

**Supplement for “AMS and LC/MS analyses of SOA from the photooxidation of benzene and 1,3,5-trimethylbenzene in the presence of NO<sub>x</sub>: Effects of chemical structure on SOA aging” by K. Sato et al.**

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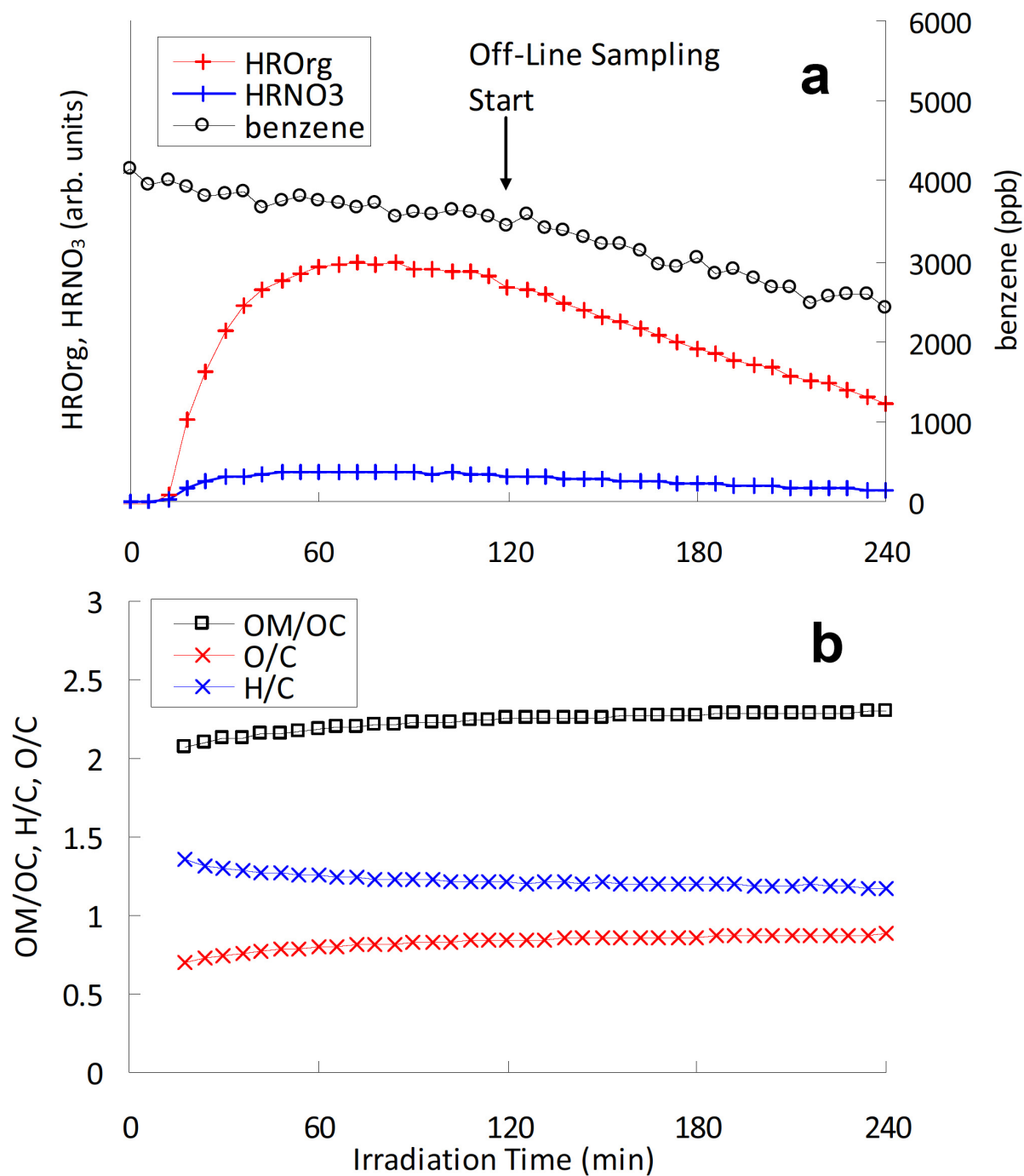


Fig. S1: Time profiles (a) benzene concentration and HROrg and HRNO<sub>3</sub> particulate product concentrations and (b) OM/OC (mass ratio of organic matter to organic carbon), H/C, and O/C ratios measured during the photooxidation of benzene (run 3).

