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ACPD

1, S14–S15, 2001

Interactive Comment

Interactive comment on "298 K rate coefficients for the reaction of OH with *i*-C₃H₇I, *n*-C₃H₇I and C₃H₈" by "S. A. Carl and J. N. Crowley"

Anonymous Referee #1

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General comments

This is a straightforward account of the measurement of the room temperature, gas phase rate constant between OH and two C_3H_7I species. The paper content is appropriate for publication in ACP given the importance that alkyl iodide species are likely to have in the marine boundary layer and that these rate constants have not been measured previously. The experimental approach used – flash photolysis – is appropriate for these studies and the data are expected to be of high quality. The formation of OH by a two-photon process is relatively novel and well suited to the study of these kinetics, given the ease by which the alkyl iodides photolyze in the UV. I recommend publication in ACP after the following issues are considered.

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Specific comments

1. The conclusion that, for the atmosphere, the gas phase kinetics with OH are significant with respect to photolytic loss should be explicitly mentioned in the Abstract.

2. Page 25/Page 26. The nature of the discharge lamp for OH resonance fluorescence should be described. For example, was it a flowing lamp with H_2O present?

3. Might the deuterium lamp (page 26) used to measure the absorption spectrum of the alkyl iodides lead to any photolytic degradation, and if so, what impacts could this have on the kinetics?

4. Page 27. The OH generation rate is presumably the sum of the rates of both reactions (7) and (8), not just (8) alone.

5. Page 27. It would be a good idea to include the back-of-the-envelope calculation for the quenching of vibrationally excited OH by NO_2 , to show that all quenching has been completed before the OH loss is measured.

6. Page 31. What is the branching ratio of products in reaction 13? Is it possible that any HOI formed via reaction (1a) might photolyze to OH, and so lower the observed rate of OH loss?

7. Page 33. Is the assumed OH concentration for the marine boundary layer (5×10^{6} cm⁻³) near the upper limit of how much OH is present? If so, it should be stated that the estimate of the potential impact of loss due to gas-phase OH reaction is an upper limit also.

8. Finally, although it becomes apparent after reading the paper that the use of the two-photon visible OH source is needed given the short photolytic lifetimes of alkyl iodides in the UV, this could be explicitly stated in either the Introduction or the start of the Experimental.

Interactive comment on Atmos. Chem. Phys. Discuss., 1, 23, 2001.

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