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Supplement of

**Identification of organic hydroperoxides and peroxy acids
using atmospheric pressure chemical ionization–tandem
mass spectrometry (APCI-MS/MS): application to
secondary organic aerosol**

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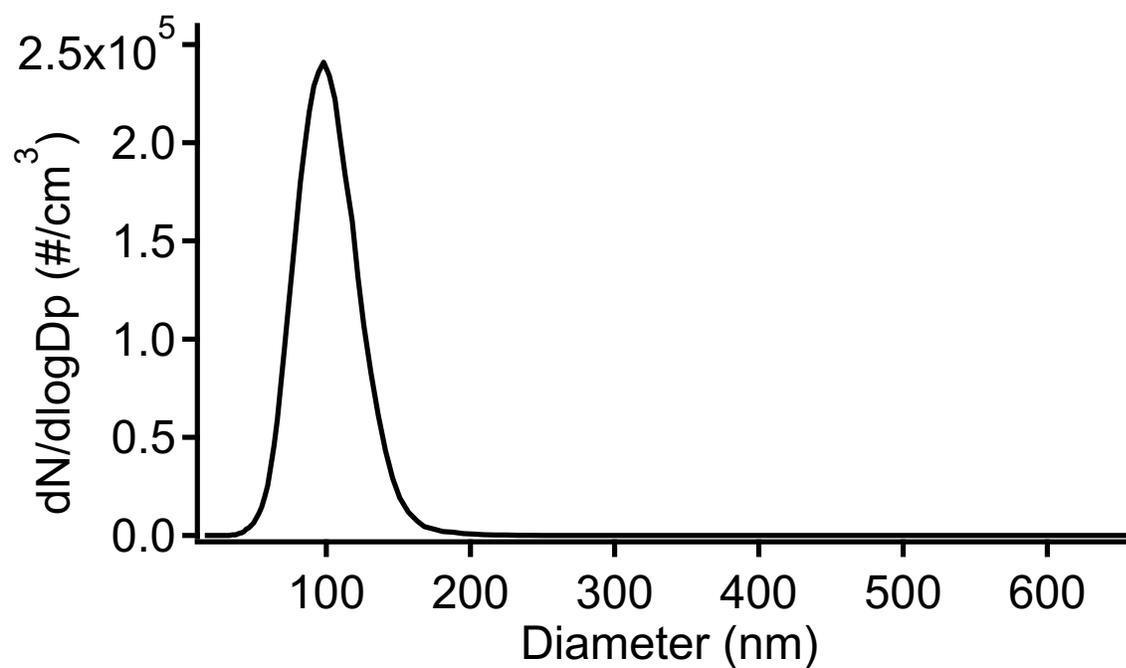


Figure S1. Particle size distribution of secondary organic aerosol formed from ozonolysis of α -pinene.

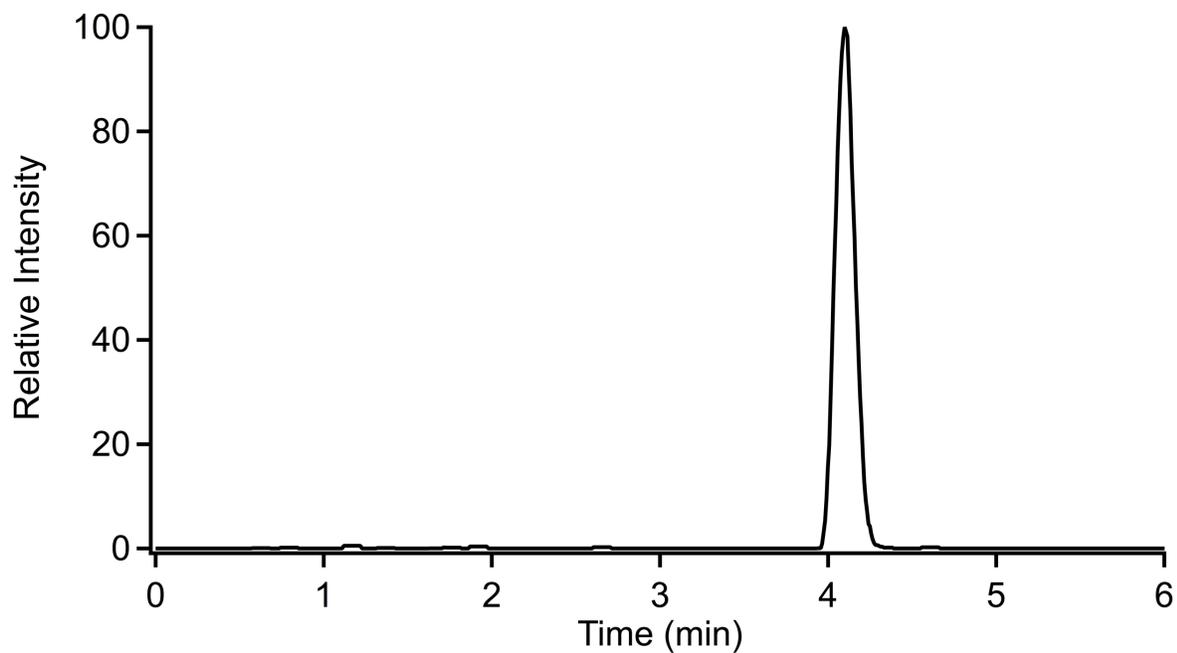


Figure S2. LC-MS/MS chromatogram of cumene hydroperoxide (2.65 μ M) with SRM of m/z 170 > m/z 119 (loss of 51 Da)