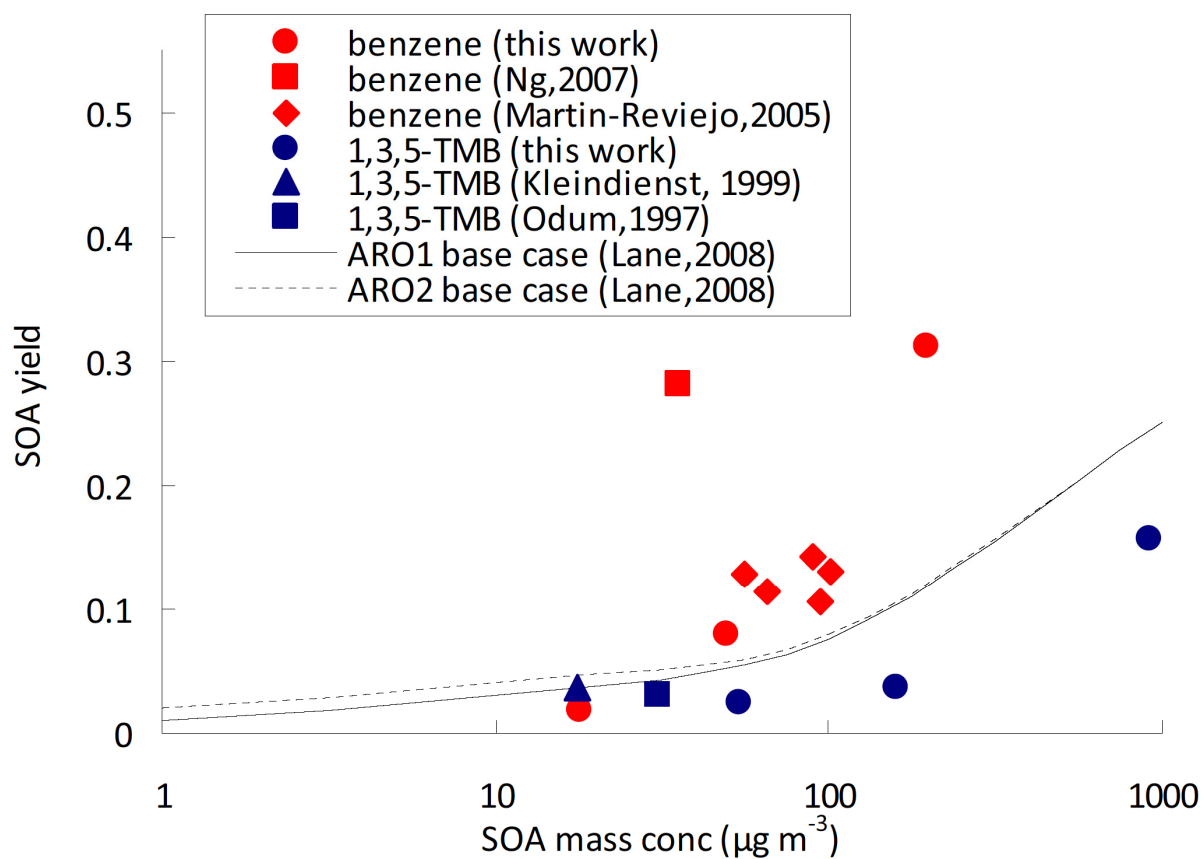


Fig. S2. Yield curves for SOA formed from the photooxidation of aromatic hydrocarbons under high  $\text{NO}_x$  conditions; symbols are present and previous experimental results; solid and dotted curves are SOA yield curves for aromatic compounds calculated by volatility basis-set approach (Lane et al., 2008). All experimental data plotted are measured at room temperatures (297-304 K) and dry conditions ( $\text{RH} < 28\%$ ).

