

Atmos. Chem. Phys. Discuss., referee comment RC2 https://doi.org/10.5194/acp-2021-449-RC2, 2021 © Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.

Comment on acp-2021-449

Anonymous Referee #2

Referee comment on "Atmospheric oxidation of a,β -unsaturated ketones: kinetics and mechanism of the OH radical reaction " by Niklas Illmann et al., Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2021-449-RC2, 2021

This is a very nice laboratory experimental study of the kinetics and mechanism of the reactions of OH with 3-methyl-3-penten-2-one and 4-methyl-3-penten-2-one. Kinetic data on Cl + the same two unsaturated ketones is also presented. The experiments and analysis are of high-quality (though the non-use of standard numerical integration tools is surprising) and clearly presented. I have only minor comments, which are listed below.

L21 RONO2 is one type of organic nitrate but so is PAN. Perhaps simply write "Based on the calculated product yields an upper limit of 0.15 was determined for the yield of RONO2....."

 ${\sf L37}$ isoprene is not the most abundant NMHC (as it is very reactive) but has the highest emission strength

L45 can you provide an estimate of the impact of the loss of α,β -unsaturated ketones on ozone and SOA formation ?? my guess is that it is not significant.

L47 replace "proving" with "identifying" ?	
L48 under which (NOx) conditions are formaldehyde and methyl glyoxal the main oxidation products ?	
L56-61 This text, describing a method that is not used, should be removed.	
L67 PAN levels depend on the temperature and levels of e.g. NO, but not PAN formation	
L74 In the Table, the reference column needs to be altered so that it is clear what the "this work" references actually refer to	
L90 "Cleanliness is proved by FTIR"? Perhaps "purity was confirmed by FTIR" is better.	
L112 "Reactants and products are basically monitored using in-situ FTIR spectroscopy". Delete "basically".	





