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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 #1

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This manuscript describes the measurement of OH and HO2 yields for the reaction of ozone with isoprene. This reaction is very important from the perspective of atmospheric chemistry, as are the radical yields. The OH yields have been measured previously and the value recommended in this work is in agreement with the majority of those that have been published. However, there have been a number of published studies that disagree with this value and the present work has evaluated the various different methods used. The authors have measured the yield using a wide variety of methods in their HIRAC chamber and have now authoritatively established that the yield is close to 0.26. In addition, this work describes direct measurement of HO2 formed in the reaction, with a detailed attribution of the various sources. The paper is significant, of high quality and well presented, and I recommend that it should be published.

My only substantive comment concerns the discussion of HO2 formation on page 17593. It would, I think, be extremely useful to expand this section, showing the key reactions involved, and their branching ratios. This would avoid potential confusion about the reactions themselves (CH2OO cannot decompose to give both OH and HO2 directly). I am somewhat confused by the statement that the OH/HO2 yield from CH2OO is 0.255, as the OH yield from ethane is about 0.12. I don't understand why it is assumed that 50 % of the HO2 comes from CH2OO and the other 50 % from the other two CIs. I also don't understand why MVKOOA and MACROOA have identical HO2 yields.

I also picked up a small number of typos: Page 17582, line 2. 2 ïĆť 106 Page 17585, line 11. absence *of* isoprene Line 13. I think this is a loss rate constant, rather than a loss rate. Page 17588, lines 1 – 7. This is slightly oddly written. Page 17592, line 3. peroxy radical reaction Page 17594, line 18. quantitatively

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