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Supplement of

Secondary organic aerosol formation from OH-initiated oxidation of *m*-xylene: effects of relative humidity on yield and chemical composition

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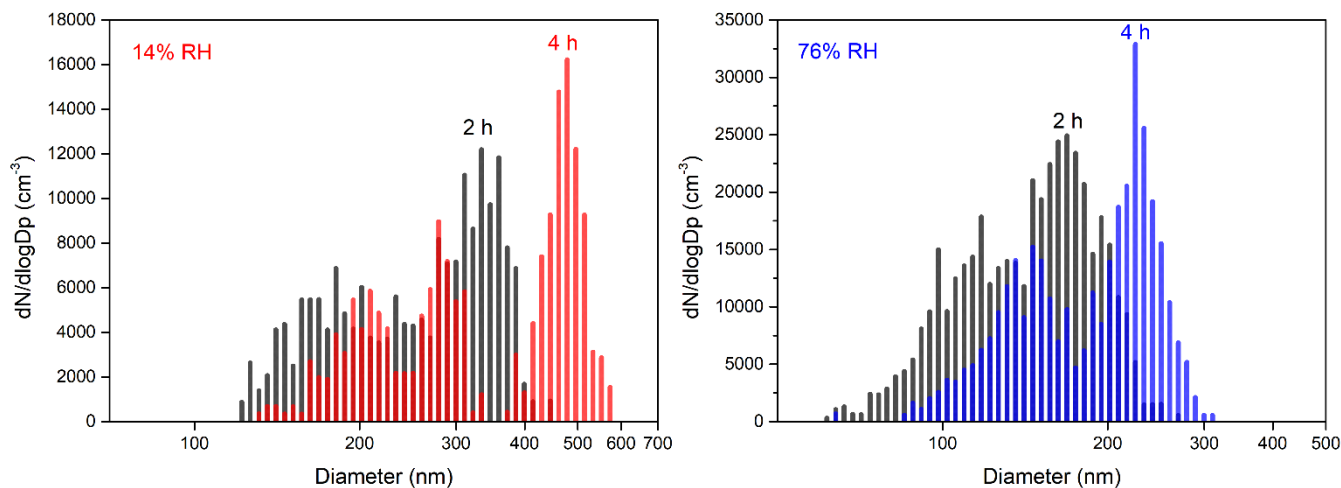


Figure S1 Variations of particle size distribution of number concentrations at the 2-h time point and at the end of the experiment for the 14% RH experiment (Exp. 4) and the 76% RH experiment (Exp. 11).

5 **Table S1(a).** List of the SOA product ions identified from ESI-HRMS in positive mode used in Fig. 5.

14% RH		74% RH		Formula
m/z	intensity	m/z	intensity	
415.12032	1.55E+05	415.11937	1.26E+04	C18 H23 O11
413.10459	1.18E+05	413.10393	5.79E+03	C18 H21 O11
399.12542	1.30E+05	399.12470	2.03E+04	C18 H23 O10
397.10976	2.18E+05	397.10926	1.95E+04	C18 H21 O10
381.11482	2.42E+05	381.11434	2.92E+04	C18 H21 O9
379.09902	1.09E+05	379.09866	7.43E+03	C18 H19 O9
365.11992	1.17E+05	365.11944	3.41E+04	C18 H21 O8
385.10957	1.03E+05	385.10901	9.72E+03	C17 H21 O10
383.09399	1.01E+05	383.09330	6.04E+03	C17 H19 O10
369.11481	1.06E+05	369.11446	1.57E+04	C17 H21 O9
367.09911	1.15E+05	367.09892	-	C17 H19 O9
355.09919	1.88E+05	355.09870	2.72E+04	C16 H19 O9
353.08352	1.31E+05	353.08319	1.08E+04	C16 H17 O9
339.10481	1.27E+05	339.10408	1.72E+04	C16 H19 O8
337.08857	1.62E+05	337.08800	2.34E+04	C16 H17 O8
321.09386	1.33E+05	321.09328	1.11E+04	C16 H17 O7
341.08370	2.11E+05	341.08322	2.89E+04	C15 H17 O9

