

## Supplementary Information

for

**Products distribution and mechanism of the OH- initiated tropospheric  
degradation of three CFCs replacement candidates: CH<sub>3</sub>CF=CH<sub>2</sub>,  
(CF<sub>3</sub>)<sub>2</sub>C=CH<sub>2</sub> and ((E/Z)-CF<sub>3</sub>CF=CHF**

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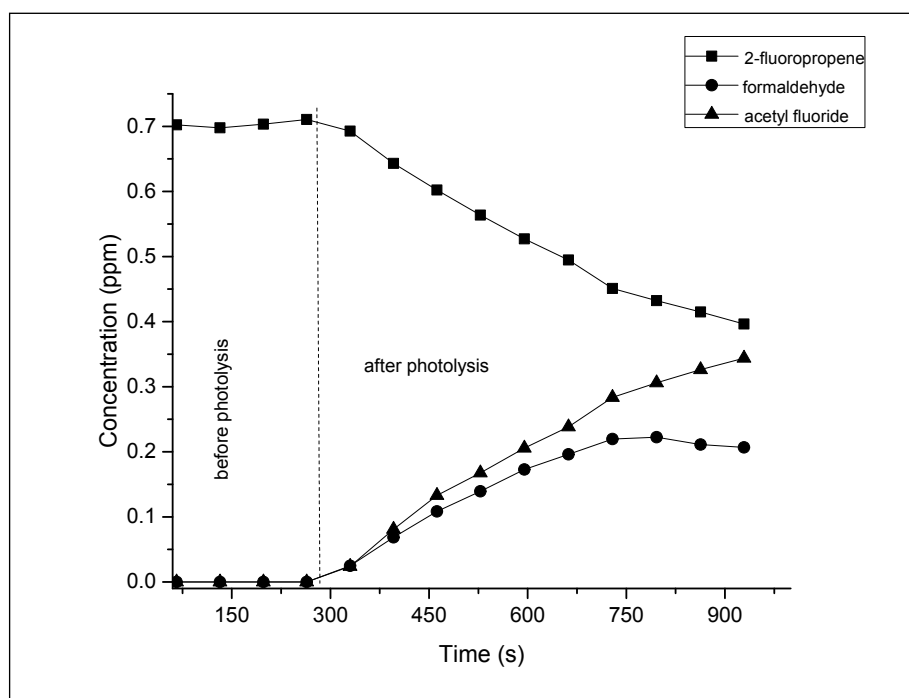
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### Content Summary

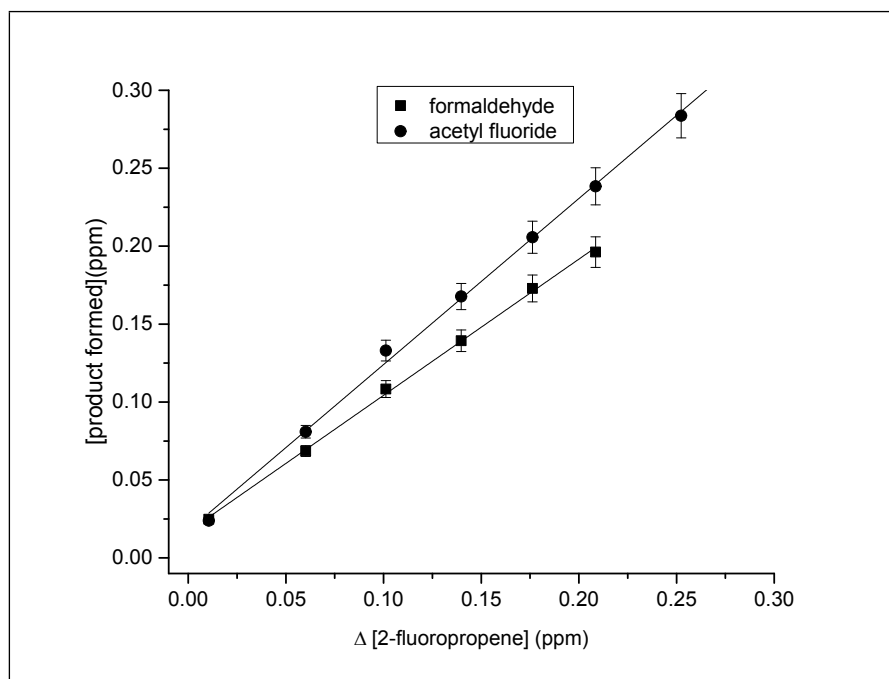
IR spectra plots used in the identification of the products formed in the reaction of OH with:  
HXFP (Figure S3) and PFP (Figure S6).

