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Controlled nitric oxide production via $O(^1D) + N_2O$ reactions for use in oxidation flow reactor studies

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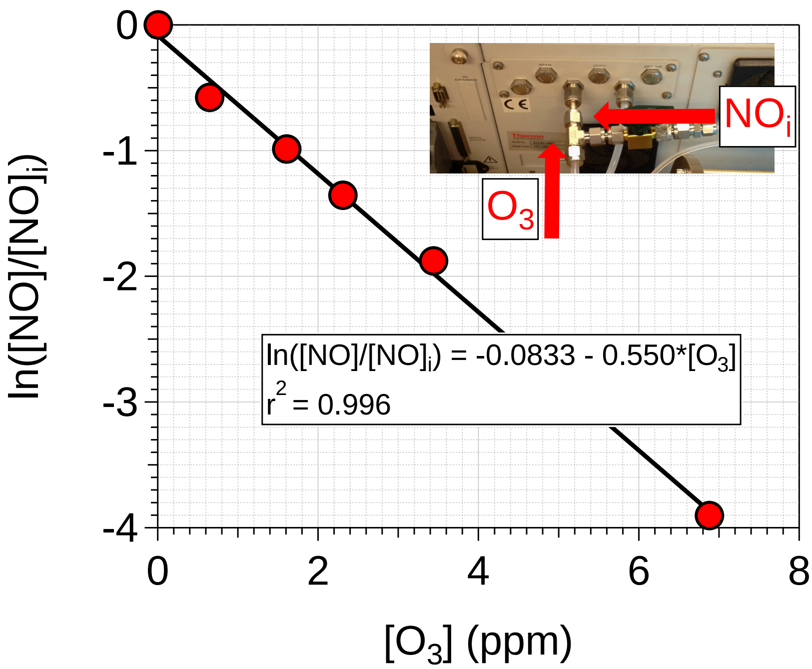

Figure S1. Nitric oxide (NO) depletion inside the NO analyzer due to reaction of 50 ppb initial NO (NO_i) with O_3. NO was introduced from a calibration cylinder, and O_3 was introduced from the output of the PAM reactor.

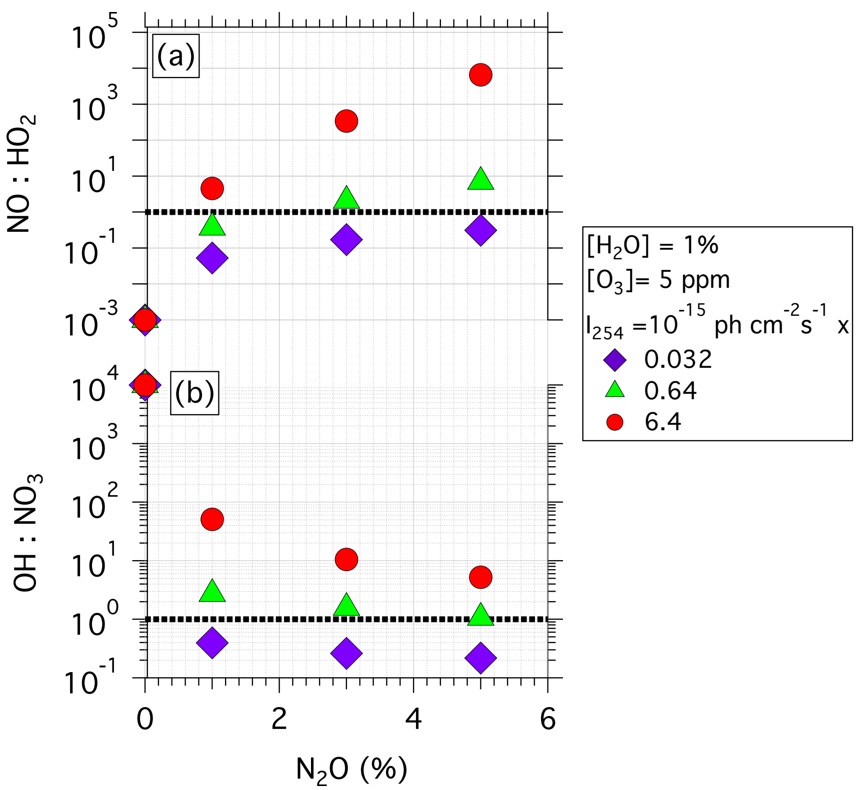

Figure S2. Modeled steady-state (a) $NO:HO_2$, and (b) $OH:NO_3$ as a function of $[N_2O]$ input to the PAM reactor with mean residence time = 80 sec for: low, medium, and high $I_{254} = 0.032\times10^{15}$, 0.64×10^{15} and 6.4×10^{15} ph cm^2 sec, respectively, at fixed $[H_2O]$ = 1% and $[O_3]$ = 5 ppm.