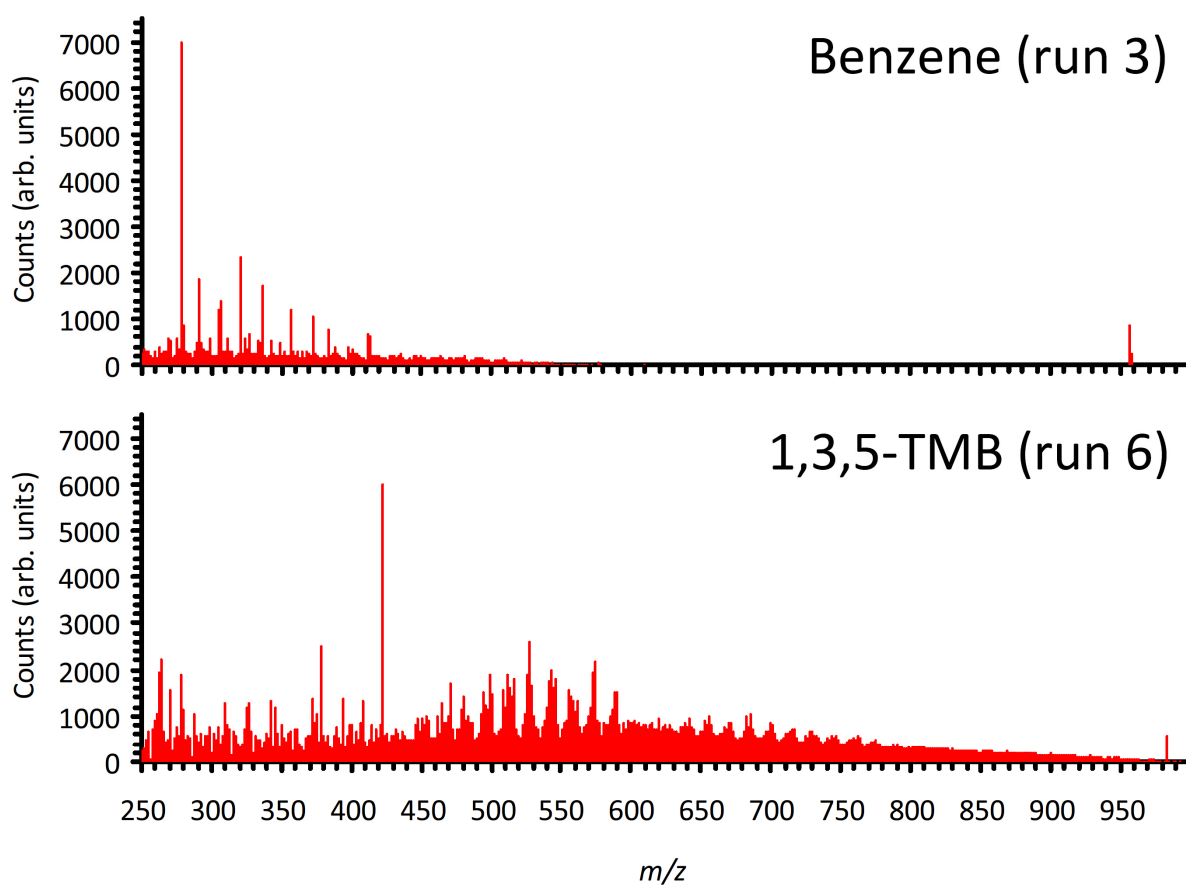


Fig. S3. Mass spectra measured by LC/TOF-MS for SOA from the photooxidation of benzene (run 3) and 1,3,5-TMB (run 6); the vertical axis is extended to show oligomer distributions; the signals in a region  $m/z < 250$  are higher than those in a region  $m/z > 250$  by a factor of  $\sim 10^2$ .

