

Supplement for “AMS and LC/MS analyses of SOA from the photooxidation of benzene and 1,3,5-trimethylbenzene in the presence of NO_x: Effects of chemical structure on SOA aging” by K. Sato et al.

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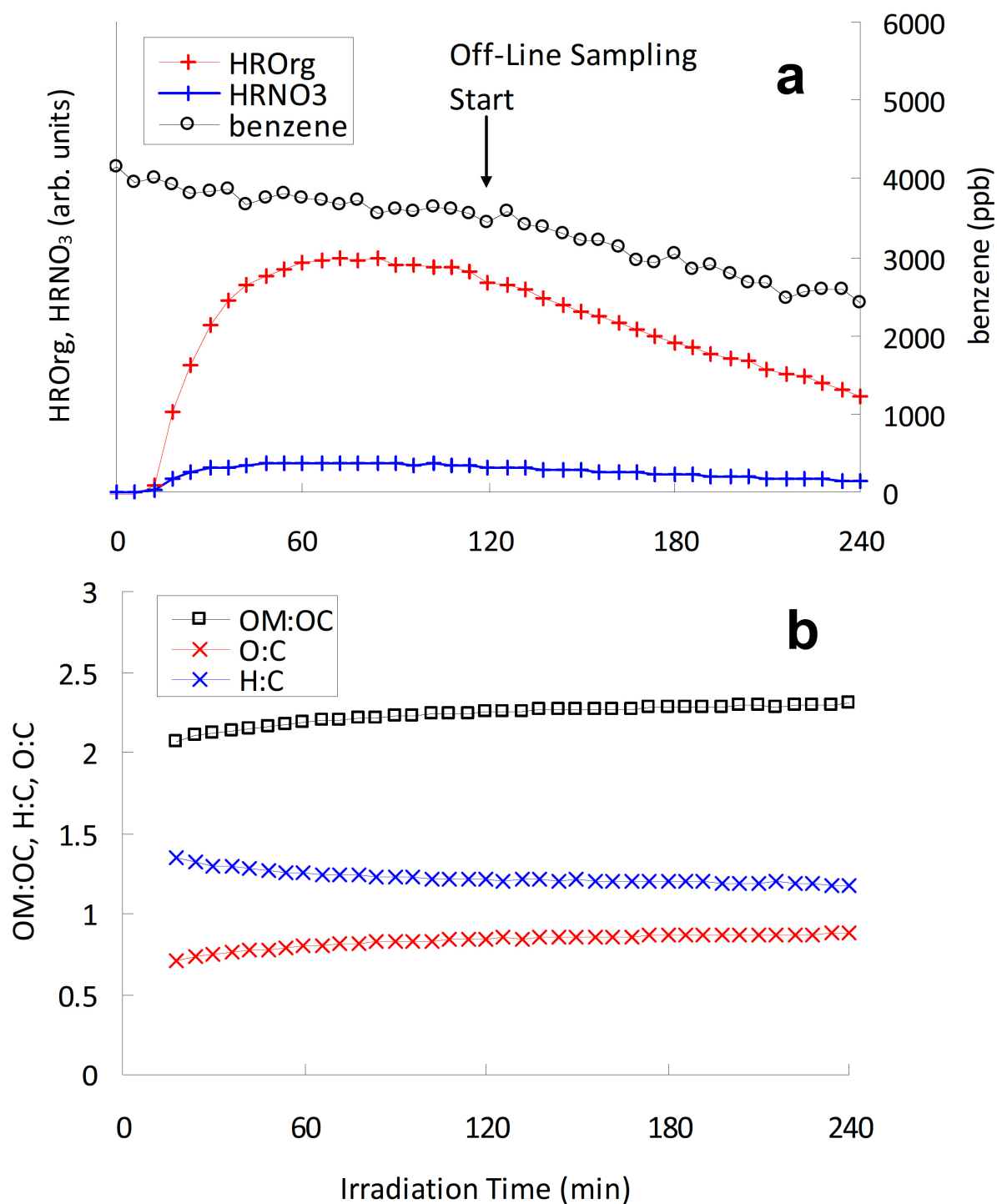


Fig. S1: Time profiles (a) benzene concentration and HROrg and HRNO₃ particulate product concentrations and (b) OM:OC, H:C, and O:C ratios measured during the photooxidation of benzene (run 3).