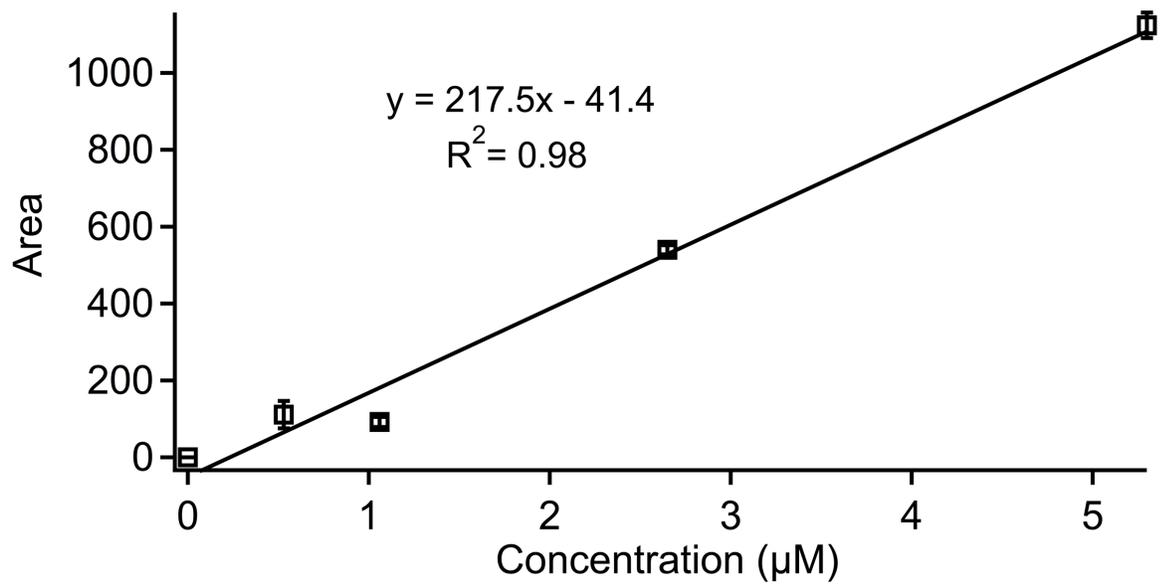


Figure S3. LC-MS/MS calibration of cumene hydroperoxide

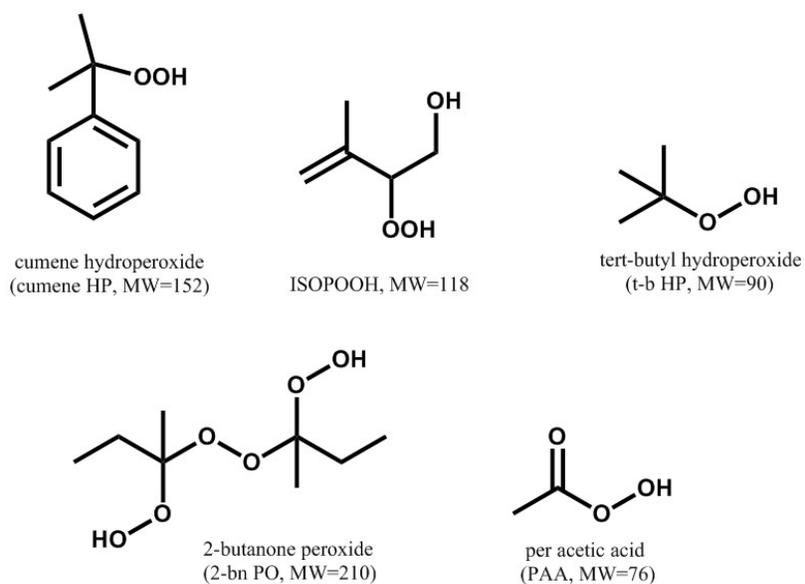


Figure S4. Chemical Structures and the molecular weights (MW) of the ROOH analyzed in this work.

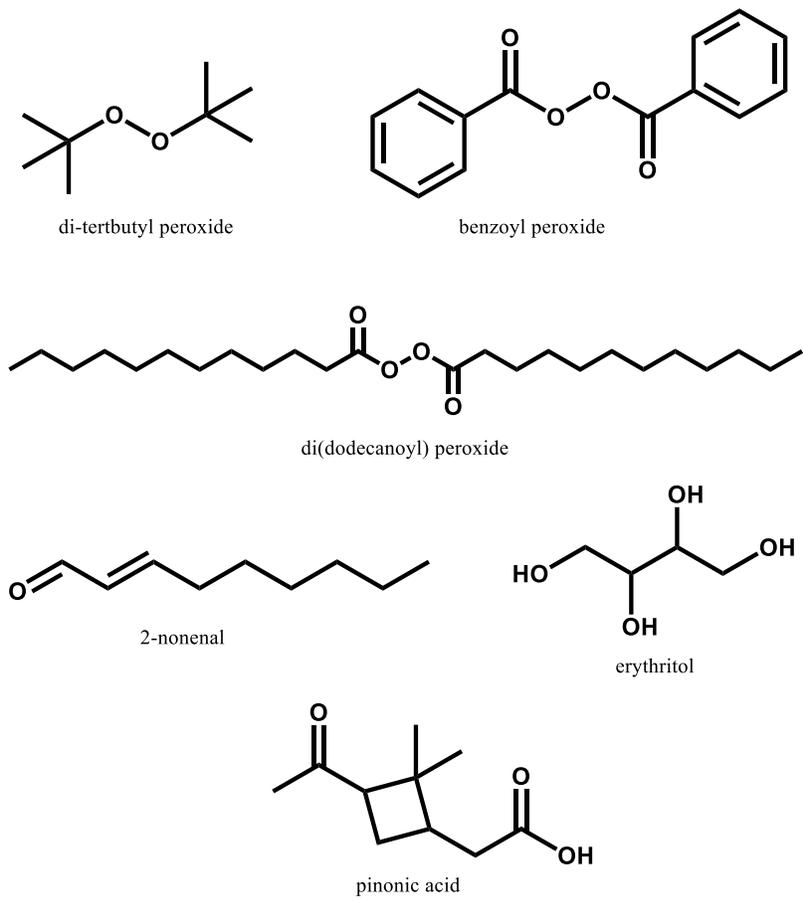


Figure S5. Other chemicals tested in this work.

