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Supplement of

Direct contribution of ammonia to α -pinene secondary organic aerosol formation

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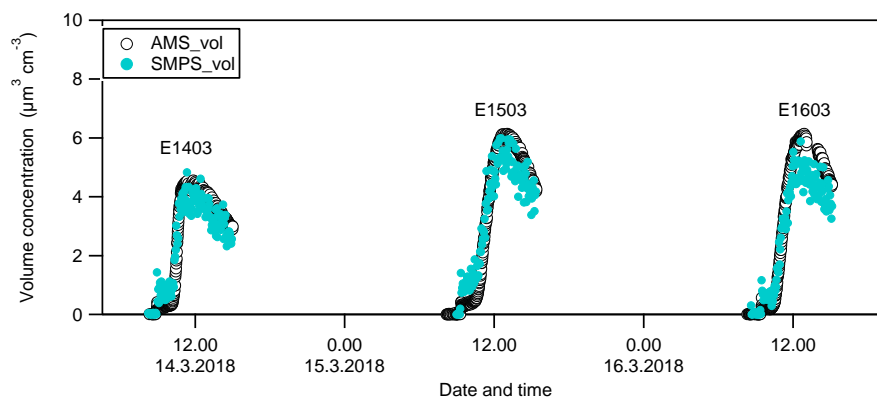


Figure S1. The volume concentration derived from AMS and SMPS in the seeded experiments (E0314, E0315, E0316). A collection efficiency of 100% was applied to determine the total aerosol concentration in AMS results.

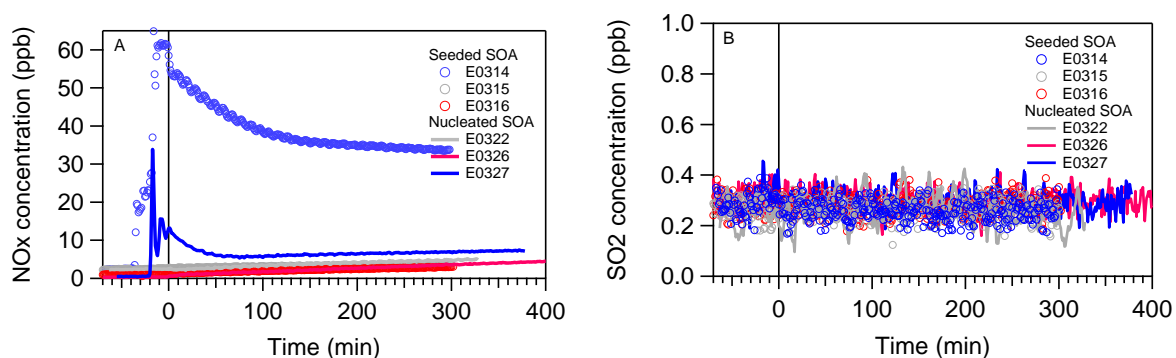


Figure S2. The temporal evolution of NO_x and SO_2 in the chamber during the nucleated and seeded SOA experiments.

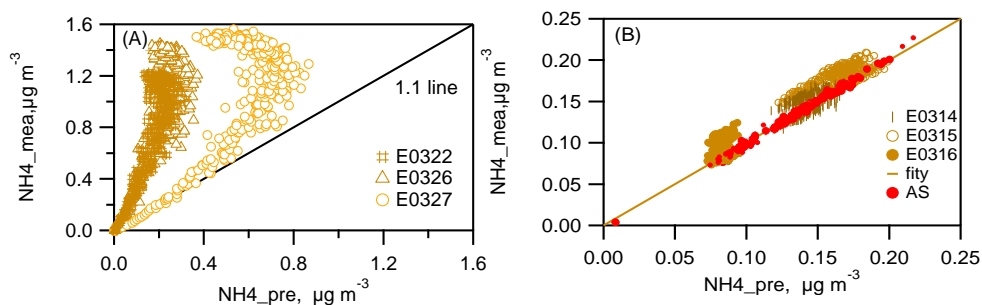


Figure S3. The scatter plots of predicted ammonium VS measured ammonium in (A) nucleation experiments and (B) seeds SOA experiments. The predicted and measured ammonium of pure ammonium sulfate aerosol particles are shown as red cycles in panel B.

