Atmospheric Chemistry and Physics Discussions

Atmos. Chem. Phys. Discuss., referee comment RC1
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Comment on acp-2021-135

Anonymous Referee #1

Referee comment on "Measurement report: Biogenic volatile organic compound emission profiles of rapeseed leaf litter and its secondary organic aerosol formation potential" by Letizia Abis et al., Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2021-135-RC1, 2021

This paper present the emission of biogenic volatile organic compounds (BVOC) from rapeseed leaves litter under three different experimental conditions i.e. under UV light irradiation, in presence of ozone, and under simultaneous exposure to ozone and UV light irradiation. The experiments were carried out in a simulation chamber containing leaves litter collected nearby Paris in north of France.

The most emitted compound was methanol followed by acetaldehyde, acetoin and acetone in O3 and UV-O3 conditions. Surprisingly, isoprene was the 30th most emitted compound only in the experiment without presence of O3. The BVOC emission influenced the secondary organic aerosol (SOA) formation process. In the presence of both UV light and O3 the SOA formation was 9 and 52 higher than only UV light or ozone.

To my opinion this manuscript can be of broad interest for the atmospheric chemistry community and it can be published in ACP. I have few comments that can possibly improve the quality of the manuscript prior to be published.

Main comments:

- In the “Experimental procedure” it is not clear how many experiments were performed (it is ambiguous for the blank experiments and missing for the experiments themselves). The authors should clearly state upon how many replicates are based

their conclusions and provide a table for various initial conditions and main results.

- Sometimes, the analysis are oversimplified. Some key measurements are not given and the literature survey is not wide enough.
- The authors should have tried to better define the behavior of the chamber walls toward the air/light system. This is a valuable exercise which is required for most of the chamber application.
- There is no information about the estimated water quantity adsorbed on the Teflon wall or about the VOCs adsorbed on the wall.
- Is the temperature constant during the chamber experiments?

Minor comments

- As the wall material seems to have a significant importance, please provide the precise reference of the material: producer, ref number, and product name
- As the Teflon foil (FEP) is new and used just before the preliminary experiments how the blank experiments were distributed during the campaign? If, they were evenly distributed among experiments, did you notice any evolution of the wall chemical behavior?
- Adsorbed organics on the chamber wall can also come from the foil production process.
- The section “Atmospheric Implications” and “Conclusion” can be combined as they are both very short or strengthen the “Atmospheric Implications” with some examples.