325.08882	1.54E+05	325.08817	2.30E+04	C15 H17 O8
323.07306	1.22E+05	323.07263	1.49E+04	C15 H15 O8
307.07817	1.31E+05	307.08028	-	C15 H15 O7
329.08383	1.01E+05	329.08320	7.12E+03	C14 H17 O9
327.06797	1.08E+05	327.06751	6.51E+03	C14 H15 O9
313.08917	1.08E+05	313.08830	1.05E+04	C14 H17 O8
311.07309	1.62E+05	311.07260	1.15E+04	C14 H15 O8
295.07852	1.11E+05	295.07782	1.29E+04	C14 H15 O7
299.07316	1.49E+05	299.07245	1.29E+04	C13 H15 O8
283.07818	1.43E+05	283.07558	-	C13 H15 O7
281.06267	1.37E+05	281.06220	1.19E+04	C13 H13 O7
267.08471	1.06E+05	267.08299	-	C13 H15 O6
287.07312	1.36E+05	287.07266	-	C12 H15 O8
285.05754	2.03E+05	285.05710	1.41E+04	C12 H13 O8
271.07849	1.33E+05	271.07786	2.30E+04	C12 H15 O7
269.06262	3.57E+05	269.06157	-	C12 H13 O7
267.04693	1.32E+05	267.04613	9.73E+03	C12 H11 O7
265.02894	1.92E+05	265.02852	4.24E+04	C12 H9 O7
263.01347	1.17E+05	263.01304	2.73E+04	C12 H7 O7
253.06787	1.75E+05	253.06731	-	C12 H13 O6
251.05217	1.70E+05	251.05172	-	C12 H11 O6
249.03409	1.97E+05	249.03366	4.15E+04	C12 H9 O6
231.02374	1.62E+05	231.02326	2.38E+04	C12 H7 O5
275.07311	1.97E+05	275.07260	-	C11 H15 O8
273.05759	3.28E+05	273.05718	1.18E+04	C11 H13 O8
271.04182	1.54E+05	271.04129	6.63E+03	C11 H11 O8
259.07844	2.48E+05	259.07786	3.72E+04	C11 H15 O7
257.06264	3.15E+05	257.06224	-	C11 H13 O7
255.04708	1.51E+05	255.04659	-	C11 H11 O7
243.08360	2.76E+05	243.08304	5.15E+04	C11 H15 O6
239.05231	1.71E+05	239.05191	-	C11 H11 O6
225.07285	1.87E+05	225.07253	-	C11 H13 O5
261.05771	2.51E+05	261.05727	2.13E+04	C10 H13 O8

259.04210	1.99E+05	259.04157	8.26E+03	C10 H11 O8
245.06288	1.36E+06	245.06243	1.74E+05	C10 H13 O7
243.04720	2.19E+06	243.04677	1.46E+05	C10 H11 O7
241.03138	7.38E+05	241.02850	-	C10 H9 O7
229.06802	1.21E+06	229.06751	-	C10 H13 O6
227.05224	3.10E+06	227.05182	3.34E+05	C10 H11 O6
225.03667	1.16E+06	225.03624	6.95E+04	C10 H9 O6
223.01851	2.82E+05	223.01812	1.69E+04	C10 H7 O6
213.07305	1.30E+05	213.07248	-	C10 H13 O5
211.05741	2.01E+06	211.05702	3.14E+05	C10 H11 O5
209.04177	3.40E+06	209.04141	8.84E+04	C10 H9 O5
193.04693	3.66E+05	193.04652	-	C10 H9 O4
295.02875	1.15E+05	nd	-	C9 H11 O11
231.04717	2.73E+05	231.04688	1.32E+04	C9 H11 O7
229.03161	1.01E+05	229.03122	-	C9 H9 O7
215.05216	5.96E+05	215.05182	-	C9 H11 O6
213.03667	9.22E+05	213.03617	-	C9 H9 O6
199.05730	3.73E+05	199.05692	-	C9 H11 O5
197.04179	4.02E+05	197.04137	-	C9 H9 O5
195.02624	1.68E+05	195.02591	-	C9 H7 O5
193.00815	3.16E+05	193.00767	1.88E+04	C9 H5 O5
185.08084	1.38E+05	185.07750	-	C9 H13 O4
183.06534	1.05E+05	183.06212	-	C9 H11 O4
167.07030	1.20E+05	167.06986	-	C9 H11 O3
201.03665	7.21E+05	201.03628	-	C8 H9 O6
189.07567	1.76E+05	189.07240	-	C8 H13 O5
187.06003	1.11E+06	187.05678	-	C8 H11 O5
185.04165	3.88E+05	185.04139	-	C8 H9 O5
183.02618	2.25E+05	183.02609	-	C8 H7 O5
171.06509	1.03E+06	171.06488	-	C8 H11 O4
169.04959	5.29E+05	169.04638	-	C8 H9 O4
167.03115	3.59E+05	167.03077	-	C8 H7 O4
155.07013	1.02E+06	155.06985	-	C8 H11 O3