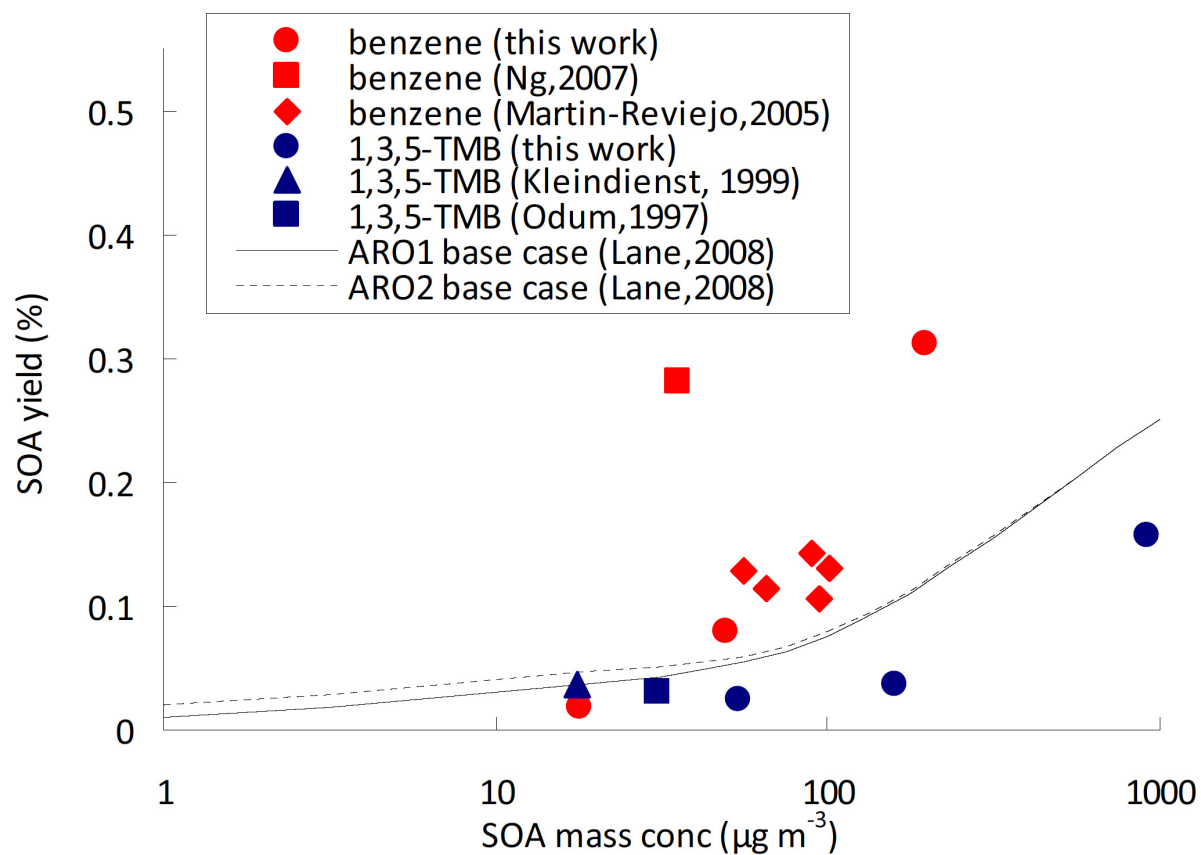


Fig. S2. Yield curves for SOA formed from the photooxidation of aromatic hydrocarbons under high NO_x conditions; symbols are present and previous experimental results; solid and dotted curves are SOA yield curves for aromatic compounds calculated by volatility basis-set approach (Lane et al., 2008).

