Supplemental Information

Thermal Desorption Behavior of Hemiacetal, Acetal, Ether, and Ester Oligomers

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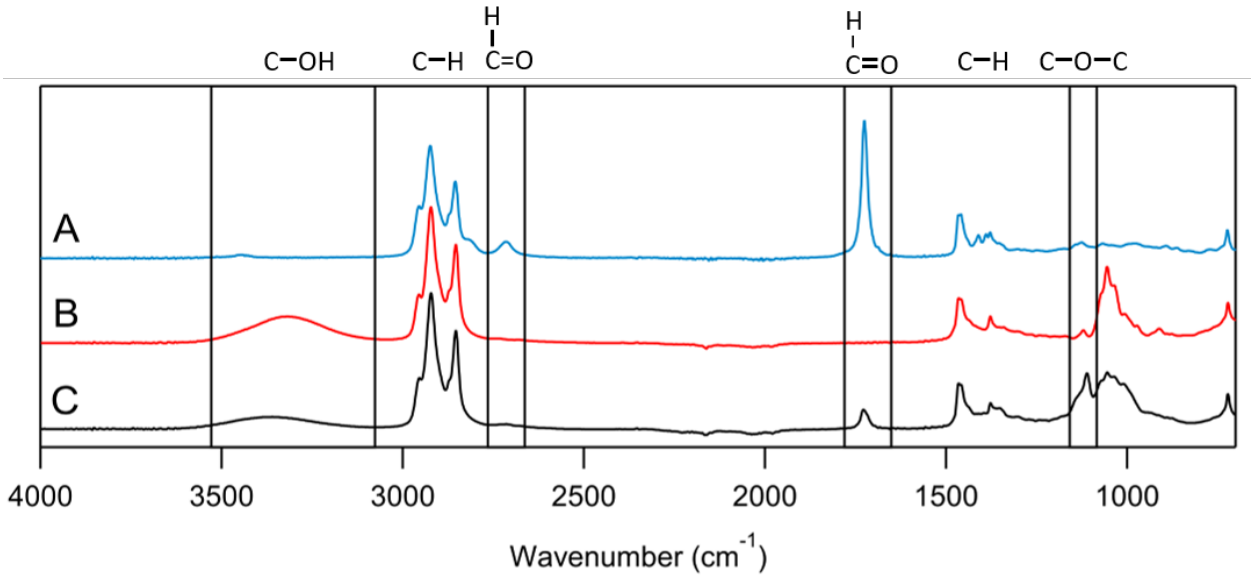


Figure S1. ATR-FTIR spectra of (A) decanal, (B) 1-nonanol, and the (C) reaction mixture containing hemiacetal oligomers and small amounts of unreacted decanal and 1-nonanol. Peaks at 1725 and 2715 cm^{-1} are due to the C=O stretch and aldehydic C–H stretch in decanal, the broad peak centered at ~3300 cm^{-1} is due to the O–H stretches in 1-nonanol and the hemiacetal oligomers, and the peak at 1110 cm^{-1} is due to the C–O–C stretches in the hemiacetal oligomers.

