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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Technical Note: Intercomparison of formaldehyde measurements at the atmosphere simulation chamber SAPHIR" *by* A. Wisthaler et al.

Anonymous Referee #2

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The manuscript by Wisthaler and co-workers is a well-presented piece of work, which adds some new aspects to the rather long story of formaldehyde instrument intercomparisons. In particular, the use of PTR-MS for measuring formaldehyde is very interesting and important, although I am convinced that this technique will never be in the short list of methods for measuring formaldehyde in the atmosphere.

Although the authors call the overall agreement between the different methods good, a closer look to the experimental data show significant differences between the different instruments, in particular, when measuring in more complex mixtures. Taking this into account, I would call the agreement between the different methods fair, if not poor (in

certain cases).

The authors try to explain the encountered difficulties, however, some of the explanations are very speculative, in particular, the impact of ozone on the measured formaldehyde concentrations. The authors should clearly mention this in the manuscript.

I would like to draw the authors' attention to the paper by Hak and co-workers, which is referenced in the present manuscript. On page 2884 of this publication, an intercomparison of different formaldehyde instrumental techniques at the EUPHORE simulation chamber is mentioned, which was performed in the presence of diesel exhaust and different hydrocarbons under irradiation with sunlight. Under these experimental conditions one can assume high ozone levels being present in the chamber. However, the agreement between the different methods applied was quite good, i.e no impact of ozone on the measured formaldehyde concentrations was observed. Unfortunately, the results from this intercomparison have not yet been published in the peer-reviewed literature.

I would also like to know, why the authors have not performed a one-day experiment in a complex but defined hydrocarbon mixture in the presence of NOx, instead of using ambient air for the last day of the experiments. My final conclusion is that the manuscript merits with some minor corrections publication in ACP. However, I am convinced that much more work will be necessary to better understand the differences observed in the application of the different formaldehyde instruments, in particular, in the presence of complex gas mixtures.

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