished in studies regarding atmospheric chemistry." Even though there are only few studies, a proper overview of previous findings should be presented. This could include the work of Nozière and colleagues on isoprene SOA (tetrols), as well as the review by Cash et al., 2016, which is only very briefly mentioned in the current version of the manuscript.

Nozière, N. J. D. González, A.-K. Borg-Karlson, Y. Pei, J. P. Redeyby, R. Krejci, J. Dommen, A. S. H. Prevot and T. Anthonson, Geophys. Res. Lett., 2011, 38
DOI:10.1029/2011gl047323.

J. Gonzalez, A.-K. Borg-Karlson, P. Artaxo, A. Guenther, R. Krejci, B. Noziere and K. Noone, Environ. Sci.: Processes Impacts, 2014, 16, 1413–1421.

Line 113: Was the extraction efficiency and recovery tested?

Line 117: What was the purity of the standard?

Line 118: I suggest to provide information about quality of standard curves here (correlation coefficients). Furthermore, the method for determination of the limits of detection and the values in ng/m³ should be stated.

Line 210: Which concentrations for ozone and OH were used for the calculation of lifetimes? Relevant levels should be available from simultaneous measurement or previous studies in the region.

Line 213-216: These sentences are unclear. Please clarify.

Line 315: Which further improvements in the analytical methods are needed? If you mean the suggestions in the following sentences, I suggest to write this more clearly.

Minor comments:

Pinic acid is written in upper case in the title.

Figure 6. I suggest to change the order in the label, so it is similar to the figure (upper: E1 Lower: E2).