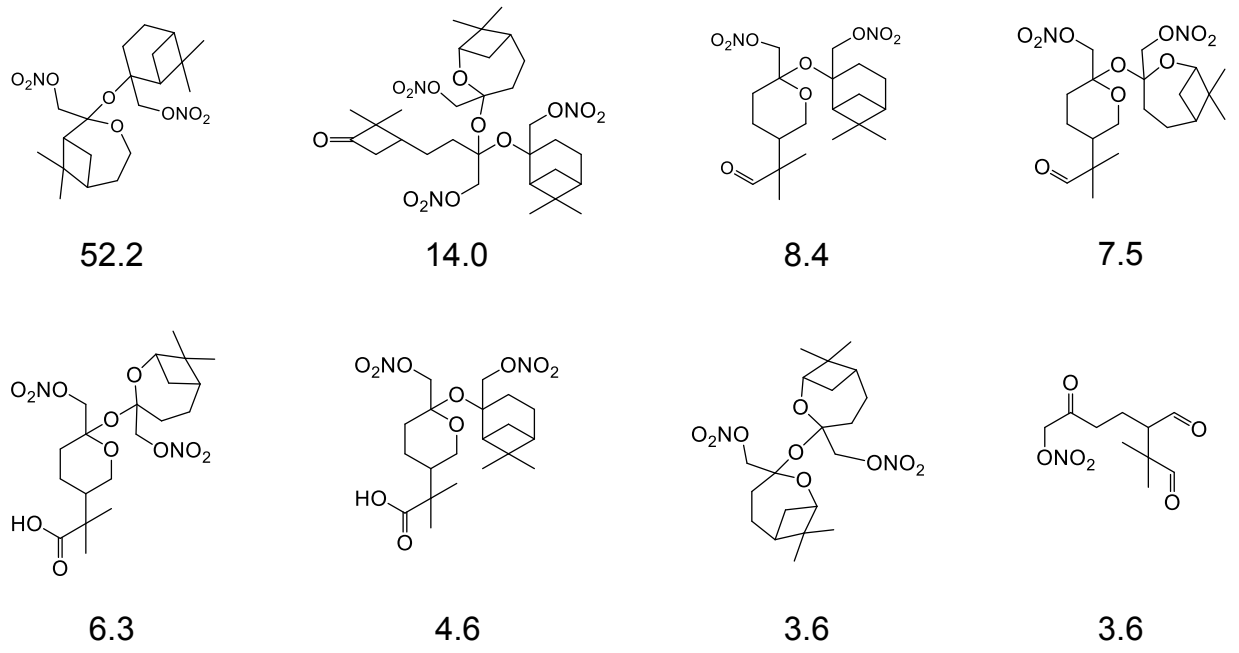
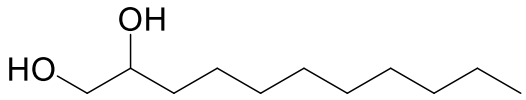
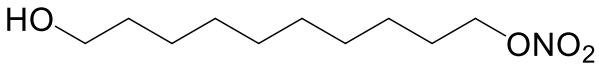


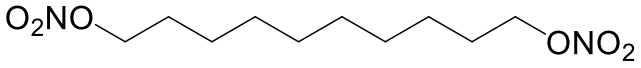
Figure S2. Acetal oligomers present in SOA formed from the reaction of β-pinene with NO_3 radicals. Values are the mass fraction (%) of oligomer in the SOA.



C_{10} Diol (MW 174)



C_{10} Hydroxynitrate (MW 219)



C_{10} Dinitrate (MW 264)

Figure S3. Structures of C_{10} diol, hydroxynitrate, and dinitrate monomers used for TPTD analysis.

