

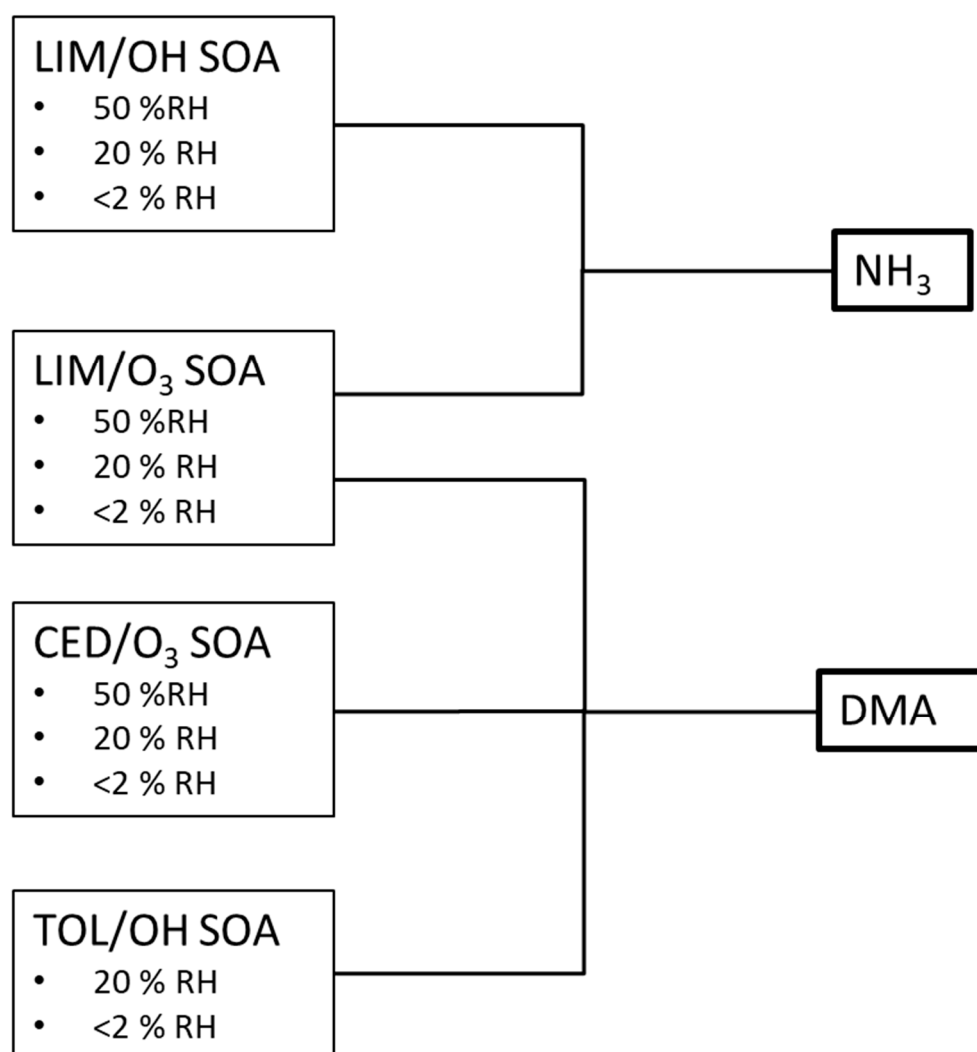
# Supplementary Materials: Effect of Humidity on the Reactive Uptake of Ammonia and Dimethylamine by Nitrogen-Containing Secondary Organic Aerosol