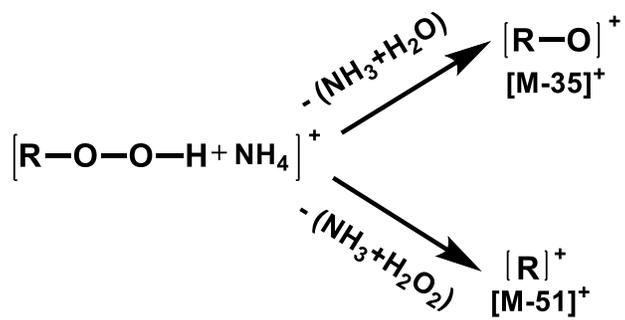
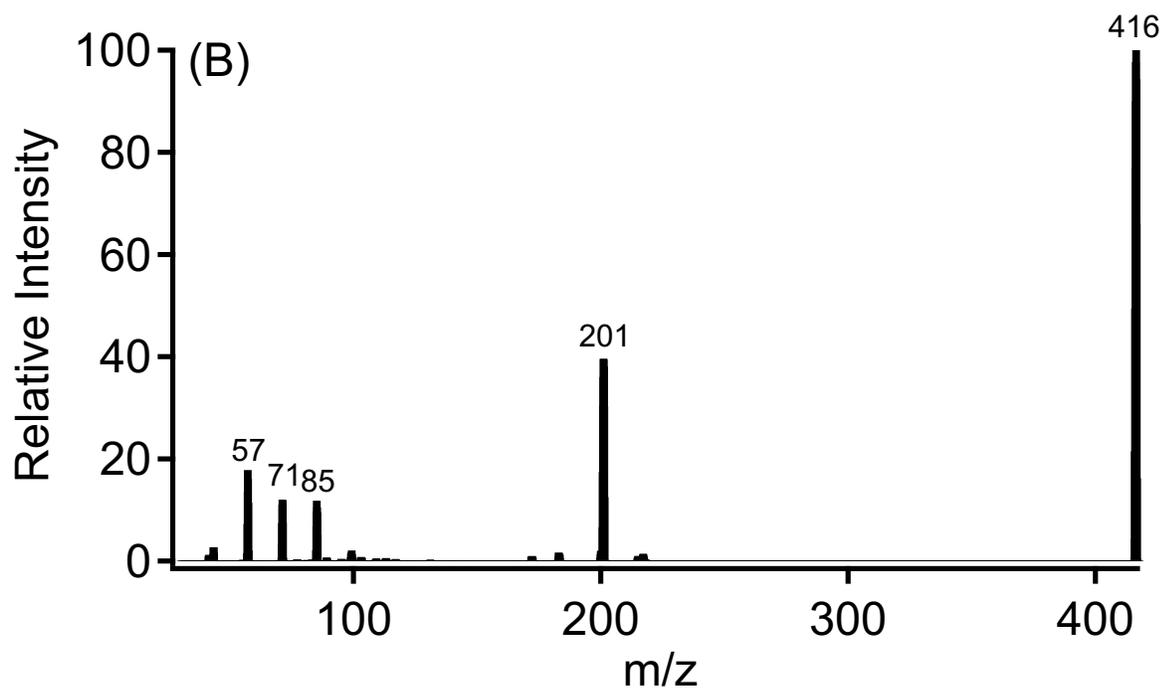
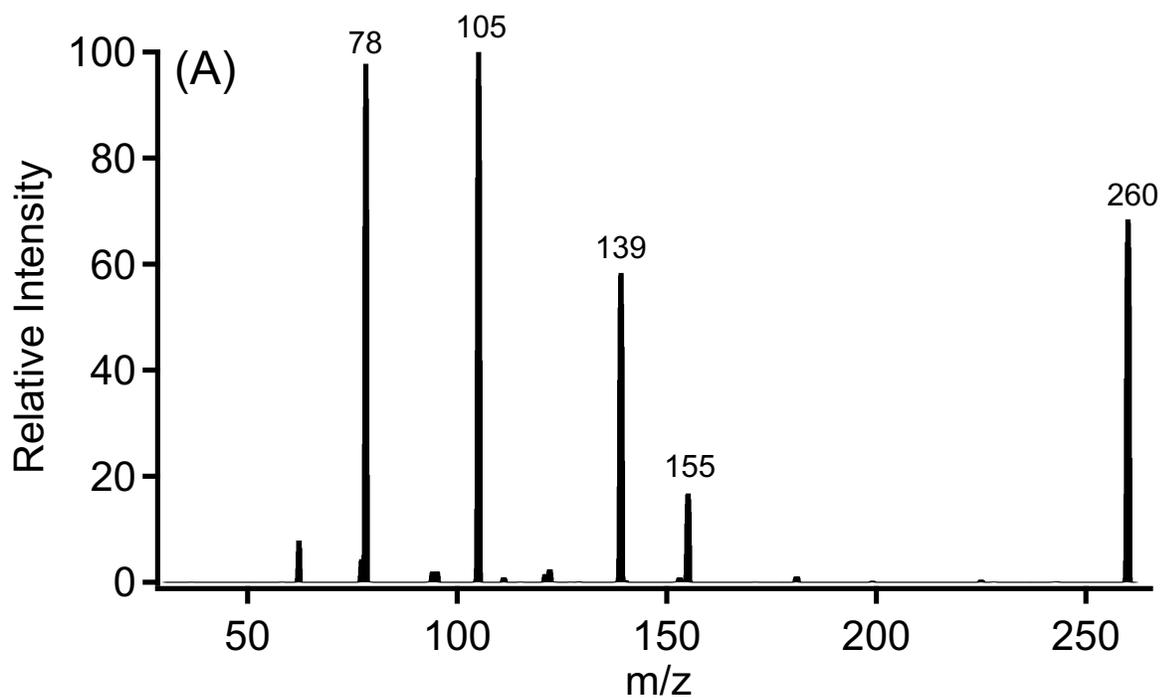