Concentration-time profiles for the reaction of OH with 2-FP, HXFP and PFP, Figure S1, S4  
and S7, respectively.

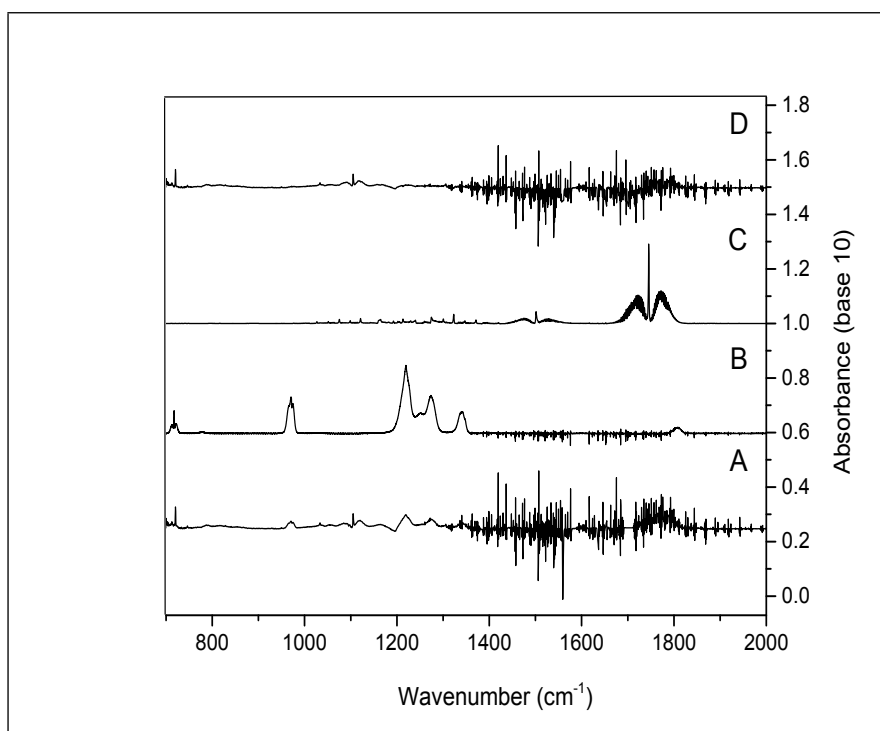
Yield plots for the reaction of OH radicals with 2-FP (S2) and HXFP (S5) in the absence of  
NO<sub>x</sub>. Simulated spectrum of the FC(O)CH<sub>2</sub>OH product formed in the 2-fluoropropene + OH  
reaction (S8). This information is available free of charge via the Internet at  
<http://www.rsc.org/suppdata>.