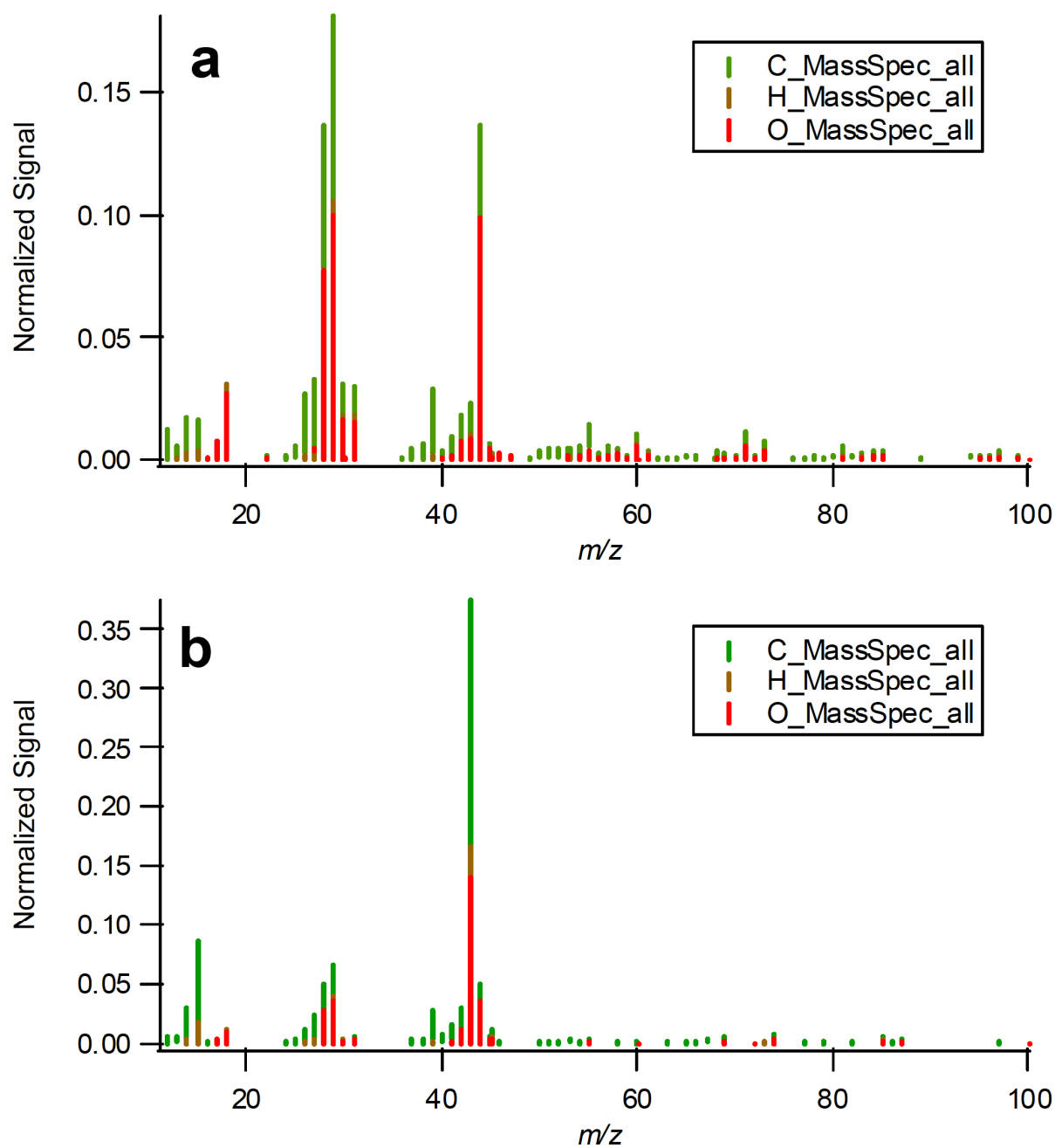


Fig. S3: Mass spectra measured by H-ToF-AMS for organic aerosol during the photooxidation of (a) benzene (run 3) and (b) 1,3,5-TMB (run 6); both spectra were obtained by averaging 4-hour data.