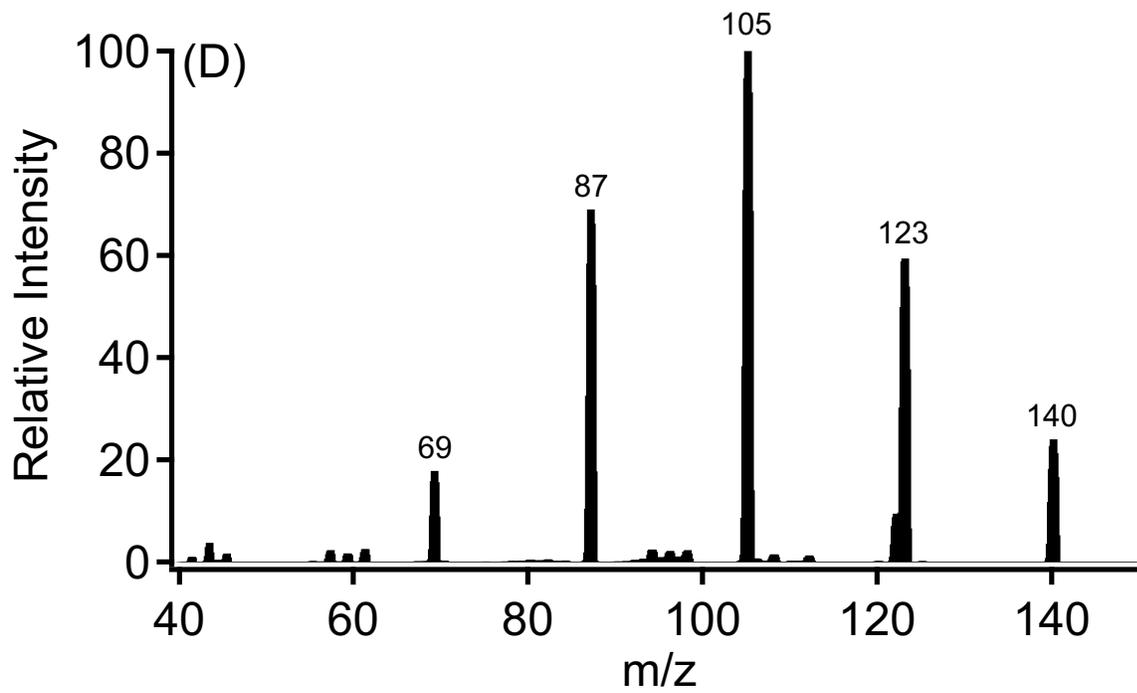
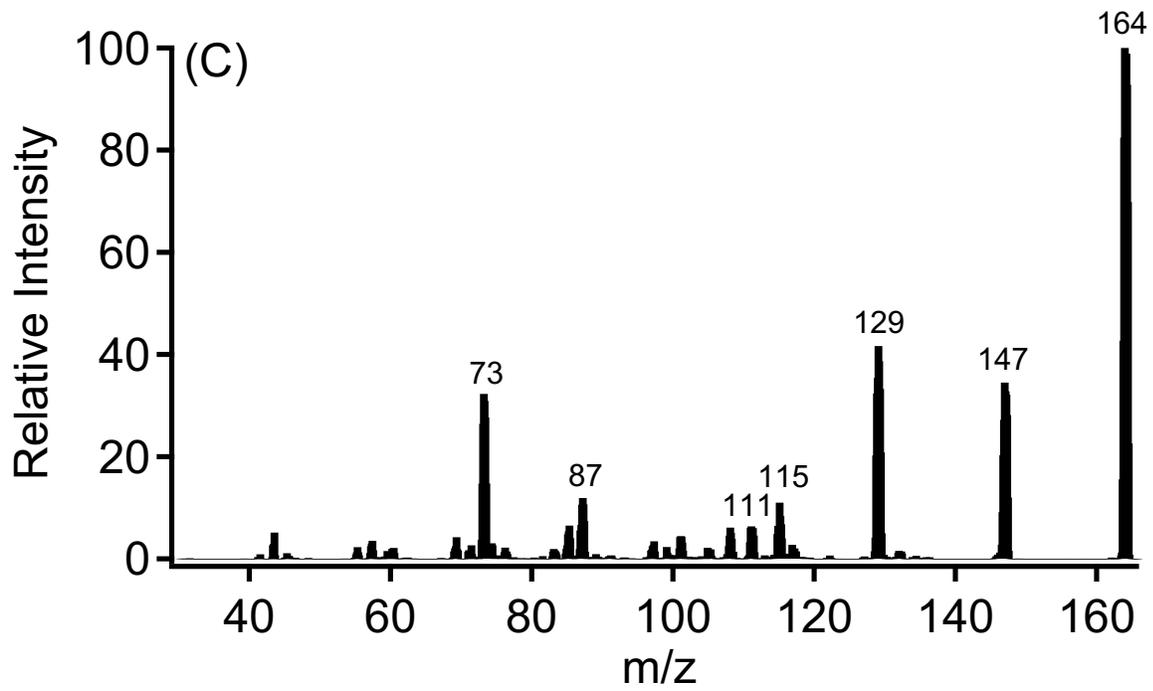