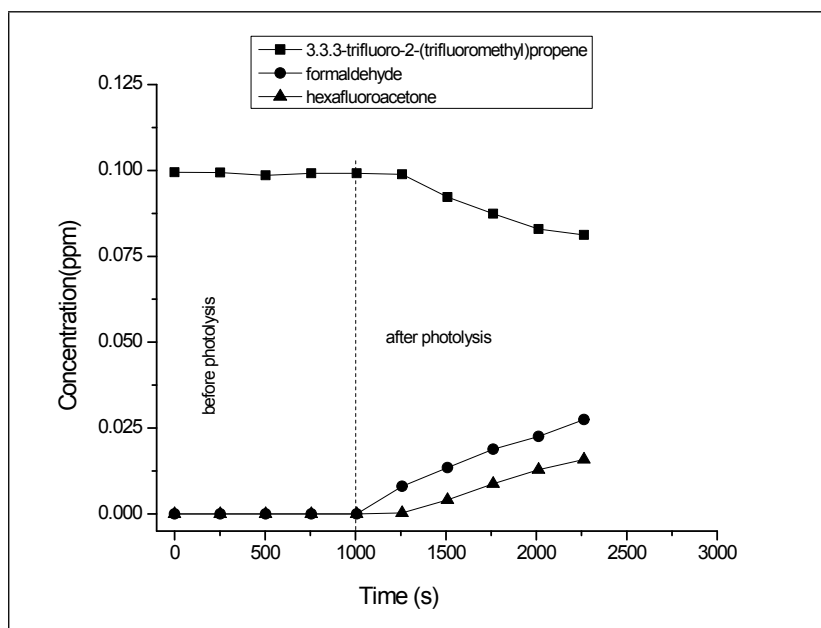
**Figure S1.** Concentration-time profiles of 2-Fluoropropene and the reaction products formaldehyde and acetyl fluoride obtained from UV photolysis of 2-Fluoropropene/H<sub>2</sub>O<sub>2</sub>/air reaction mixture.



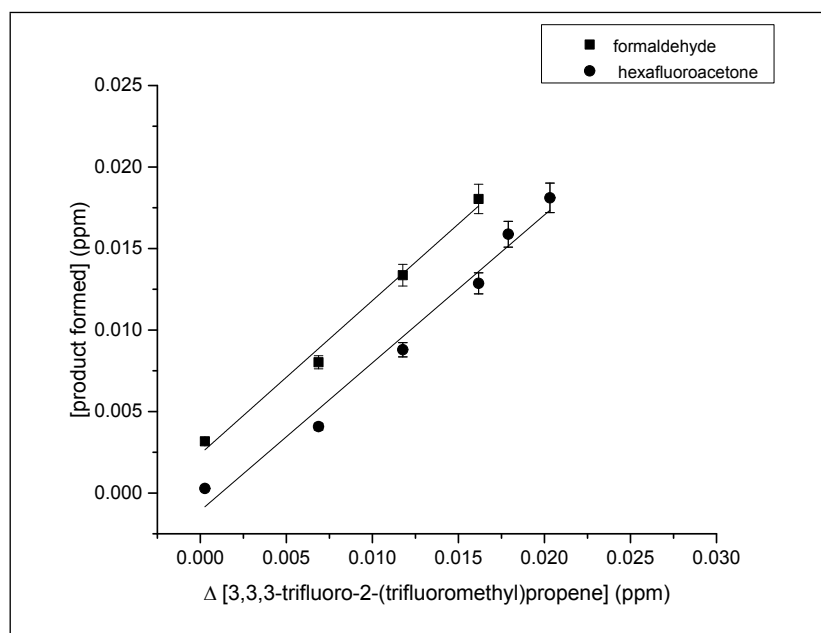
**Figure S2.** Plots of the concentrations of the reaction products formaldehyde and acetyl fluoride as a function of reacted 2-Fluoropropene obtained from UV photolysis of 2-Fluoropropene/H<sub>2</sub>O<sub>2</sub>/air reaction mixtures.