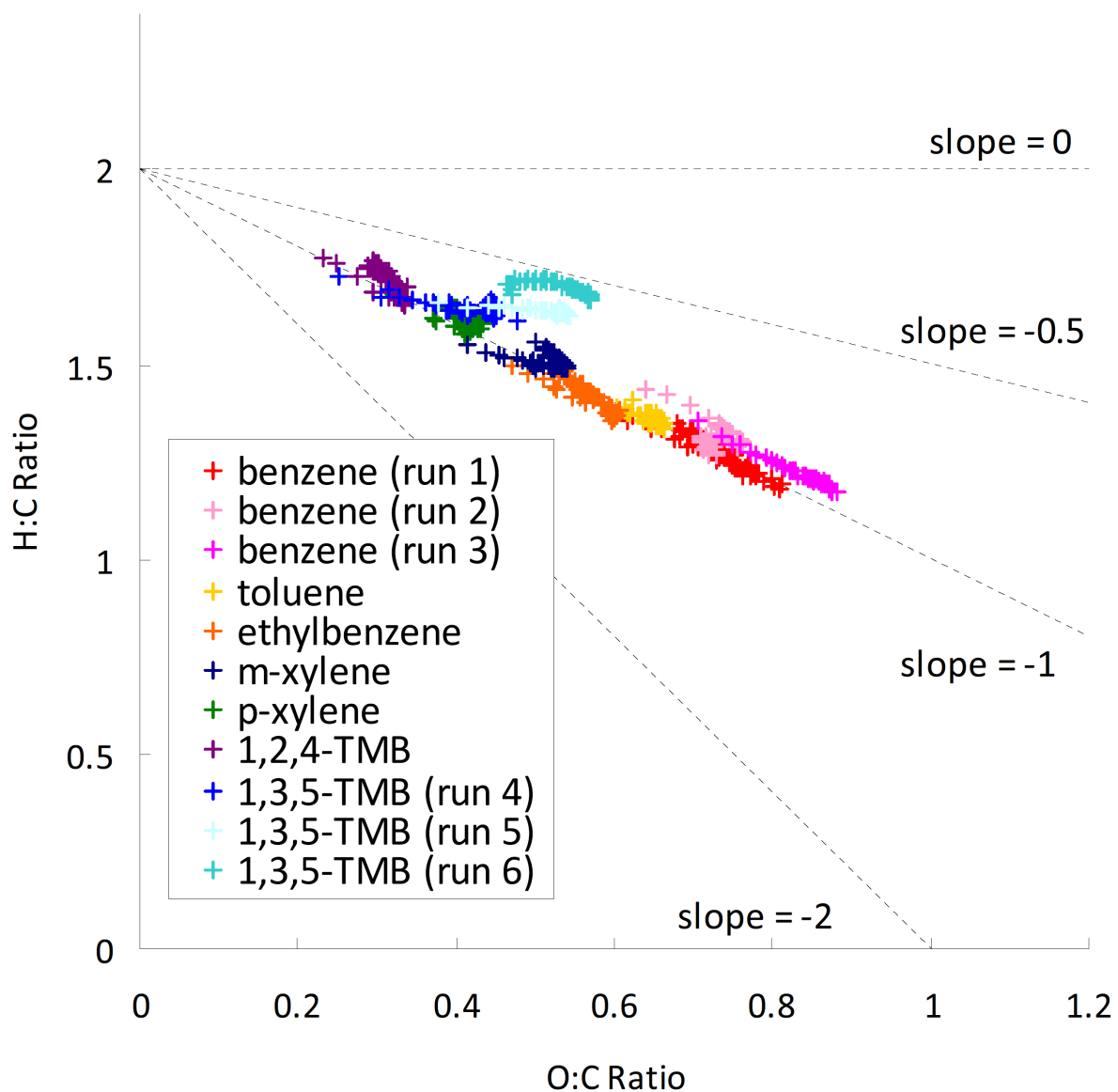


Fig. S4. Van Krevelen diagram for secondary organic aerosol from the photooxidation of aromatic hydrocarbons in the presence of NO_x ; data of benzene and 1,3,5-trimethylbenzene are present results; data of other hydrocarbons are taken from Sato et al. (2010).