Figure S6. Fragmentation of $[\text{M}+\text{NH}_4]^+$ for ROOH.





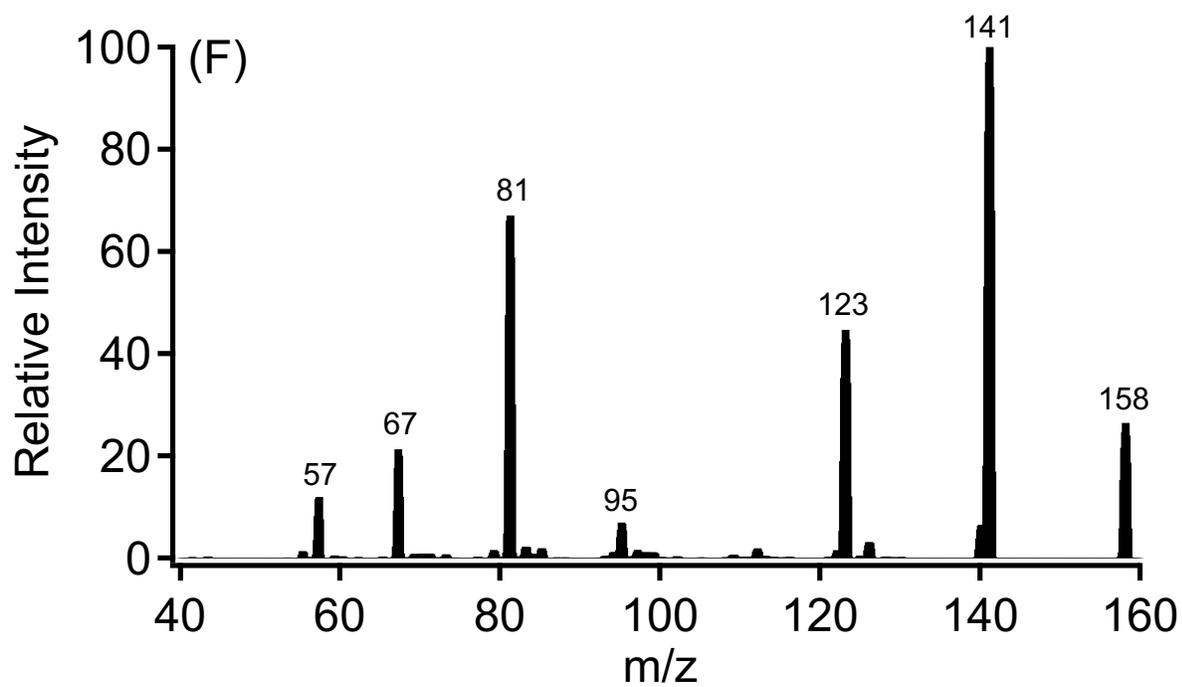
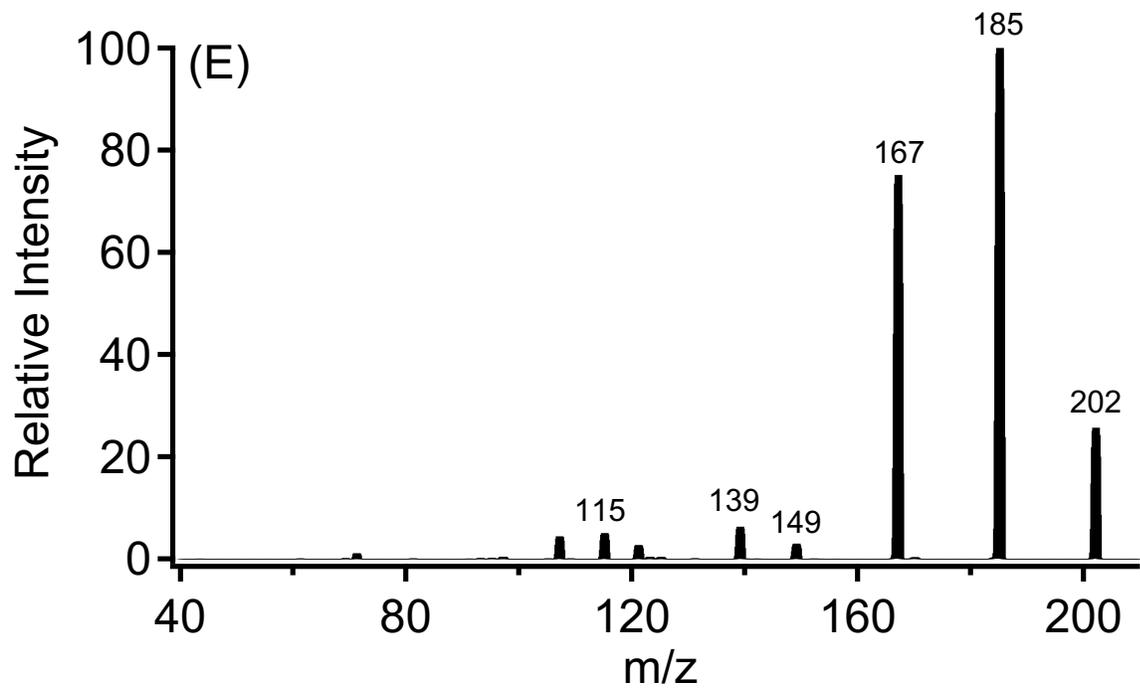
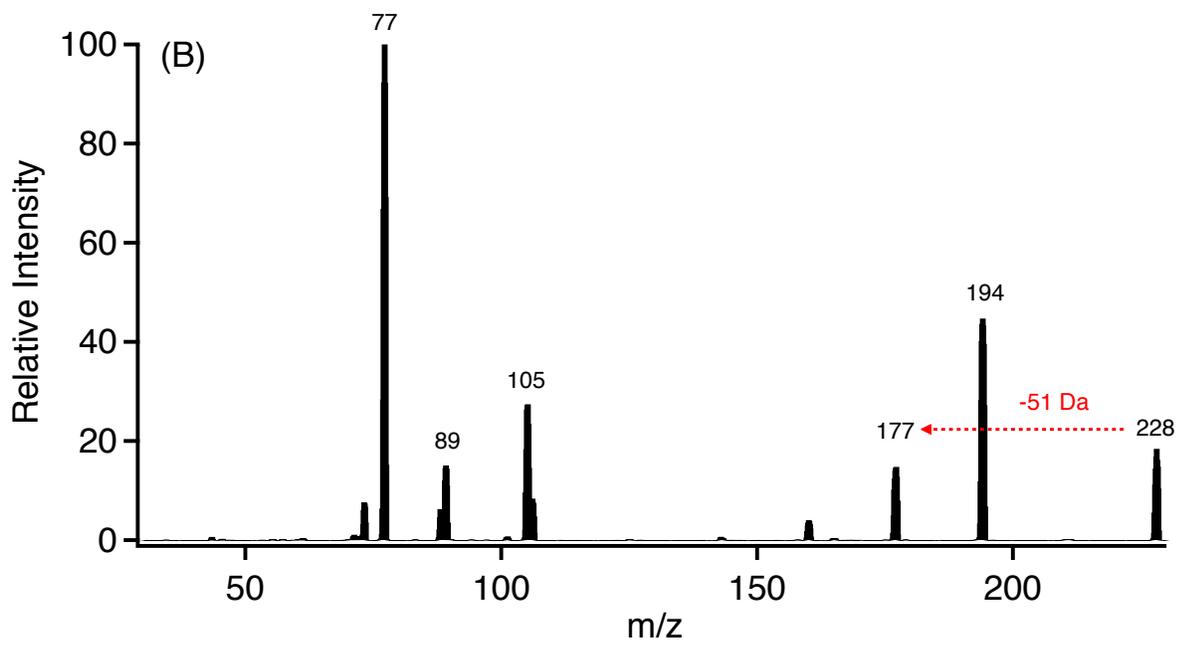
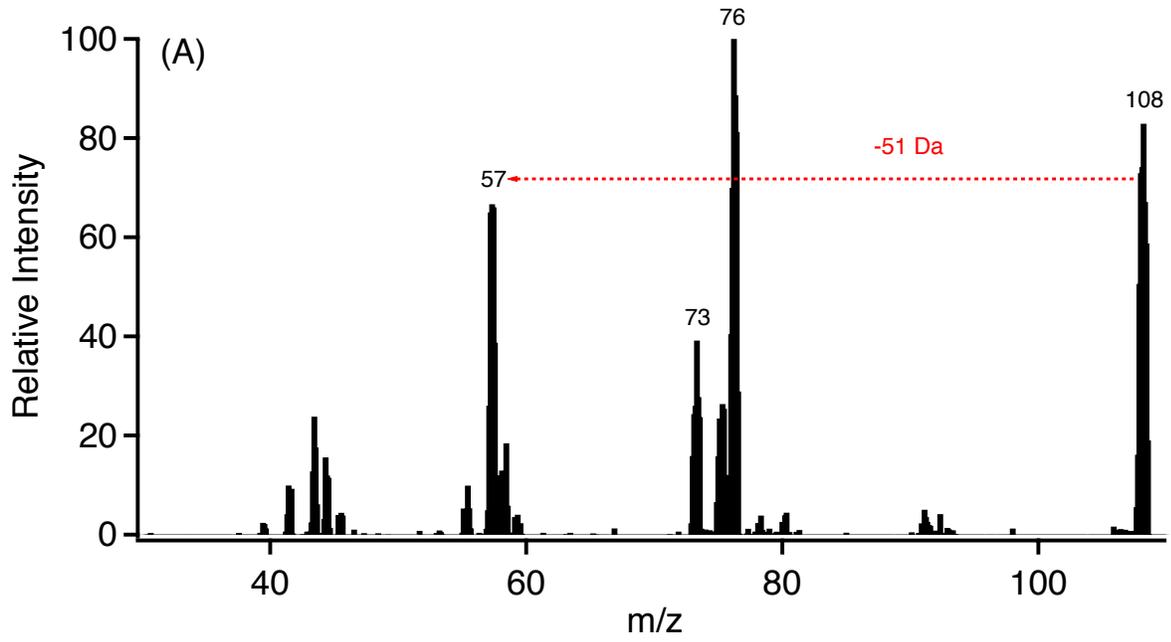