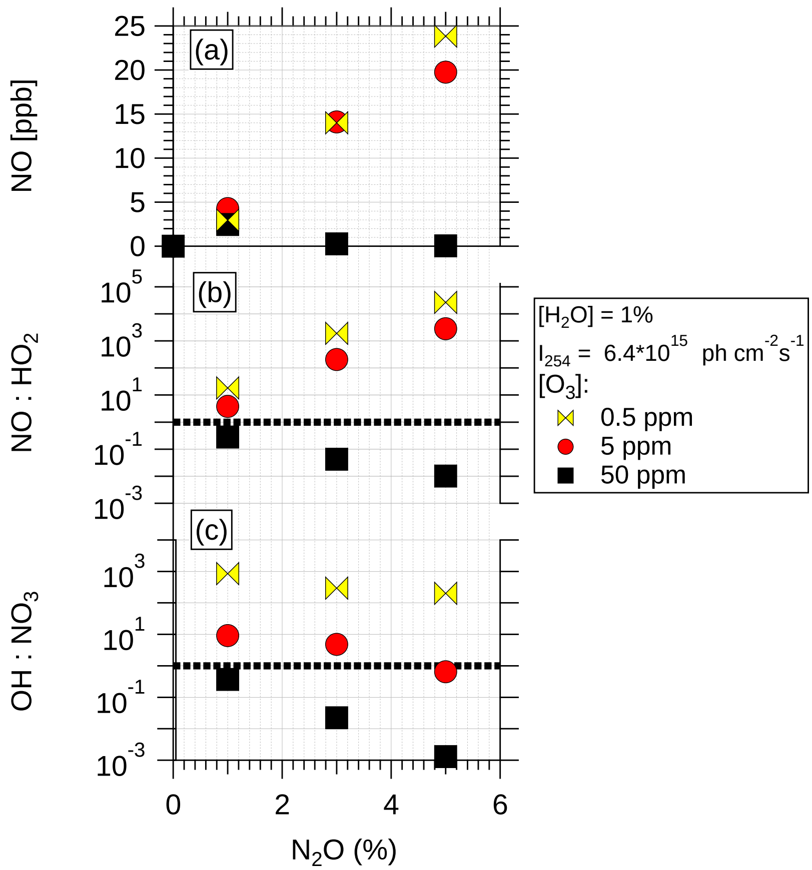

Figure S3. Modeled steady-state (a) NO, (b) NO:HO_2, and (c) OH:NO_3 as a function of [N_2O] input to the PAM reactor with mean residence time = 80 sec for: low, medium, and high [O_3] = 0.5, 5, and 50 ppm respectively, at fixed [H_2O] = 1% and $I_{254} = 6.4\times10^{15}$ ph cm^{-2} sec.