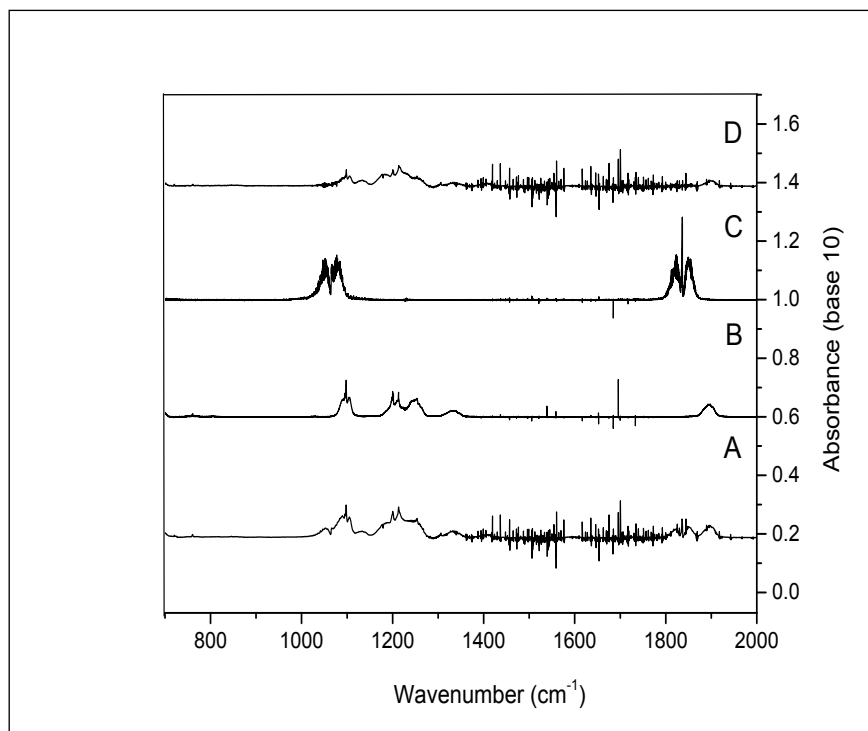
**Figure S3.** Panel A shows the infrared product spectrum obtained from UV photolysis of 3,3,3-trifluoro-2-(trifluoromethyl)propene/H<sub>2</sub>O<sub>2</sub>/air reaction mixture where the 3,3,3-trifluoro-2-(trifluoromethyl)propene spectrum was subtracted. Panels B and C show reference spectra of hexafluoroacetone and formaldehyde, respectively. Panel D shows the residual product spectrum obtained after subtraction of features due to the reference spectra from the spectrum in panel A.



**Figure S4.** Concentration-time profiles of 3,3,3-trifluoro-2-(trifluoromethyl)propene and the reaction products formaldehyde and hexafluoroacetone obtained from UV photolysis of 3,3,3-trifluoro-2-(trifluoromethyl)propene/H<sub>2</sub>O<sub>2</sub>/air reaction mixture.