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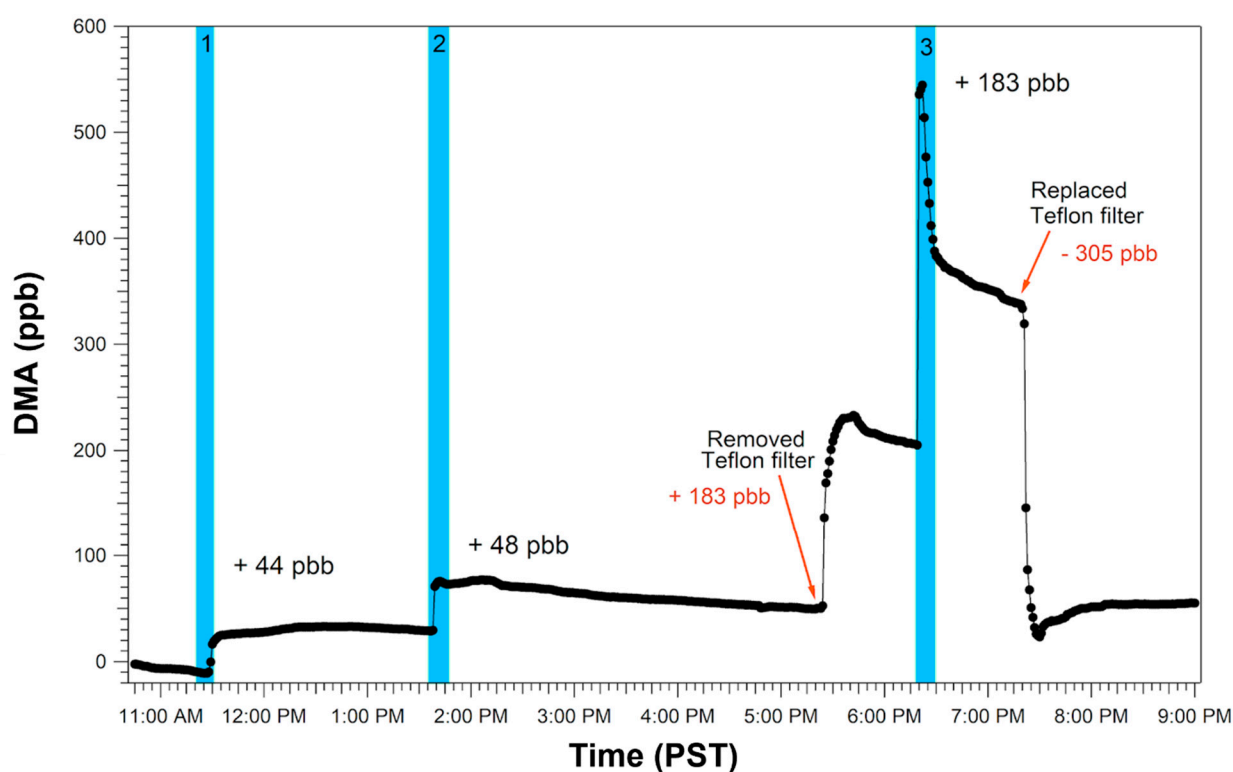
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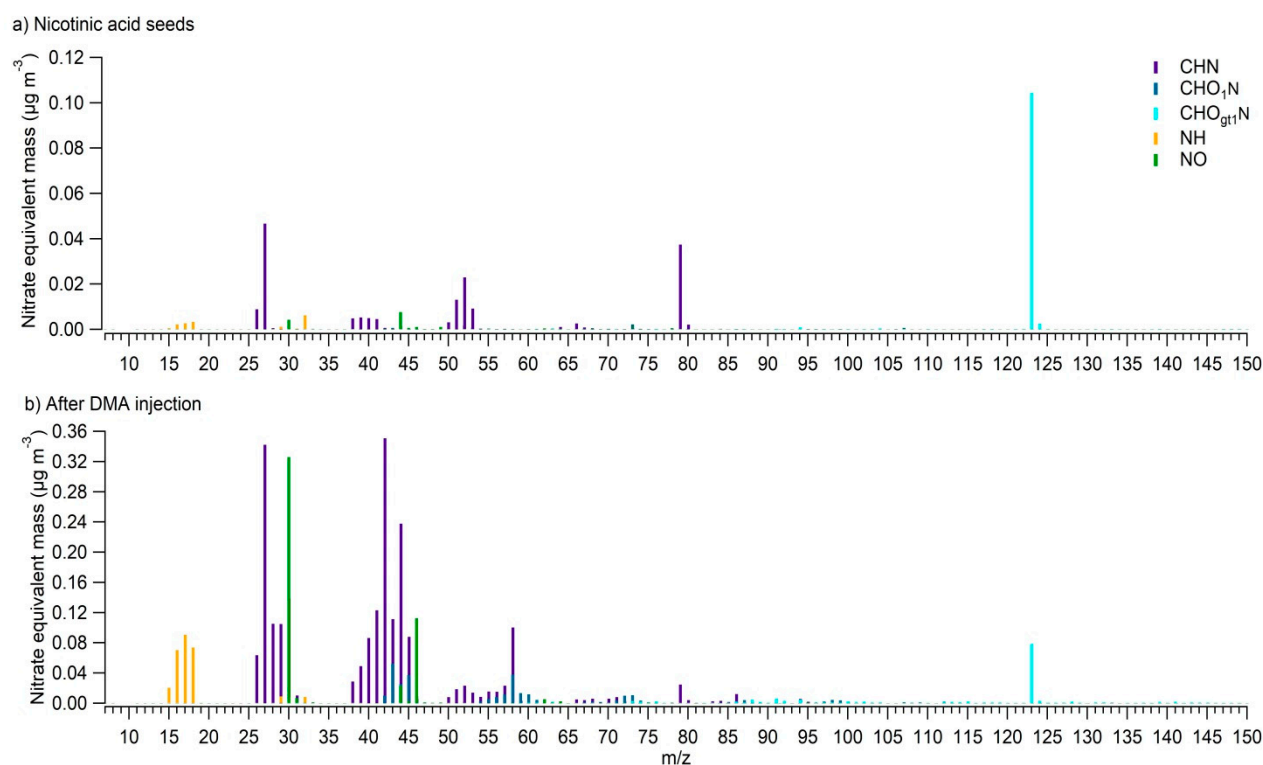
**Figure S1.** Flowchart of SOA systems reported in this study. All SOA systems were generated in the presence of nicotinic acid seeds.