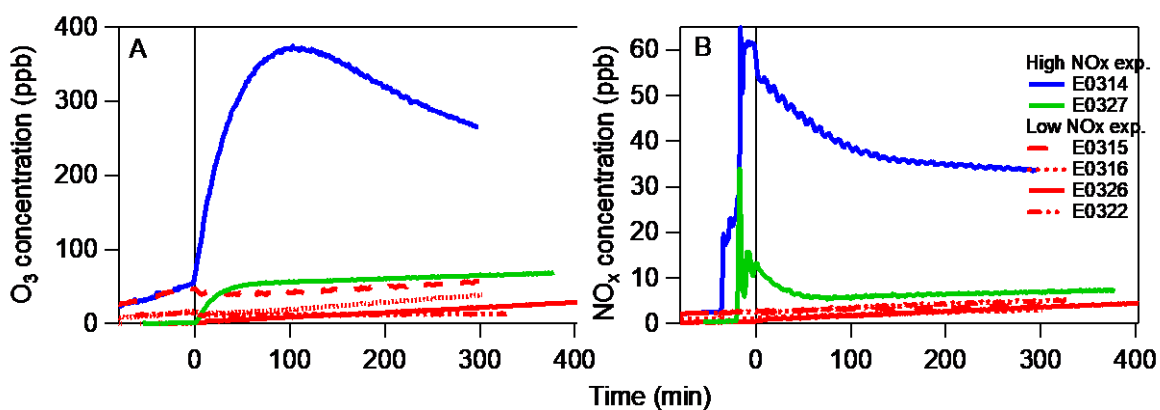


Figure S4. The O_3 and NO_x concentration in the chamber. The high NO_x injection led to high O_3 concentration in the chamber (in blue).

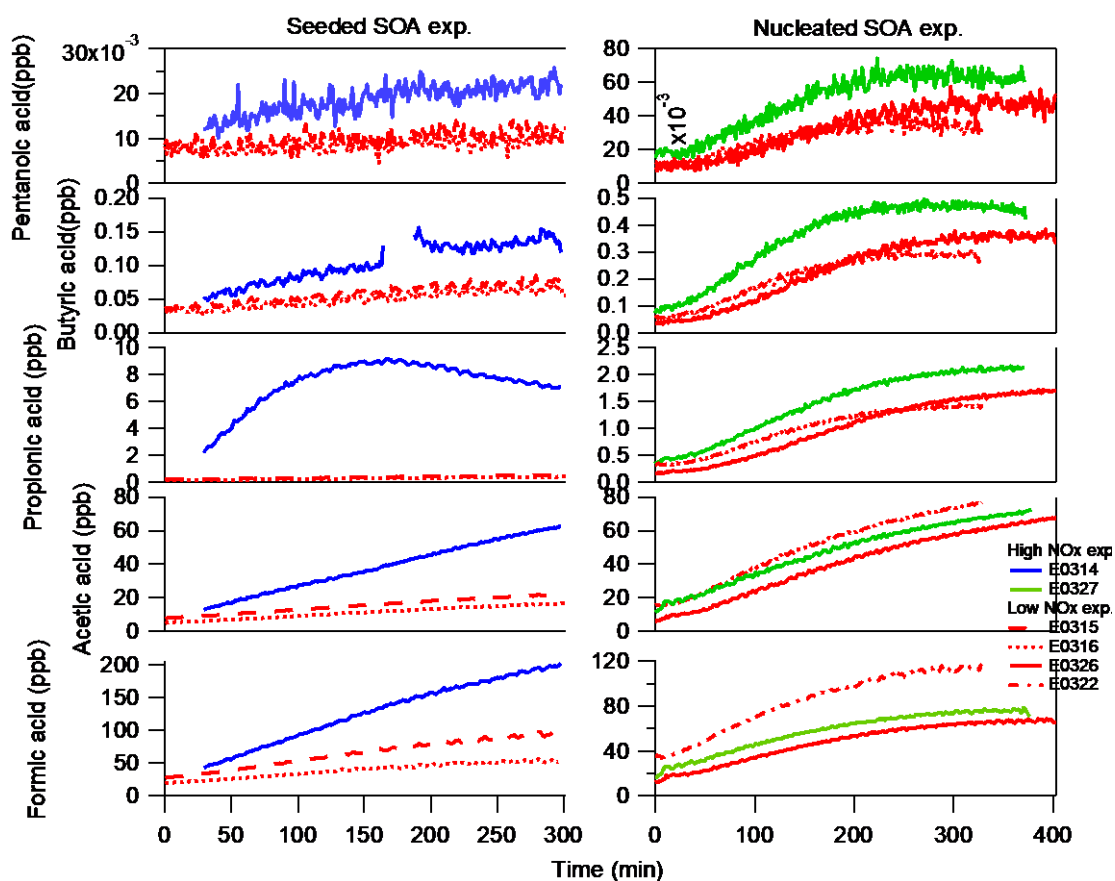


Figure S5. The concentrations of C1-C5 organic monoacid in the seeded (left panels) and nucleated (right panels) SOA experiments. The higher NO_x input in E0314 (in blue) also led to higher ozone formation and eventually led to higher organic acids concentration resulting from ozonolysis reaction.