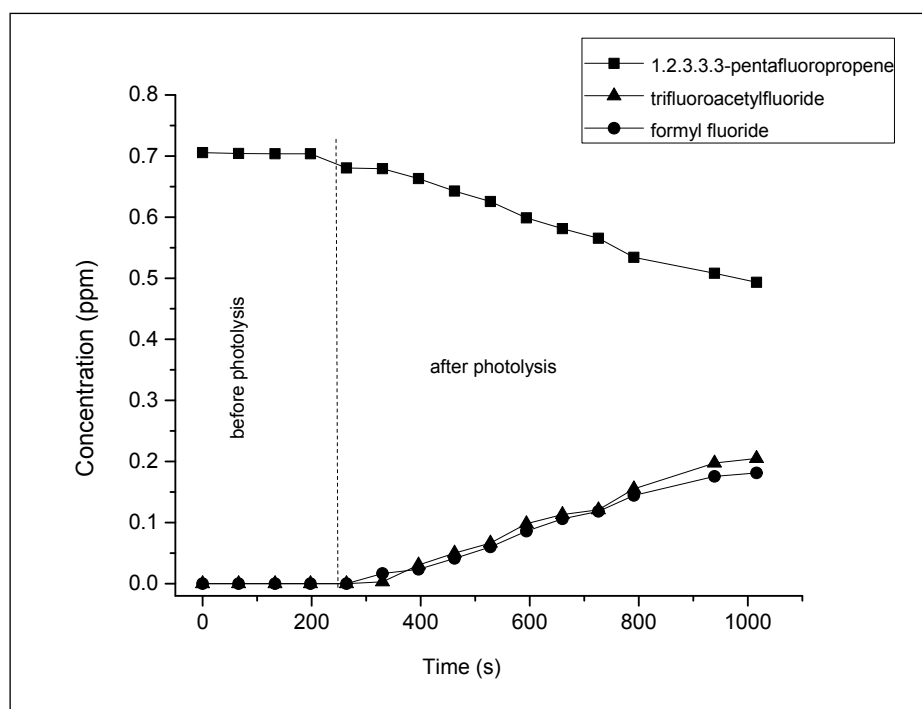


**Figure S5.** Plots of the concentrations of the reaction products formaldehyde and hexafluoroacetone as a function of reacted 3,3,3-trifluoro-2-(trifluoromethyl)propene obtained from UV photolysis of 3,3,3-trifluoro-2-

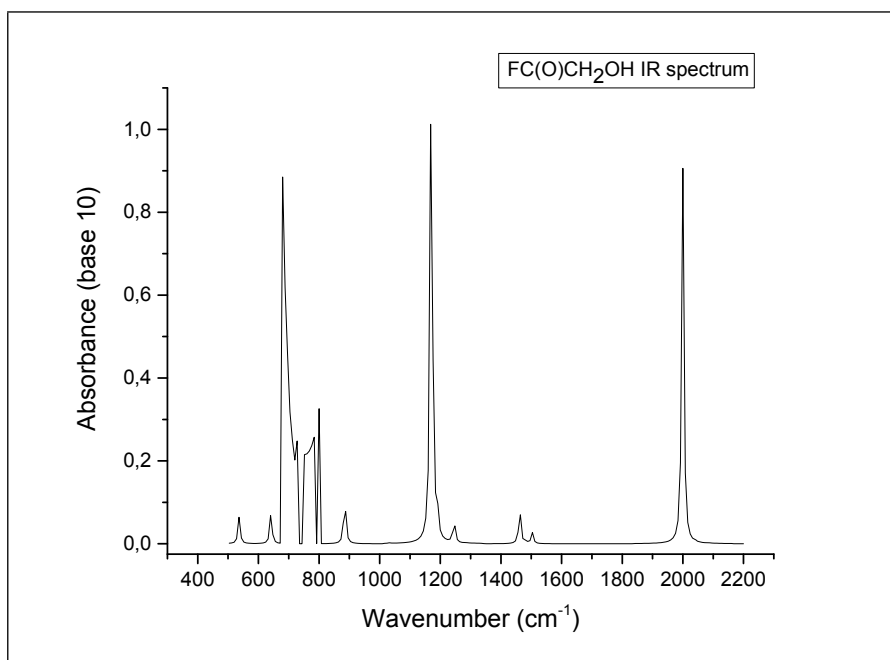


(trifluoromethyl)propene/H<sub>2</sub>O<sub>2</sub>/air reaction mixtures.

**Figure S6.** Panel A shows the infrared product spectrum obtained from UV photolysis of 1,2,3,3,3-Pentafluoropropene (*E/Z*)/H<sub>2</sub>O<sub>2</sub>/air reaction mixture where the 1,2,3,3,3-Pentafluoropropene (*E/Z*) spectrum was subtracted. Panels B and C show reference spectra of trifluoroacetylfluoride and formyl fluoride, respectively. Panel D shows the residual product spectrum obtained after subtraction of features due to the reference spectra from the spectrum in panel A.



**Figure S7.** Concentration-time profiles of 1,2,3,3,3-Pentafluoropropene (mixture cis/trans) and the reaction products formyl fluoride and trifluoroacetylfluoride obtained from UV photolysis of 1,2,3,3,3-Pentafluoropropene (mixture cis/trans)/H<sub>2</sub>O<sub>2</sub>/air reaction mixture.



**Figure S8.** Simulated spectrum of FC(O)CH<sub>2</sub>OH formed in the 2-fluoropropene + OH reaction.