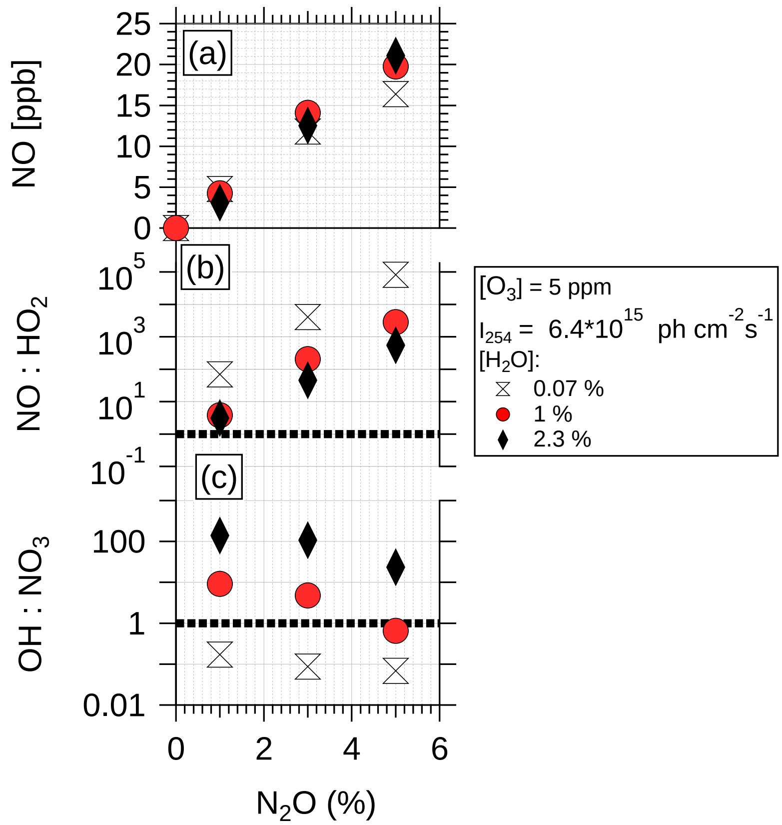

Figure S4. Modeled steady-state (a) NO, (b) $NO{:}HO_2$, and (c) $OH{:}NO_3$ as a function of input $[N_2O]$ in the PAM oxidation flow reactor with mean residence time = 80 sec for: low, medium, and high $[H_2O]$ = 0.07, 1, and 2.3% respectively, at fixed $[O_3]$ = 5 ppm and $I_{254} = 6.4\times10^{15}$ ph cm^{-2} sec.

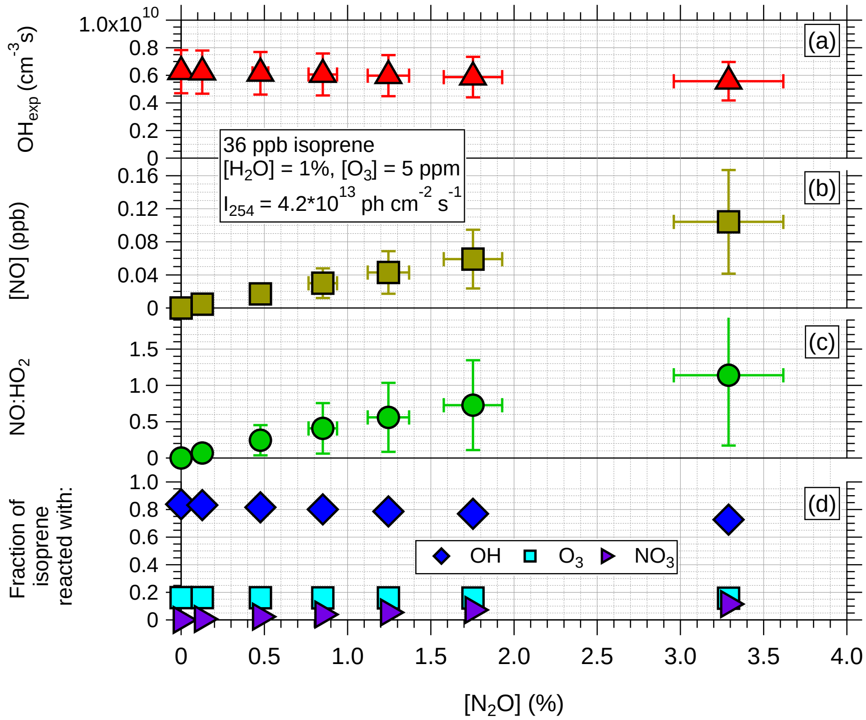

Figure S5. Modeled steady-state (a) OH exposure, (b) [NO], (c) $NO:HO_2$, and (d) fractional oxidative loss to OH, O_3, and NO_3 as a function of input [N_2O] corresponding to isoprene oxidation conditions at low OH exposure in the PAM reactor. Error bars represent uncertainty in model outputs (Peng et al., 2015) and in accuracy of N_2O flow controller.

