

Atmos. Meas. Tech. Discuss., referee comment RC1
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Comment on amt-2021-439

Anonymous Referee #1

Referee comment on "Measurement of enantiomer percentages for five monoterpenes from six conifer species by cartridge-tube-based passive sampling adsorption–thermal desorption (ps-ATD)" by Ying Wang et al., Atmos. Meas. Tech. Discuss., <https://doi.org/10.5194/amt-2021-439-RC1>, 2022

General Comments:

Scientific significance

This work is novel and important for use in volatile organic compound (VOC) analysis of conifer/plant emissions. Authors make an important point that monoterpenes make up a large portion of plant emissions which then can form secondary organic aerosols. This work highlights a passive sampling headspace adsorption/thermal desorption technique followed by chiral GC-TOFMS analysis. Six species of conifer clippings were sampled, both nursery and established types. The sampling included different times of the day and 2 seasons, with 3 or more replicates. Results show good separation, precision and detection of five monoterpenes and their +/- enantiomers.

Strength: This adds to the existing works on chiral monoterpenes by adding the passive sampling with chiral analysis of conifers. Passive sampling is really easy to use and convenient.

Weakness: Authors do not attempt to explain results of the enantiomeric ratios of the emissions. This may be useful for future research. Any ideas or hypothesis of why this is? Compare your active to passive sampling – do you see similar results? Other comparisons were not made. Are there any other works that measure these species?

Uptake rates exist for pinene and limonene on Tenax TA sorbent. Thus, concentrations could have been calculated in addition to ratios of the enantiomers. This would add to knowledge of how much of these VOCs are emitted, which might be useful to other

researchers.

Scientific quality: These experiments were well thought out and conducted.

Presentation quality: The writing style was straightforward and easy to follow.

Specific comments:

Line 88: Please reference your active sampling ATD work.

Line 93: Don't need diffusive rates since identical is an assumption. This might be tested in future by measuring the rates.

Line 122: Cut samples of plants instead of living plants sampled. Sampling the living plants in natural environment might have different results. This would be a good experiment to conduct.

Can the time difference of when the cuts were made until analysis matter?

Figures 2-4- I didn't understand the ABC lettering system in the graph. I did understand capital and lowercase meant statistically insignificant for the monoterpenes, then the species, respectively but I didn't understand the a-f or A-E designations. Where these just random to demonstrate the relationships? Please provide abbreviations in the caption or as a footnote. Or consider including in the table summarizing the statistical significance.

Also figures have error bars, please specify if these are 1 standard deviation or something else.

Technical corrections:

Line 167 "was directed to split flow" may sound better.

Table 1: Last entry: Tenax spelled incorrectly (Tenas)