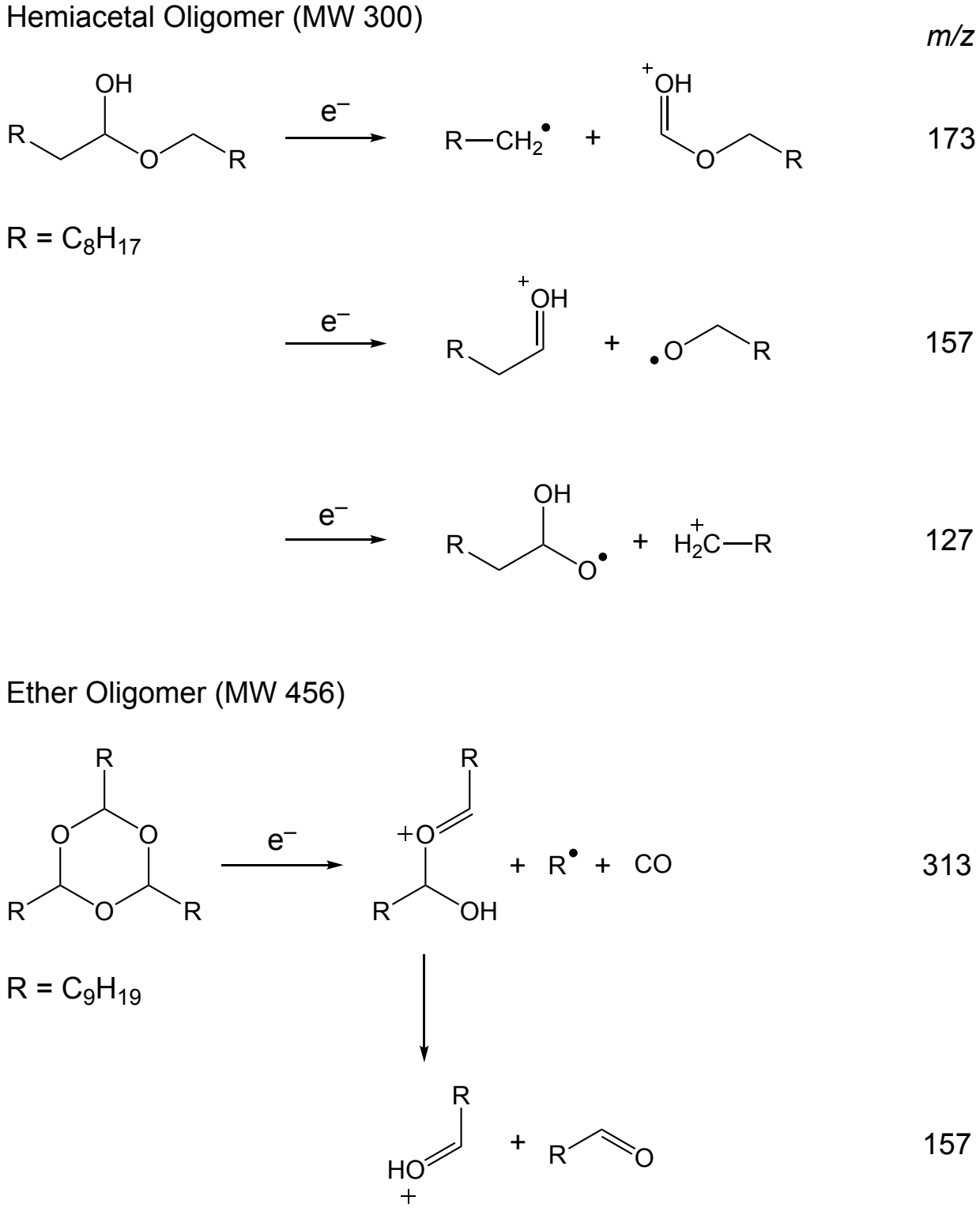


Figure S4. Fragmentation pathways for forming major ions observed in the TDPBMS mass spectrum of the hemiacetal and ether oligomers.

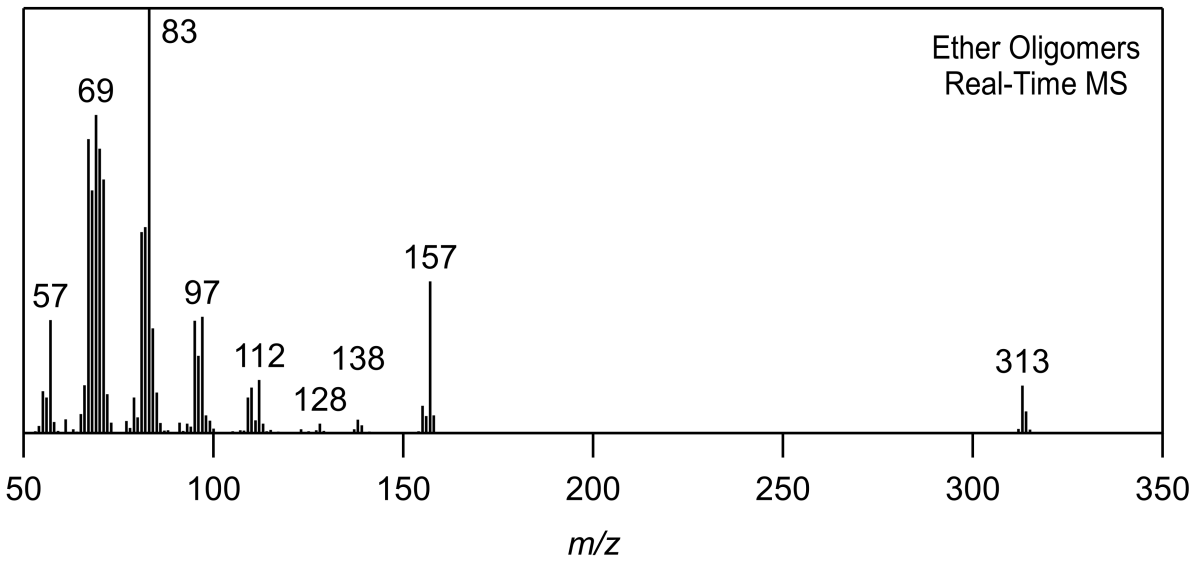


Figure S5. Real-time TDPBMS electron ionization mass spectrum of the ether oligomer formed from decanal.

