



## **A self-consistent, multi-variate method for the rapid determination of gas phase rate coefficients, applied to reactions of atmospheric VOC with multiple radical oxidants**

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Gas phase rate coefficients are fundamental to our understanding of atmospheric oxidation chemistry. However, experimentally determined data for the oxidation of thousands of VOC observed in the troposphere is not currently available. Here we present results obtained using a new experimental method that allows for the simultaneous study of multiple VOC reactions, in which each VOC is depleted relative to their oxidation rate coefficient. This technique builds on already established relative rate concepts but has the advantage of a significantly higher throughput of target VOC. Experiments are conducted across a wide range of VOC species, using different atmospheric radicals as oxidants. Where comparisons are possible, results are in satisfactory agreement with the literature allowing for the facile derivation of new rate coefficients for important atmospheric species.