153.05453	7.56E+05	153.05425	-	C8 H9 O3
151.03891	1.33E+05	151.03874	4.89E+03	C8 H7 O3
137.05962	1.70E+06	137.05931	-	C8 H9 O2
219.01631	2.01E+05	219.01588	-	C7 H7 O8
189.03670	1.66E+05	189.03673	-	C7 H9 O6
171.03328	1.50E+06	171.03295	-	C7 H7 O5
171.02640	2.77E+05	171.02571	-	C7 H7 O5
157.04949	2.03E+05	157.04906	-	C7 H9 O4
141.05445	5.63E+05	141.05420	-	C7 H9 O3
125.05974	1.68E+06	125.05950	-	C7 H9 O2
123.04411	1.34E+05	123.04389	-	C7 H7 O2
109.06503	2.41E+05	109.06480	-	C7 H9 O
175.03264	1.17E+05	175.03264	-	C6 H7 O6
175.02542	9.74E+05	175.02510	-	C6 H7 O6
127.03897	4.85E+05	127.03868	-	C6 H7 O3
113.05988	4.34E+05	113.05967	-	C6 H9 O2
111.04425	1.26E+06	111.04405	-	C6 H7 O2
115.03911	2.47E+05	115.03889	-	C5 H7 O3

Table S1(b). List of the SOA product ions identified from ESI-HRMS in negative mode used in Fig. 5

14% RH		74% RH		Formula
m/z	Intensity	m/z	Intensity	
427.02033	1.43E+05	427.01930	3.35E+02	C16 H11 O14
407.11955	1.04E+05	407.11842	2.19E+02	C16 H23 O12
405.10387	1.04E+05	405.10320	2.63E+02	C16 H21 O12
391.12466	1.12E+05	391.12383	2.93E+02	C16 H23 O11
389.10906	1.96E+05	389.10828	1.48E+03	C16 H21 O11
387.09325	1.09E+05	387.09280	5.09E+02	C16 H19 O11
373.11399	1.97E+05	373.11329	1.26E+03	C16 H21 O10
371.09821	1.44E+05	371.09766	6.70E+02	C16 H19 O10
357.11903	1.69E+05	357.11856	9.95E+02	C16 H21 O9
355.10338	1.80E+05	355.10274	1.62E+03	C16 H19 O9
359.09835	1.67E+05	359.09778	1.15E+03	C15 H19 O10

343.10330	1.50E+05	343.10278	1.01E+03	C15 H19 O9
341.08758	1.21E+05	341.08664	5.45E+02	C15 H17 O9
339.20000	2.00E+05	339.19922	-	C15 H31 O8
327.10844	1.12E+05	327.10799	5.27E+02	C15 H19 O8
325.09285	1.08E+05	325.09217	6.23E+02	C15 H17 O8
265.14792	3.33E+05	265.14776	-	C15 H21 O4
218.03824	2.71E+05	218.03779	5.27E+03	C15 H6 O2
363.09335	1.13E+05	363.09077	9.01E+02	C14 H19 O11
347.09836	2.51E+05	347.09758	2.67E+03	C14 H19 O10
345.08263	1.80E+05	345.08202	1.35E+03	C14 H17 O10
331.10347	1.83E+05	331.10283	2.34E+03	C14 H19 O9
329.08781	2.19E+05	329.08696	1.87E+03	C14 H17 O9
327.07190	1.29E+05	327.07119	9.89E+02	C14 H15 O9
325.18438	3.85E+05	325.18366	-	C14 H29 O8
313.09287	1.96E+05	313.09204	1.88E+03	C14 H17 O8
311.07715	1.52E+05	311.07670	1.01E+03	C14 H15 O8
297.09786	1.32E+05	297.09724	1.05E+03	C14 H17 O7
295.08212	1.29E+05	295.08163	9.81E+02	C14 H15 O7
333.08273	1.42E+05	333.08206	1.23E+03	C13 H17 O10
317.08774	2.67E+05	317.08714	4.21E+03	C13 H17 O9
315.07210	1.77E+05	315.07401	-	C13 H15 O9
311.16878	7.80E+05	311.16806	-	C13 H27 O8
301.09273	1.82E+05	301.09215	2.77E+03	C13 H17 O8
299.07727	2.15E+05	299.07641	3.44E+03	C13 H15 O8
297.06154	1.09E+05	297.06002	1.42E+03	C13 H13 O8
285.09789	1.00E+05	285.09726	1.77E+03	C13 H17 O7
283.08221	2.00E+05	283.08162	2.54E+03	C13 H15 O7
281.06697	1.22E+05	281.06609	-	C13 H13 O7
267.08726	1.26E+05	267.08657	2.19E+03	C13 H15 O6
265.07197	1.61E+05	265.07106	1.19E+03	C13 H13 O6
247.06280	1.81E+05	247.06092	3.33E+02	C13 H11 O5
231.06771	3.10E+05	231.06592	-	C13 H11 O4
303.07184	1.82E+05	303.07152	3.35E+03	C12 H15 O9

