

Interactive comment on “Rate coefficients for reactions of OH with aromatic and aliphatic volatile organic compounds determined by the Multivariate Relative Rate Technique” by Jacob T. Shaw et al.

Anonymous Referee #1

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The paper “Rate coefficients for reactions of OH with aromatic and aliphatic volatile organic compounds determined by the Multivariate Relative Rate Technique” by J. Shaw et al. describes the application of a recently developed technique for the measurement of relative rate coefficients of complex mixtures. The technique had been already presented in an earlier work by the same authors, but has been improved in this work to allow also the measurement of rate constants for slower reacting hydrocarbons. The technique has been validated by the measurement of well-known rate constants, and the overall measurements are used to validate SAR models. The rate

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constants of 5 species have also been measured for the first time. The work is well done and within the scope of ACP. I recommend publication after considering the following minor remarks.

Introduction: page 3, line 13, please precise at first use what Cx substituted aromatics means. Page 4, line 9: change “.” to “;” Page 6: how can you be sure that all H is converted into rather unreactive HO₂? Is there a possibility that H-atoms survive into the reaction zone and react more or less fast with the different VOCs? Page 12, last paragraph: is it possible that the fact that you do not find agreement between model and observations with increasing NO is due to the fact that you do not consider in your model reactions of RO₂ with NO? Figure 1, 2 and 3: I don't understand what the dashed arrows mean? Does it just show the direction of where the data points should go, or has the lengths of the arrow (which is different- in the different figures) a meaning? How did you choose the x-values of these data points? In figure 3 the three red and two green dots are slightly displaced, while in Figure 4 they all have the same x-value. I guess this has no meaning? I would have expected the points on the dashed lines, and maybe the arrows down to the x-axis to indicate the retrieved rate constant. The current version is confusing to me, so please explain in more detail (maybe also in the text, not just in the legend).

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