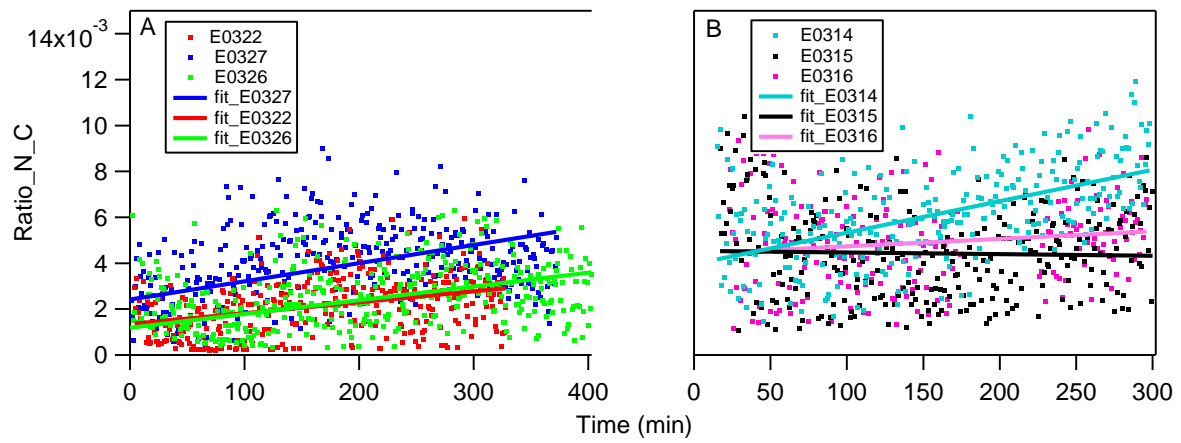


Figure S6. The N:C ratios determined by AMS in (A) the nucleated SOA experiments, and (2) in the seeded SOA experiments.

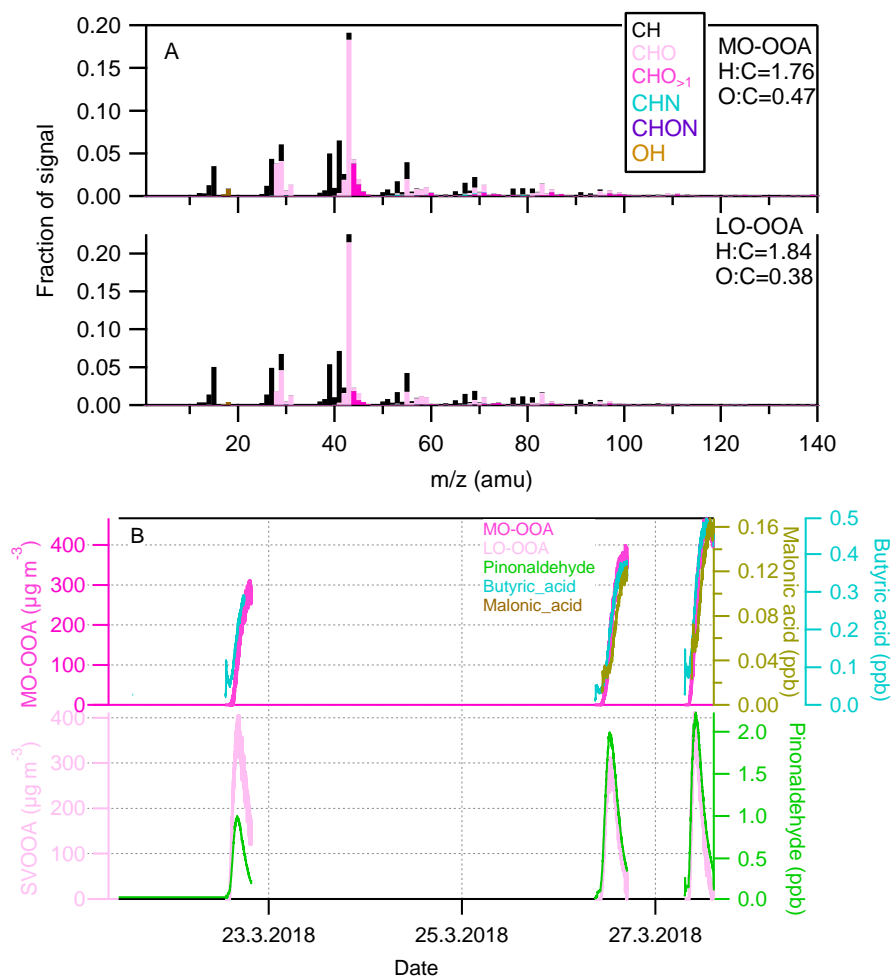


Figure S7. A PMF solution to the high-resolution mass spectra in the nucleated SOA experiments. Panel A: profiles of organic factors and panel B: time series of the factors and their correlation with the tracers.

Table S1 The mode diameters of ammonium, nitrate and organic acids determined by performing a lognormal-fitting on the size distributions in the nucleation experiments

Experimental No. (nm)	NH ₄ ⁺	NO ₃ ⁺	CO ₂ ⁺
E0327	254	255	264
E0326	284	287	297
E0322	458	462	467