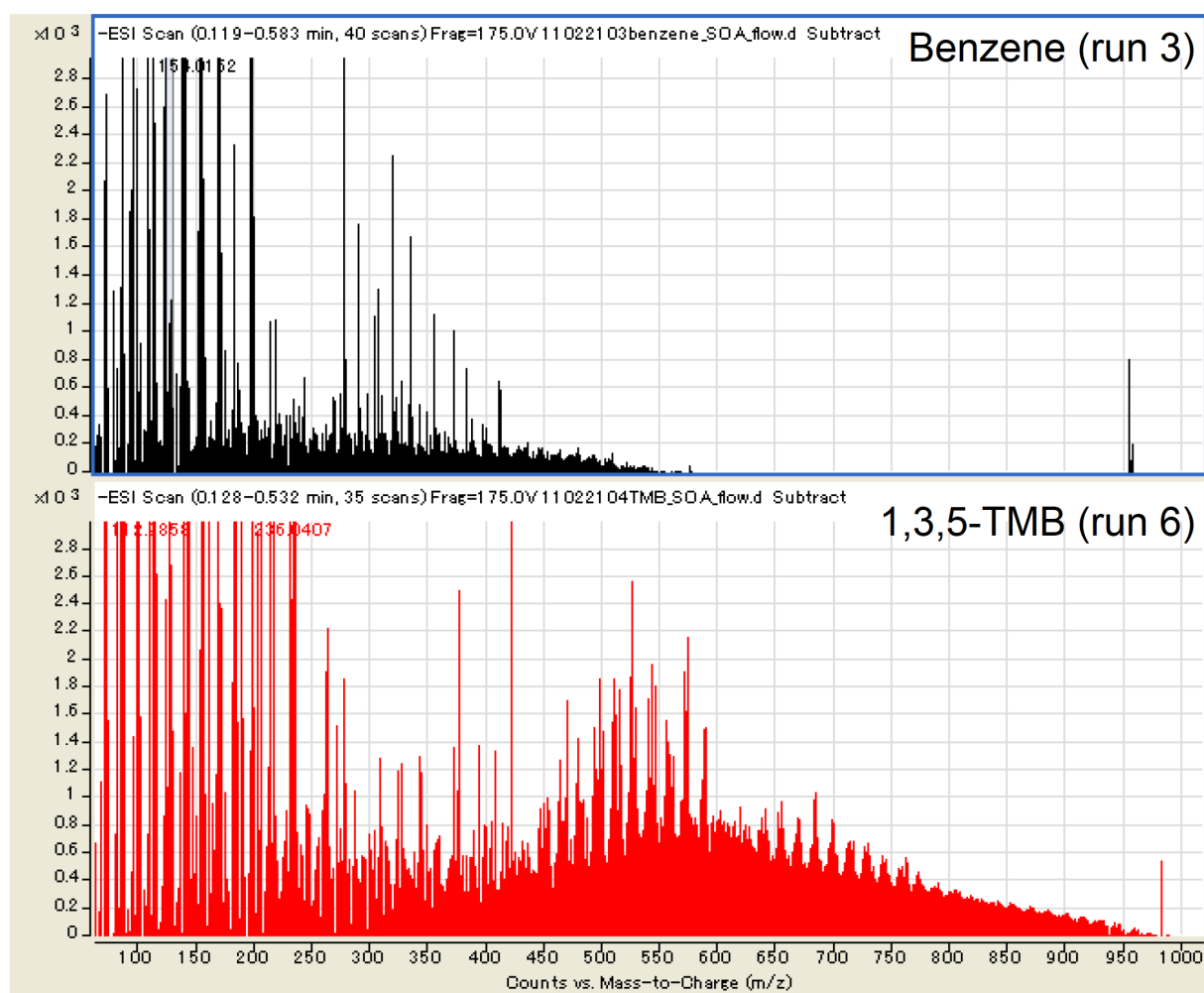


Fig. S5. Mass spectra measured by LC/TOF-MS for SOA from the photooxidation of benzene (run 3) and 1,3,5-TMB (run 6); the vertical axis is extended to show oligomer distributions; the signals in a region $m/z < 250$ are higher than those in a region $m/z > 250$ by a factor of $\sim 10^2$.

