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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Physical state of 2-methylbutane-1,2,3,4-tetraol in pure and internally mixed aerosols" *by* Jörn Lessmeier et al.

Anonymous Referee #2

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The authors describe the physical phase states of 2-Methylbutane-1,2,3,4-tetraol and mixtures of tetrol which can be a marker for isoprene-derived SOA and α-pinene-derived SOA. The results provide new/additional insight for the phase state of SOA particles which is still unknown in the atmospheric chemistry community. This manuscript is clear, concise, and well-written. I recommend this manuscript for publication in ACP. I have several comments that the authors should consider prior to publication.

1. Page 2, line 19 – page 3, line 6; Page 15, line 8 – page 16, line 4: Recently, many research groups have focused on determination of phase states of isoprene-derived SOA and α-pinene-derived SOA particles using different techniques (i.e. measurements of viscosity, diffusion rate, evaporation rate, reactivity, and etc.) besides bounce experiments. Below are the relevant references. Maclean et al., and Song et al. showed that

SOA particles produced from biogenic VOC are to be liquid even at dry condition at $\sim$290 K. Please add these references even more and compared the results in detail.

Maclean, A. M., Butenhoff, C. L., Grayson, J. W., Barsanti, K., Jimenez, J. L., and Bertram, A. K.: Mixing times of organic molecules within secondary organic aerosol particles: a global planetary boundary layer perspective, Atmos Chem Phys, 17, 13037-13048, 10.5194/acp-17-13037-2017, 2017. Song, M., Liu, P. F., Hanna, S. J., Li, Y. J., Martin, S. T., and Bertram, A. K.: Relative humidity-dependent viscosities of isoprene-derived secondary organic material and atmospheric implications for isoprene-dominant forests, Atmos Chem Phys, 15, 5145-5159, 2015.

2. Please provide the fitting parameters for Fig. 4. It would be useful for readers.

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