

Interactive comment on “Low-volatility compounds contribute significantly to isoprene SOA under high-NO conditions” by Rebecca H. Schwantes et al.

Anonymous Referee #1

Received and published: 26 January 2019

This paper reports on the SOA yield of isoprene OH oxidation in a chamber study. The authors designed experiments to distinguish between different chemical pathways for a more systematic investigation than previous studies. In addition, experiments aimed for similar conditions during the time of the experiment. The authors conclude that the main difference previous results from chamber studies were due to the variability in the seed aerosol concentration.

The paper is well written und gives all required details. It is well suited for publication in ACP.

I have only few small comments:

C1

p2 line 29: The authors may want to consider the publication of Peeters et al. PCCP 2014, if they mention new gas-phase chemistry of isoprene.

p3, Fig 1: I would suggest to add reference for the chemical scheme that is shown. What is the importance of the 1,5-H shift reaction that is shown in the scheme for conditions of high NO in these experiments?

p5 l6: I assume the specification of the Milli-Q water is meant to be 18 M Ohm.

p5 l18: I would suggest to add the mean diameter of the seed aerosol for information.

p7 l13: The author mention that in only few experiments NO₂ was directly detected and in other NO₂ was modelled. How was the model-measurement agreement of NO₂ in the experiments, when NO₂ was measured?

p8 l26: I would suggest to mention the parameters that were constrained by measurements in the model.

p12 l1-9: What does the unreasonable result of the correction of DMA data for wall loss mean for the uncertainty of yields determined for similar conditions in this work?

p14: Fig 5: The figure does not very clearly support the statement that SOA mass yield depends on the initial seed aerosol correction. There are essentially two values for the range from 1000 to 2000 and from 2500 to 6000 $\mu\text{m}^2/\text{cm}^3$. Could you please comment?

p25 l27-30: Does the statement that SOA from the LV pathway is moderately higher than from 2MGA takes into account the differences in the turnover of the OH oxidation of the precursors of the two pathways?

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2018-1358>, 2019.

C2