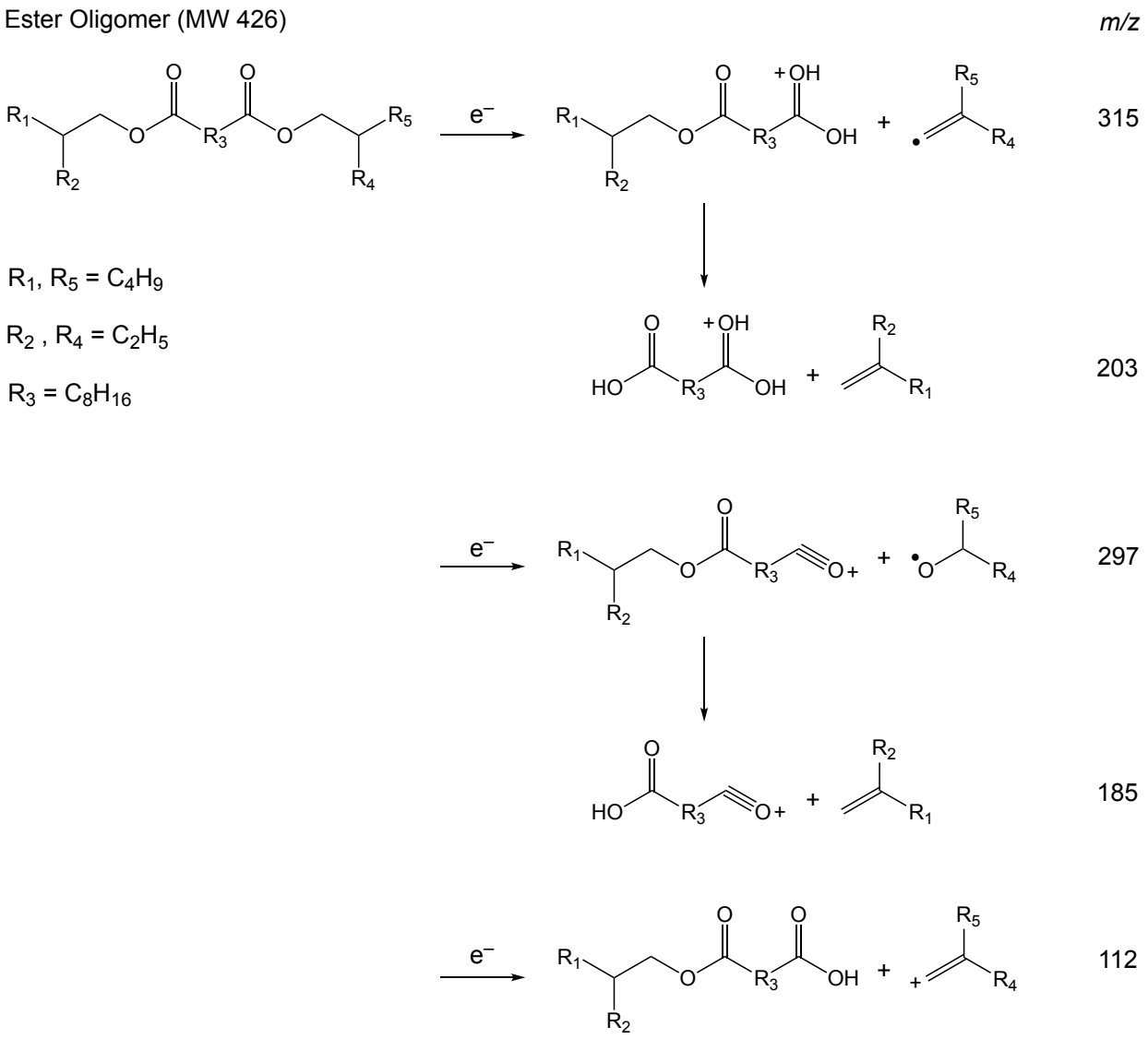


Figure S6. Fragmentation pathways for forming major ions observed in the TDPBMS mass spectrum of the ester oligomer.