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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Measurements of OH and HO_2 yields from the gas phase ozonolysis of isoprene" *by* T. L. Malkin et al.

Anonymous Referee #2

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This is well-written manuscript describing a carefully performed study to measure OH and HO2 yields from the ozone + isoprene reaction. The atmospheric significance of HOx formation from ozone + isoprene is obvious, and I certainly support the publication of this work in Atmospheric Chemistry and Physics. The OH yield from this reaction has been studied a number of times, and there is some scatter in the reported values. This work reports the most comprehensive measurement of this quantity to date, and it is reassuring to see good agreement across the four methods used. The reported HO2 yield from the reaction is the first measurement of this quantity, and as such it is a significant result. However, it's not clear to me exactly what the authors mean by HO2 yield – direct formation from the CI or from alkoxy radicals downstream of OH formation or from something else? I think a more detailed discussion of the HO2 chemistry would be helpful.

Other comments

The Criegee intermediate is referred to throughout the manuscript as a biradical. My understanding is that it is generally considered to be a carbonyl oxide with significant double bond character.

Equation 2 assumes that [tmb] is constant over the course of the experiment. Perhaps this is worth stating here. [C5H8] should be [C5H8]0 in this equation.

Page 17590, lines 6-7. If the OH yield is about 25%, and if isoprene is in excess here, why is the stoichiometry 1:1? Shouldn't significantly more isoprene react away compared to ozone?

Page 17596, lines 6-10. In the FAGE experiments, the RODA/ROPA plots seem to indicate that HO2 + O3 is a significant source of OH. It is not obvious to me why the OH yield can be determined independently of the HO2 yield, as is implied. Perhaps this could be clarified here.

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 17579, 2009.