Reply To Reviewer 2

We would like to again thank Dr. Lambe for his comment. Below we provide our response to the comment

1. L91 - for the reader's reference, please state the lamp voltage values and/or corresponding photon fluxes that were used to offset OH suppression following NOx generation.

Response: We added the following sentences in the main text to provide details about the lamp adjustment and add one more row about the photon flux in the Table S1.

Change:

Section 2.1

[…] We indirectly determined the photon fluxes for each experiment using the measured O_3 decay without any α-pinene and N_2O in the OFR. With the KinSim model developed by Peng and Jimenez (2019), we estimated the photon flux by varying the model input photon flux until the model output O_3 concentration agreed with the measured one. The estimated photon fluxes were $(1.08 \pm 0.14)\times10^{15}$ and $(2.74 \pm 0.35)\times10^{15}$ photons cm^{-2} s^{-1} for the low- and high-NO_x cases, respectively. Furthermore, […]

Table S1. Summary of experimental conditions and results of α-pinene SOA generation

	Low-NO_x	High-NO_x
$[VOC]_{OFR}$ (ppb)[a]	254 ± 11	296 ± 14
$[N_2O]_{OFR}$ (%)	N/A	1.82 ± 0.10
$[O_3]_{OFR}$ (ppm)[b]	9.76 ± 0.31	6.85 ± 0.36
photon flux (10^{15} photons cm^{-2} s^{-1})[b]	1.08 ± 0.14	2.74 ± 0.35
T_{OFR} (°C)	24.66 ± 0.76	28.14 ± 0.91
RH_{OFR} (%)	44.19 ± 2.17	38.74 ± 2.63
nominal residence time (s)	160	160
effective OH exposure (10^{12} molec cm^{-3} s)[c]	1.82 ± 0.21	2.45 ± 0.09
$\frac{[RO_2]+[NO]}{[RO_2]+[HO_2]}$	N/A	0.84 ± 0.19

fraction Loss to OH (%)	96	50
fraction Loss to O_3 (%)	4	1
fraction Loss to NO_3 (%)	0	49
oxygen-to-carbon (O:C)[d]	0.77 ± 0.03	0.74 ± 0.01
oxidation state (OS_c)[d]	0.05 ± 0.04	0.02 ± 0.02

[a] Mixing ratio of α-pinene was corrected with the dilution of O_3-contained flow but without the loss due to pure ozonolysis at the inlet. [b] O_3 was measured at the OFR outlet after 254-nm UV lamps were switched on but without the addition of α-pinene and N_2O. The photon flux was estimated by varying the model input photon flux in the KimSim model (Peng and Jimenez, 2019) until the model output O_3 concentration agreed with the measured one. [c] OH exposure was calculated with the KinSim model (Peng and Jimenez, 2019). [d] The values of the oxygen to carbon ratio (O:C) and the oxidation state (OS_c) were derived from the HR-ToF-AMS measurement data of monodisperse SOA particles which represents the initial particle population used for isothermal evaporation measurements.

References

Peng, Z. and Jimenez, J. L.: Kinsim: A research-grade, user-friendly, visual kinetics simulator for chemical-kinetics and environmental-chemistry teaching, 2019.