Atmospheric Chemistry and Physics Discussions

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Comment on acp-2022-566

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Community comment on "Product distribution, kinetics, and aerosol formation from the OH oxidation of dimethyl sulfide under different RO_2 regimes" by Qing Ye et al., Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2022-566-CC1, 2022

Dear authors,

I have read your paper with great interest, and I have a comment particularly regarding your statement in the introduction saying that "very few studies of the entire multiphase and multistep reaction system have been conducted...".

I would like to make you aware of three papers we have recently published/submitted on DMS oxidation and related aerosol formation in our group (Rosati et al., 2021; Rosati et al., 2022; Wollesen de Jonge et al., 2021).

Our studies focused on the pure new particle formation from the DMS+OH reaction at low NOx, high and low relative humidity, different DMS concentrations and different temperatures. A particular focus was put on the measurement of MSA by HR-ToF-MS in our experiments. As described in detail in Wollesen de Jonge et al. (2021) we also employed a model that implemented new reactions in the MCMv3.3.1 and the formation of HPTMF.

As you use different seed aerosols I was wondering about a few points:

- How many and what mass of seed did you use during the experiments?
- Did all oxidation products condense on the pre-existing seed aerosols or did you simultaneously observe new particle formation?
- Did the use of the different seeds (i.e. ammonium nitrate, sodium nitrate, sodium chloride) affect the results?

It would be interesting to see a comparison/discussion of your results with our chamber experiments as far as possible given the different conditions.

References:

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Rosati, B., Isokääntä, S., Christiansen, S., Jensen, M. M., Moosakutty, S. P., Wollesen de Jonge, R., Massling, A., Glasius, M., Elm, J., Virtanen, A., & Bilde, M. (2022). Hygroscopicity and CCN potential of DMS derived aerosol particles. *Atmos. Chem. Phys. Discuss.*, *2022*, 1-28. https://doi.org/10.5194/acp-2022-188

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