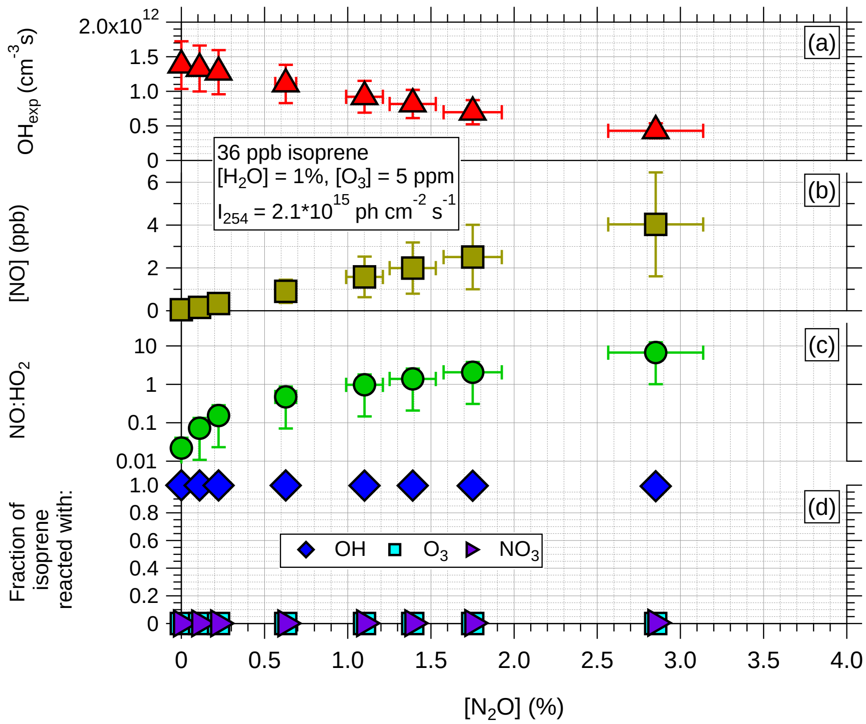

Figure S6. Modeled steady-state (a) OH exposure, (b) [NO], (c) $NO:HO_2$, and (d) fractional oxidative loss to OH, O_3, and NO_3 as a function of input [N_2O] corresponding to isoprene oxidation conditions at high OH exposure in the PAM reactor. Error bars represent uncertainty in model outputs (Peng et al., 2015) and in accuracy of N_2O flow controller.

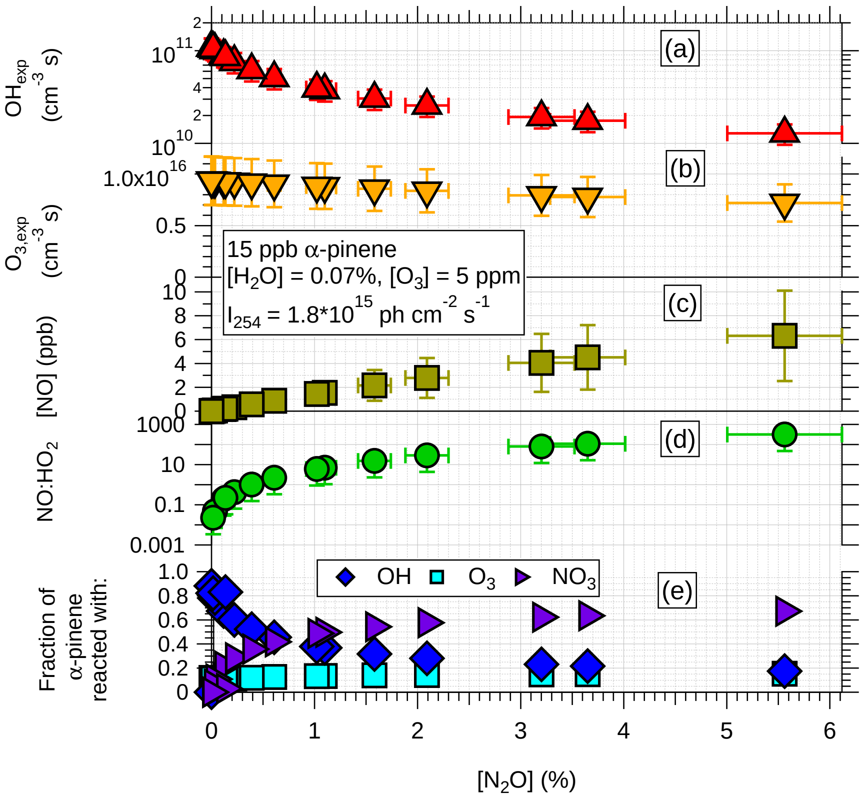

Figure S7. Modeled steady-state (a) OH exposure, (b) O_3 exposure, (c) [NO], (d) NO:HO_2, and (e) fractional oxidative loss to OH, O_3, and NO_3 as a function of input [N_2O] corresponding to α-pinene oxidation conditions at low OH exposure in the PAM reactor. Error bars represent uncertainty in model outputs (Peng et al., 2015) and in accuracy of N_2O flow controller.