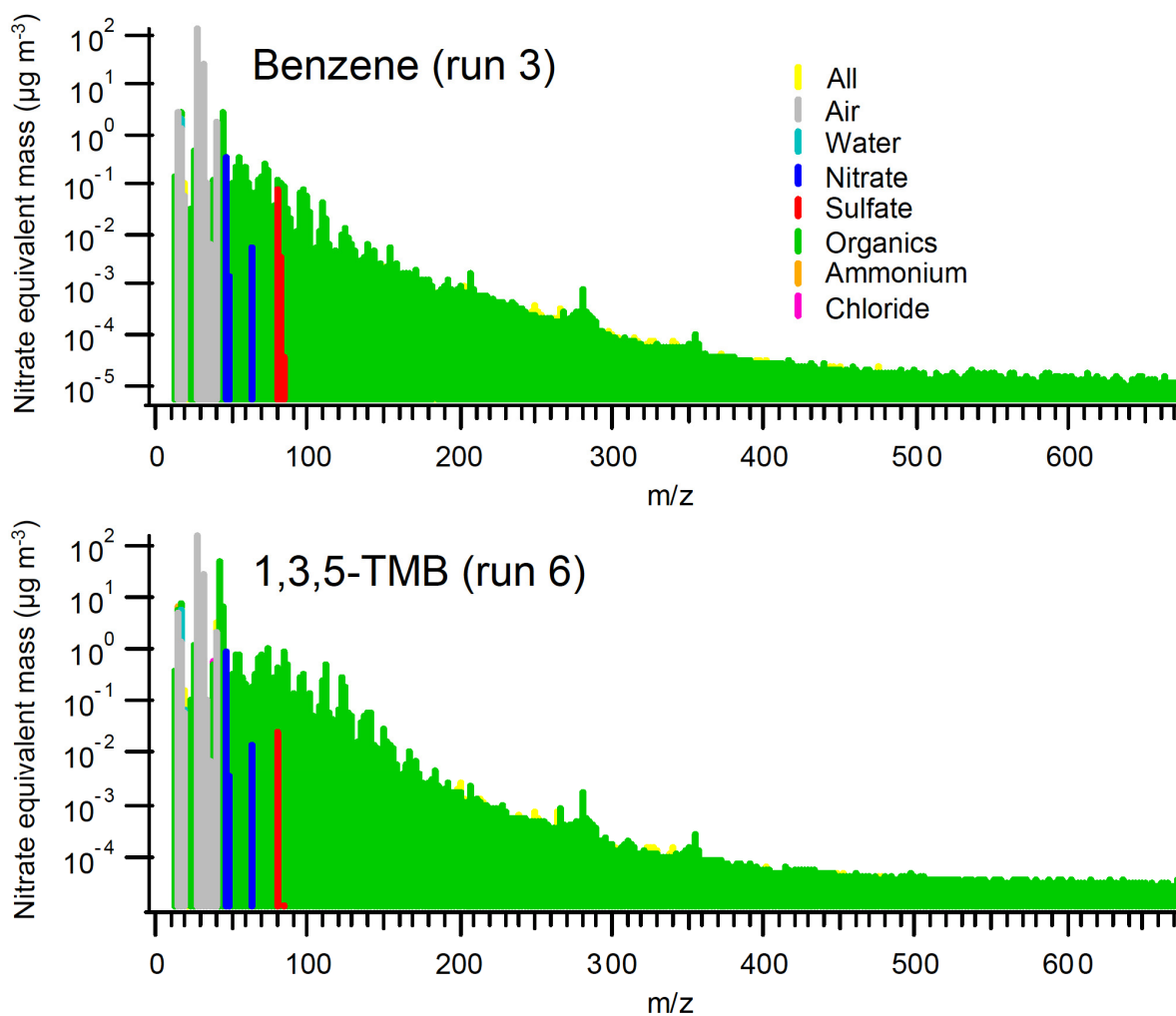


Fig. S4. Mass spectra measured by H-ToF-AMS for SOA from the photooxidation of benzene (run 3) and 1,3,5-TMB (run 6); peaks of  $m/z = 207, 281,$  and  $355$  were identified as  $\text{SiO}(\text{CH}_3)(\text{SiO}(\text{CH}_3)_2)_n^+$  ions ( $n = 2, 3,$  and  $4$ ) originated from silicone oil absorbed onto SOA particles (Timko et al., 2009); organic mass peaks in a region  $m/z$  200–600 except for the peaks of silicone oil are attributed to oligomers.

