

Figure S1. The volume concentration derived from AMS and SMPS in the seeded experiments (E0314, E031, E0316). A collection efficiency of 100% was applied to determine the total aerosol concentration in AMS results.

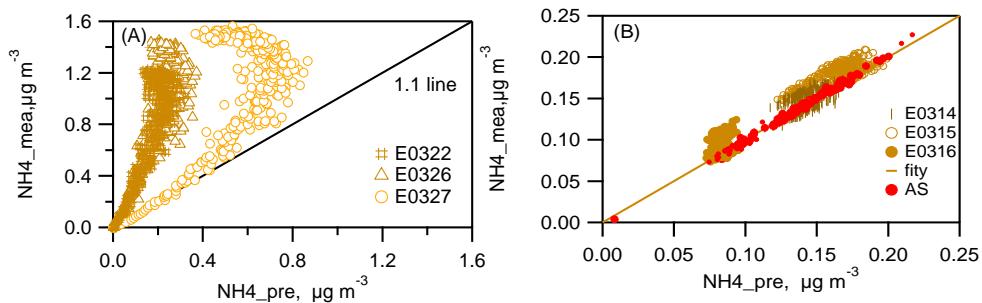


Figure S2. The scatter plots of predicted ammonium VS measured ammonium in (A) nucleation experiments and (B) seeds SOA experiments. The predicted and measured ammonium of pure ammonium sulfate aerosol particles are shown as red cycles in panel B.

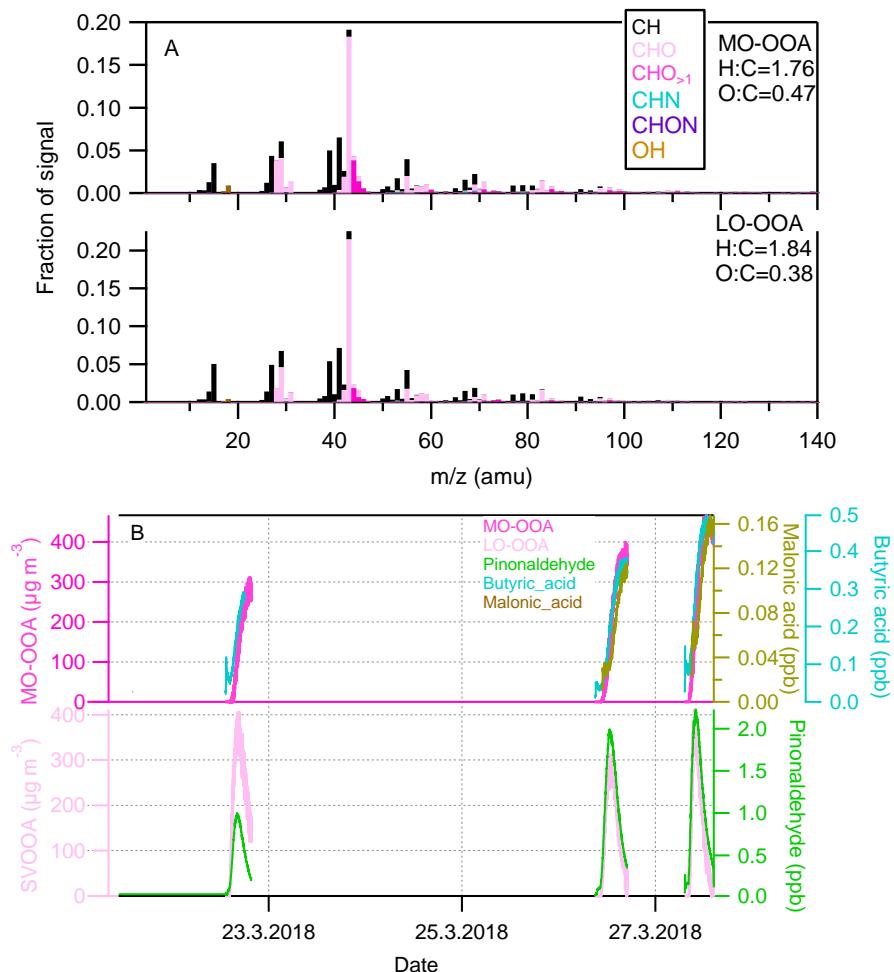


Figure S3. A PMF solution to the high-resolution mass spectra in the nucleated SOA experiments. Panel A: profiles of organic factors and panel B: time series of the factors and their correlation with the tracers.

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)	$\text{NH}_4^+$	$\text{NO}_3^-$	$\text{CO}_2^+$
E0327	254	255	264
E0326	284	287	297
E0322	458	462	467