297.15292	3.35E+05	297.15230	-	C12 H25 O8
287.07698	2.52E+05	287.07691	3.35E+03	C12 H15 O8
285.06133	1.57E+05	285.06109	2.27E+03	C12 H13 O8
271.08217	1.69E+05	271.08173	3.03E+03	C12 H15 O7
269.06606	2.53E+05	269.06611	2.03E+03	C12 H13 O7
255.08719	1.17E+05	255.08664	-	C12 H15 O6
253.07111	1.91E+05	253.07089	-	C12 H13 O6
251.05515	1.24E+05	251.05505	5.59E+02	C12 H11 O6
237.07648	1.36E+05	237.07600	-	C12 H13 O5
291.07203	1.18E+05	291.07139	1.57E+03	C11 H15 O9
275.07729	1.70E+05	275.07673	3.31E+03	C11 H15 O8
273.06161	2.00E+05	273.06105	4.47E+03	C11 H13 O8
259.08219	1.57E+05	259.08171	3.21E+03	C11 H15 O7
257.06651	2.28E+05	257.06598	4.31E+03	C11 H13 O7
255.05088	1.07E+05	255.05025	2.48E+03	C11 H11 O7
241.07147	2.04E+05	241.07093	-	C11 H13 O6
225.07641	1.52E+05	225.07596	-	C11 H13 O5
223.06071	1.40E+05	223.06018	-	C11 H11 O5
209.08133	1.02E+05	209.08102	-	C11 H13 O4
207.06573	1.11E+05	207.06531	-	C11 H11 O4
261.06155	2.09E+05	261.05977	-	C10 H13 O8
245.06644	2.22E+05	245.06586	-	C10 H13 O7
243.05084	2.08E+05	243.05037	-	C10 H11 O7
229.07132	2.03E+05	229.07087	-	C10 H13 O6
227.05570	2.51E+05	227.05525	-	C10 H11 O6
211.06064	1.96E+05	211.06027	-	C10 H11 O5
195.06563	1.61E+05	195.06536	-	C10 H11 O4
249.06096	1.71E+05	249.06092	2.65E+03	C9 H13 O8
247.04556	1.43E+05	247.04500	3.44E+03	C9 H11 O8
233.06614	1.99E+05	233.06580	4.43E+03	C9 H13 O7
231.05066	1.62E+05	231.05023	-	C9 H11 O7
217.07129	1.69E+05	217.07080	-	C9 H13 O6
215.05569	2.04E+05	215.05511	-	C9 H11 O6