Figure S7. Product spectra of $[M+NH_4]^+$ for (A) benzoyl peroxide; (B) di(dodecanoyl) peroxide; (C) di-tert-butyl peroxide; (D) meso-erythritol; (E) pinonic acid; and (F) 2-nonenal.



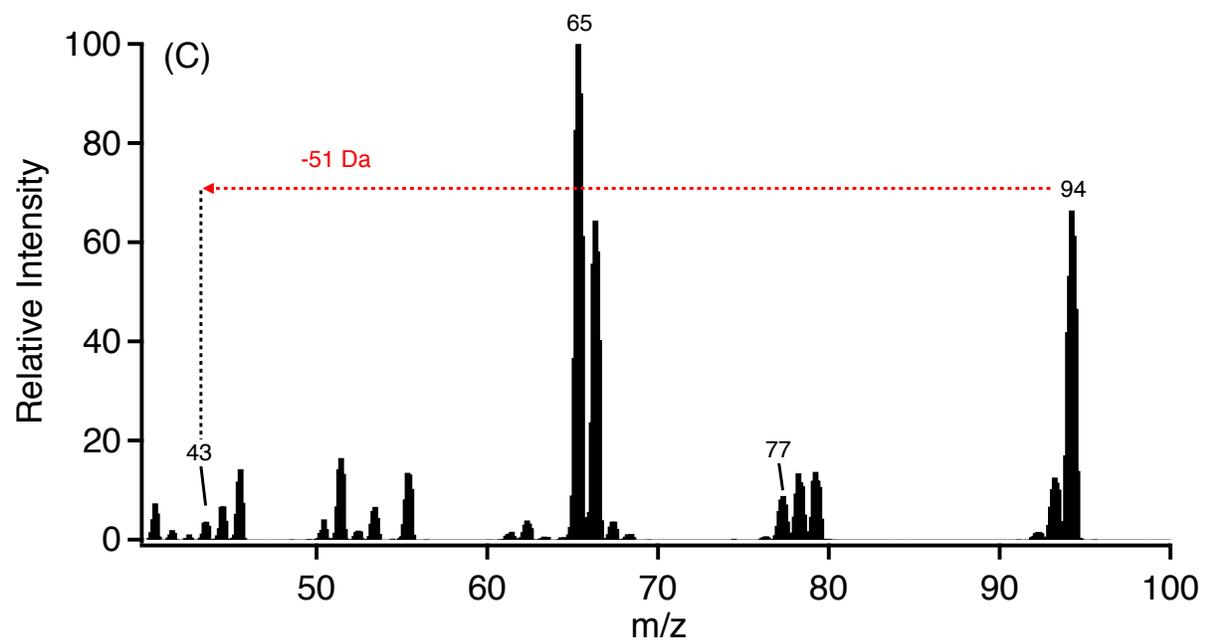


Figure S8. Product spectra of $[M+NH_4]^+$ for: (A) tert-butyl hydroperoxide; (B) 2-butanone peroxide; and (C) peracetic acid.

