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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Secondary organic aerosol formation from the photooxidation of isoprene, 1,3-butadiene, and 2,3-dimethyl-1,3-butadiene under high NO_x conditions" *by* K. Sato et al.

Anonymous Referee #5

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General Comments

This manuscript describes the results of smog chamber experiments on SOA formation from the oxidation of a few low molecular weight dienes, including isoprene. The dienes have slightly different structures, which allows for comparison of the effect of VOC structure on reaction products and SOA yields. A few experiments were also carried out at 300K and 278K to evaluate the effect of temperature and/or gas-particle partitioning on SOA formation. The particle composition was analyzed using high-resolution electrospray mass spectrometry and a high resolution AMS. The results show the presence

of a few series of oligomers in the SOA, some of which have been observed previously and some of which are new. The explanations of the trends in the SOA yields and composition for the different dienes seem reasonable. The results add useful new information on SOA chemistry and yields for some atmospherically important compounds. The manuscript is well written and contains necessary and appropriate references and figures. I think is should be published in ACP.

Specific Comments

1. At various places in the text the authors seem to be implying that methacrolein is oxidized in the particles by OH and that this leads to oligomer formation. I think this is inconsistent with the figures and also what has been proposed previously.

Technical Corrections

I did not find any technical errors.

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 4313, 2011.