201.07618	2.38E+05	201.07580	-	C9 H13 O5
199.06058	1.95E+05	199.06031	-	C9 H11 O5
197.04500	1.59E+05	197.04464	-	C9 H9 O5
183.06553	1.70E+05	183.06531	-	C9 H11 O4
181.04989	1.64E+05	181.04952	-	C9 H9 O4
165.05484	1.21E+05	165.05454	-	C9 H9 O3
235.04566	2.21E+05	235.04511	2.88E+03	C8 H11 O8
233.03005	1.23E+05	233.02891	-	C8 H9 O8
221.06623	4.82E+05	221.06579	8.46E+03	C8 H13 O7
219.05057	3.05E+06	219.05011	5.02E+04	C8 H11 O7
217.03488	3.13E+06	217.03444	7.13E+04	C8 H9 O7
205.07117	2.33E+05	205.07077	4.95E+03	C8 H13 O6
203.05550	1.74E+06	203.05513	2.87E+04	C8 H11 O6
201.03983	2.10E+06	201.03967	3.18E+04	C8 H9 O6
199.02428	2.08E+05	199.02409	-	C8 H7 O6
187.06049	1.68E+06	187.06013	-	C8 H11 O5
185.04483	5.49E+06	185.04449	-	C8 H9 O5
183.02923	4.41E+05	183.02901	-	C8 H7 O5
171.06543	5.43E+05	171.06511	1.23E+05	C8 H11 O4
169.04976	3.79E+06	169.04954	-	C8 H9 O4
167.03412	7.36E+05	167.03368	-	C8 H7 O4
153.05472	5.91E+05	153.05442	-	C8 H9 O3
151.03908	4.09E+05	151.03878	-	C8 H7 O3
137.05970	1.18E+05	137.05943	-	C8 H9 O2
205.03496	2.28E+05	205.03286	-	C7 H9 O7
191.05540	1.23E+06	191.05504	1.88E+04	C7 H11 O6
189.03975	2.04E+06	189.03942	2.91E+04	C7 H9 O6
187.02422	1.80E+05	187.02389	-	C7 H7 O6
175.06041	1.80E+05	175.06006	-	C7 H11 O5
173.04471	6.71E+05	173.04440	-	C7 H9 O5
171.02908	6.75E+05	171.02879	-	C7 H7 O5
169.01357	1.20E+05	169.01317	-	C7 H5 O5
157.04965	9.08E+05	157.04939	-	C7 H9 O4

155.03403	1.23E+06	155.03374	-	C7 H7 O4
153.01828	2.32E+05	153.01805	-	C7 H5 O4
141.05463	2.11E+06	141.05439	-	C7 H9 O3
139.03897	1.25E+06	139.03869	-	C7 H7 O3
125.05961	6.55E+05	125.05940	-	C7 H9 O2
123.04397	1.33E+06	123.04376	-	C7 H7 O2
229.05210	1.79E+05	229.04953	-	C6 H13 O9
191.01907	1.26E+05	191.01873	7.54E+03	C6 H7 O7
177.03967	2.86E+06	177.03930	4.45E+04	C6 H9 O6
175.02402	1.43E+06	175.02363	4.04E+04	C6 H7 O6
173.00836	2.54E+05	173.00529	-	C6 H5 O6
161.04464	1.30E+06	161.04430	-	C6 H9 O5
157.01330	3.67E+05	157.01334	-	C6 H5 O5
145.04957	3.71E+05	145.04929	-	C6 H9 O4
143.03391	1.54E+06	143.03365	-	C6 H7 O4
141.01827	7.79E+05	141.01797	-	C6 H5 O4
127.03890	1.83E+06	127.03866	-	C6 H7 O3
125.02325	9.93E+05	125.02297	-	C6 H5 O3
113.05952	7.21E+05	113.05925	-	C6 H9 O2
111.04388	7.15E+05	111.04361	-	C6 H7 O2
109.02824	2.35E+05	109.02805	-	C6 H5 O2
201.05694	1.09E+05	201.05479	-	C5 H13 O8
147.02887	2.97E+06	147.02878	4.63E+04	C5 H7 O5
145.01320	4.46E+05	145.01289	-	C5 H5 O5
131.03383	8.78E+05	131.03360	-	C5 H7 O4
129.01819	2.07E+06	129.01793	-	C5 H5 O4
127.00253	1.97E+05	127.00232	-	C5 H3 O4
115.03882	1.08E+06	115.03858	-	C5 H7 O3
113.02311	2.36E+06	113.02278	-	C5 H5 O3
111.00750	4.41E+05	111.00726	-	C5 H3 O3
133.01316	1.69E+05	133.01282	-	C4 H5 O5
119.03381	1.48E+05	119.03355	-	C4 H7 O4
117.01807	3.64E+05	117.01775	-	C4 H5 O4

115.00245	3.19E+05	115.00215	-	C4 H3 O4
101.02308	1.11E+06	101.02289	-	C4 H5 O3