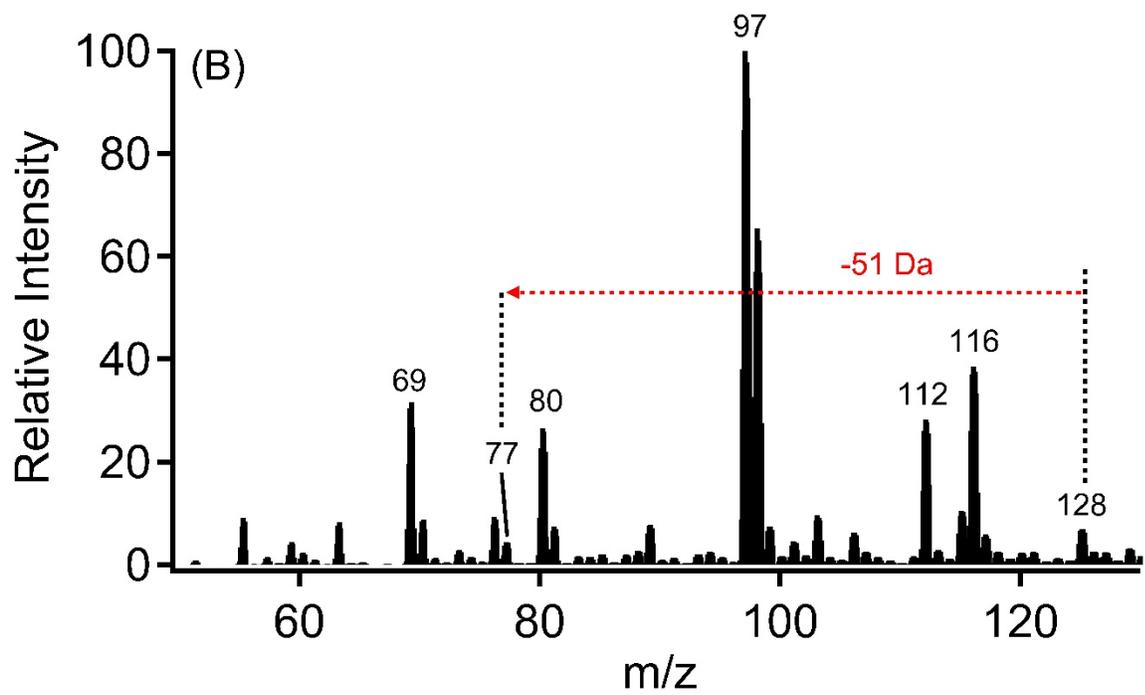
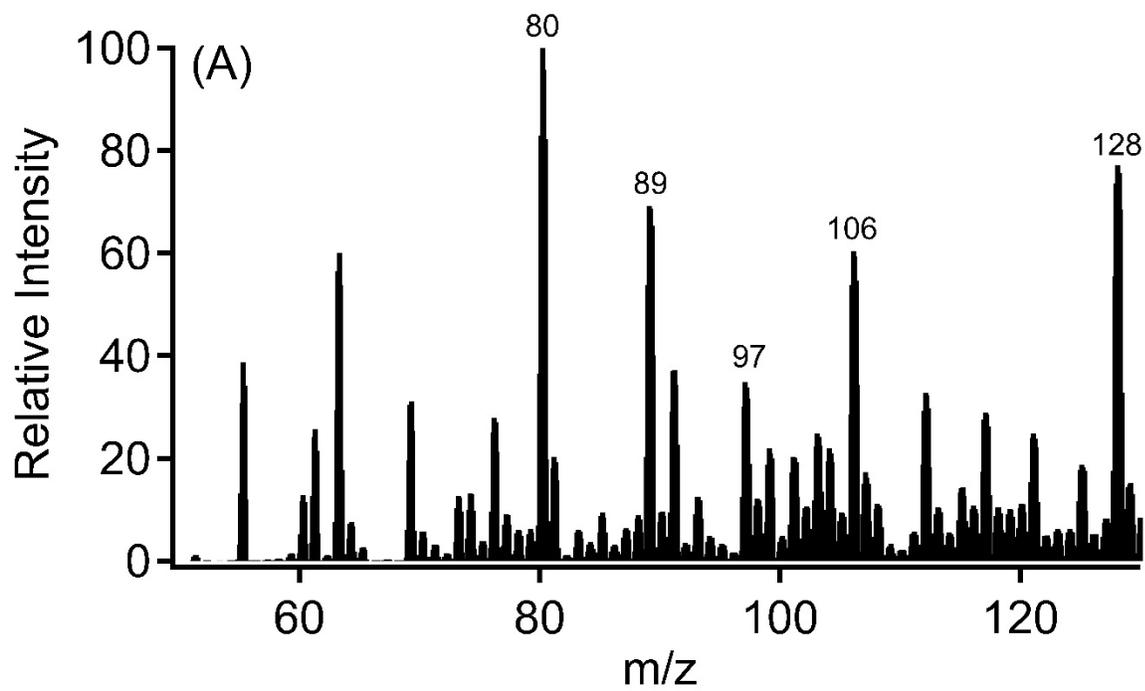


Figure S9. (A) Mass spectrum of reaction of glyoxal with H_2O_2 in the presence of AA; (B) Product mass spectrum of m/z 128 from (A).

