OH- and O₃-initiated atmospheric degradation of camphene:

Temperature dependent rate coefficients, product yields and mechanisms

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Figure S1: Plot of the kinetic data for the reaction of OH radicals with camphene measured relative to isobutene 288, 293, 303 and 311 K and 760 Torr. (For clarity the line at 288K is displaced +0.1 units; the line at 293 K is displaced +0.05 units and the line at 311K is displaced -0.05 units). The plot of the kinetic data at 298 K is shown in the paper.



Figure S2: Plot of the kinetic data for the reaction of O_3 molecules with camphene measured relative to ethene 288, 293, 303 and 311 K and 760 Torr. The plot of the kinetic data at 298 K is shown in the paper.



Figure S3: Panel A shows the infrared spectrum of a camphene/ H_2O_2/air reaction mixture after irradiation and subtraction of residual camphene. Panels B, C and D show reference spectra of acetone, formaldehyde and carbon monoxide, respectively. Panel E shows the residual product spectrum obtained after subtraction of features due to the reference spectra from the spectrum in panel A.



Figure S4: Panel A shows the infrared spectrum of a camphene/ $H_2O_2/NO_x/air$ reaction mixture after irradiation and subtraction of residual camphene. Panels B, C and D show reference spectra of acetone, formaldehyde and carbon monoxide, respectively. Panel E shows the residual product spectrum obtained after subtraction of features due to the reference spectra from the spectrum in panel A.



Figure S5: Concentration-time profiles of camphene and the reaction products formaldehyde and acetone (in the absence of NO_x) obtained from camphene/OH /air reaction mixture.



Figure S6: Concentration-time profiles of camphene and the reaction products formaldehyde and acetone (in the presence of NO_x) obtained from camphene/OH /air reaction mixture.



Figure S7: Plots of the concentrations of the reaction products formaldehyde and acetone as a function of reacted camphene obtained from experiments performed on the OH + camphene reaction in the absence of NO_x .



Figure S8: Plots of the concentrations of the reaction products formaldehyde and acetone as a function of reacted camphene obtained from experiments performed on the OH + camphene reaction in the presence of NO_x .



Figure S9: Panel A shows the infrared spectrum of a camphene/ O_3 /air reaction mixture after subtraction of residual camphene. Panels B shows reference spectrum of formaldehyde. Panel C shows the residual product spectrum obtained after subtraction of features due to the reference spectrum from the spectrum in panel A.



Figure S10: Concentration-time profiles of camphene and the reaction product formaldehyde obtained from camphene/ O_3 /air reaction mixture.



Figure S11: Plots of the concentrations of the reaction product formaldehyde as a function of reacted camphene obtained from experiments performed on the O_3 + camphene reaction.