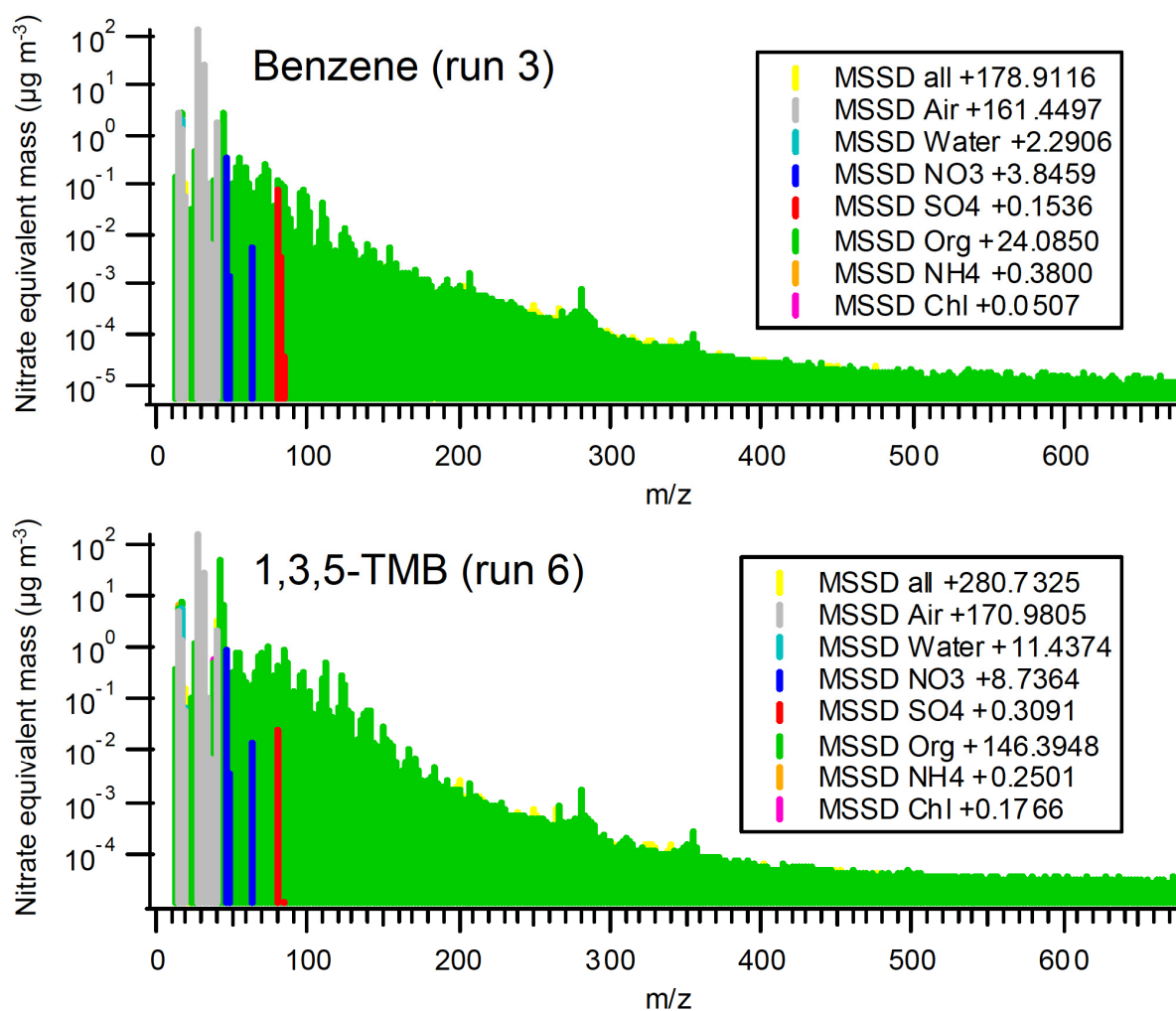


Fig. S6. Mass spectra measured by H-ToF-AMS for SOA from the photooxidation of benzene (run 3) and 1,3,5-TMB (run 6); peaks of $m/z = 207, 281,$ and 355 were identified as $\text{SiO}(\text{CH}_3)(\text{SiO}(\text{CH}_3)_2)_n^+$ ions ($n = 2, 3,$ and 4) originated from silicone oil absorbed onto SOA particles (Timko et al., 2009); organic mass peaks in a region m/z 200–500 except for the peaks of silicone oil are attributed to oligomers.



Photo. S1. Sample filter obtained in the experiment (run 3) with benzene (right) and blank filter (left); in contrast, a sample filter obtained in the experiment with 1,3,5-TMB was white.

References

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