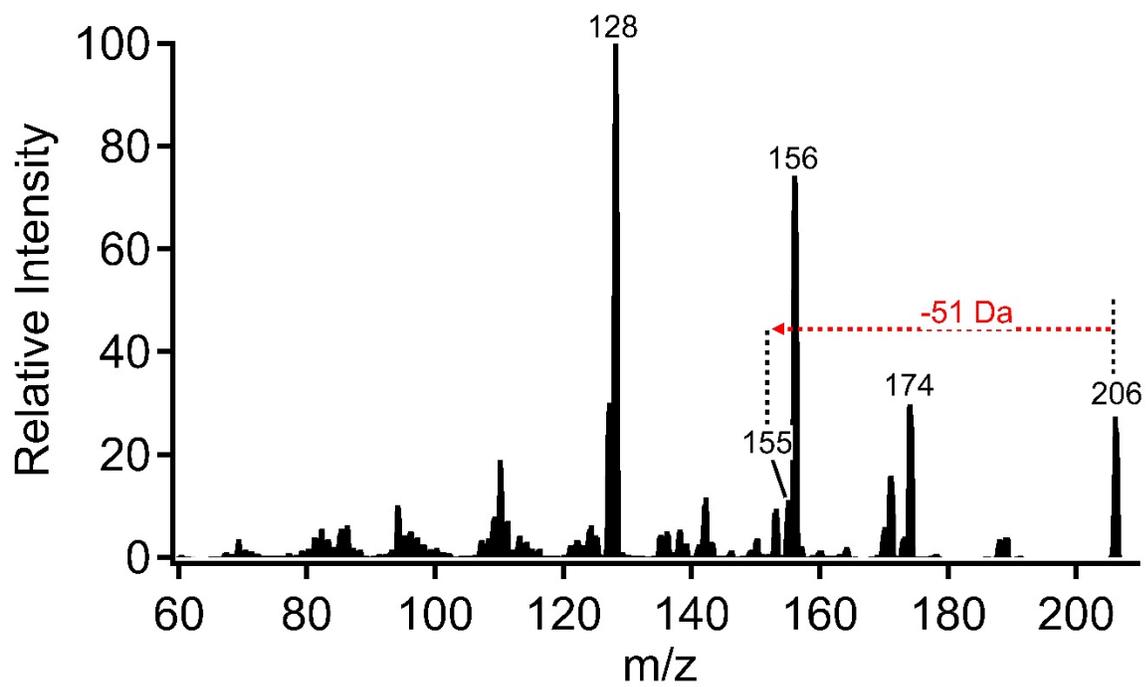


Figure S10. Product spectrum of m/z 206 from α -pinene SOA.

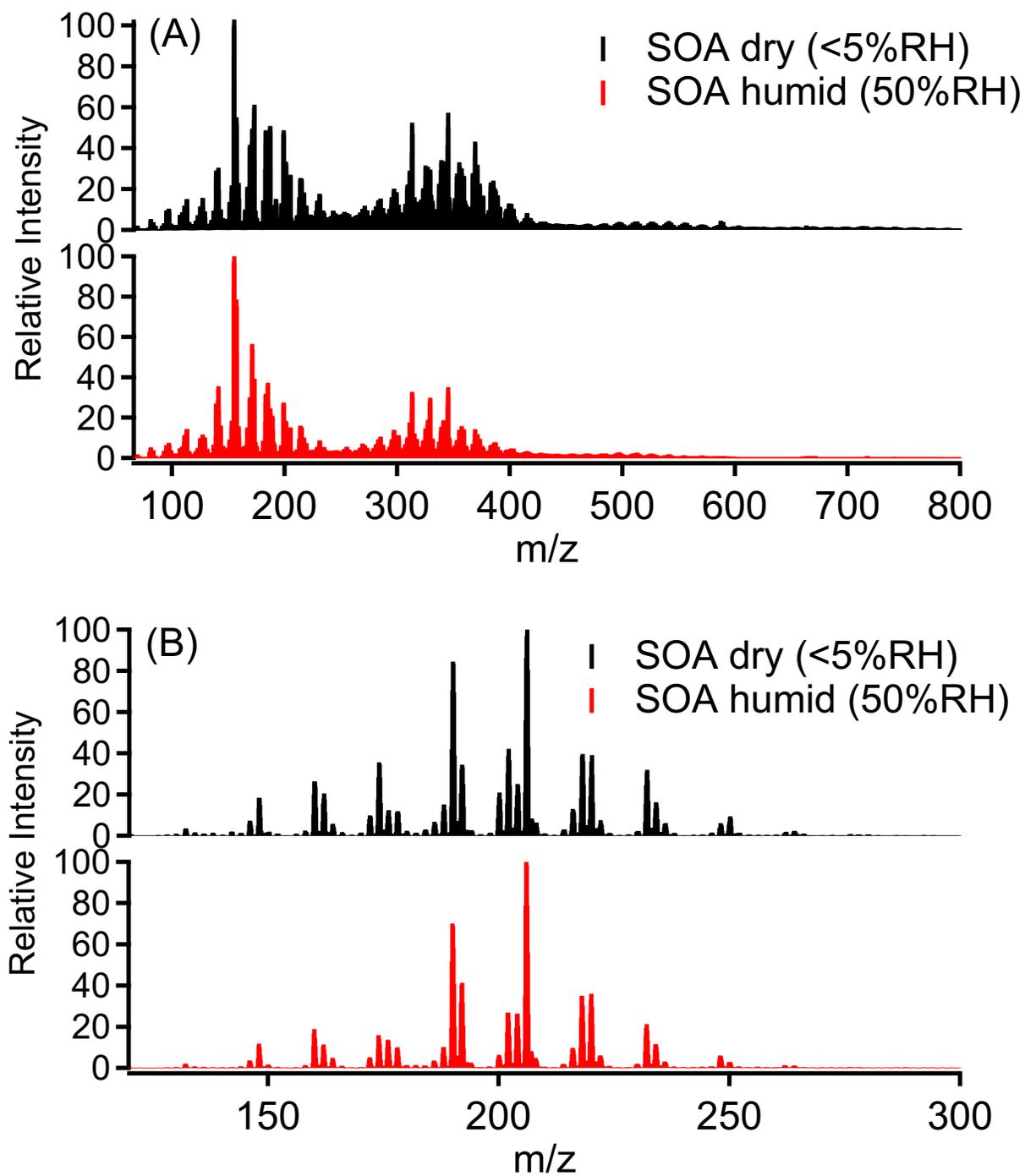


Figure S11. Mass spectra of (A) SOA, and (B) ROOH from ozone reaction with α -pinene under dry ($RH < 5\%$) and humid ($RH = 50\%$) conditions.