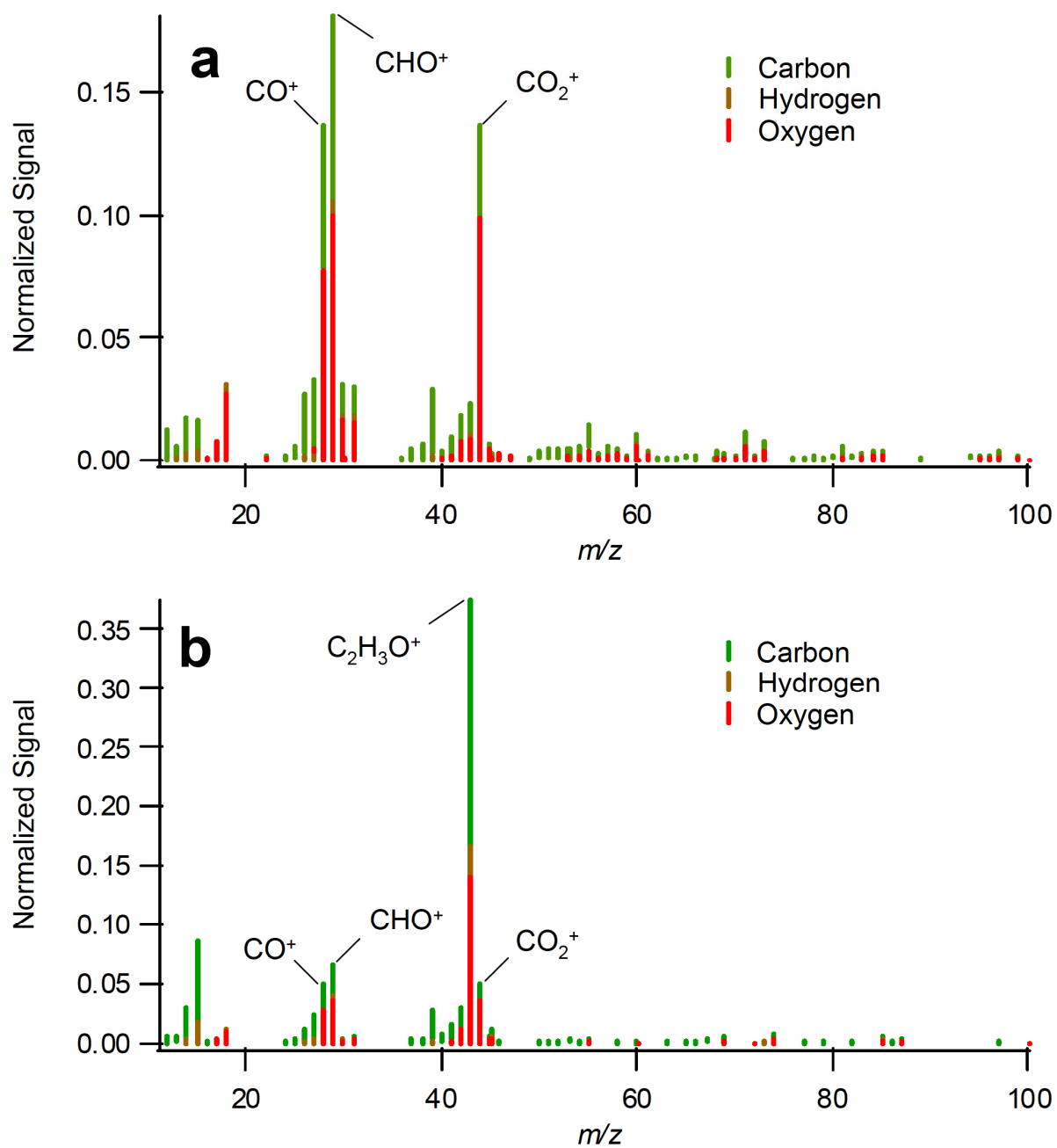


Fig. S5: Mass spectra measured by H-ToF-AMS for organic aerosol during the photooxidation of (a) benzene (run 3) and (b) 1,3,5-TMB (run 6); both spectra were obtained by averaging 4-hour data.



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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