**Figure S2.** Ammonia monitor response to DMA injections at 50% RH. Each DMA injection was 13  $\mu$ l (blue shaded area, expected to produce a step of 500 ppb). The Teflon filter was attached to the inlet of the monitor during experiments to reduce aerosol loading and preserve the life of the instrument. When the filter was removed the mixing ratio increased due to unrestricted air flow to the inlet.

**Table S1.** The 15 most prominent N-containing fragments and their families for LIM/O<sub>3</sub> SOA, CED/O<sub>3</sub> SOA, and TOL/OH SOA after exposure to DMA under low RH. Fragments are listed in descending order with respect to their signal.

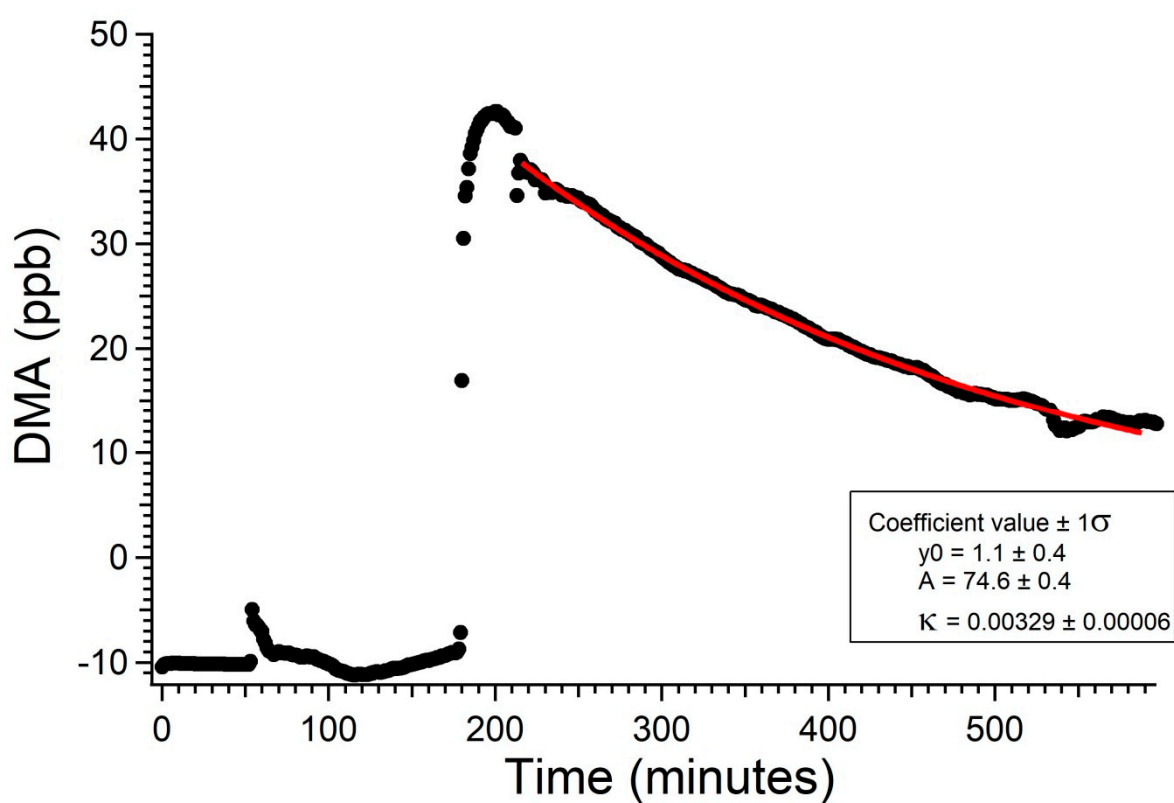
LIM/O <sub>3</sub> SOA, low RH			CED/O <sub>3</sub> SOA, low RH		TOL/OH SOA, low RH	
	family	m/z, fragment	family	m/z, fragment	family	m/z, fragment
1	CHN	42.034, C <sub>2</sub> H <sub>4</sub> N	CHN	44.050, C <sub>2</sub> H <sub>6</sub> N	CHN	44.050, C <sub>2</sub> H <sub>6</sub> N
2	CHN	27.011, CHN	CHN	42.034, C <sub>2</sub> H <sub>4</sub> N	NO	29.998, NO
3	NO	29.998, NO	CHN	79.042, C <sub>5</sub> H <sub>5</sub> N	NH	17.027, NH <sub>3</sub>
4	CHN	44.050, C <sub>2</sub> H <sub>6</sub> N	NO	29.998, NO	NH	16.019, NH <sub>2</sub>
5	CHN	30.034, CH <sub>4</sub> N	CHN	55.042, C <sub>3</sub> H <sub>5</sub> N	CHN	45.058, C <sub>2</sub> H <sub>7</sub> N
6	CHN	41.027, C <sub>2</sub> H <sub>3</sub> N	CHN	53.027, C <sub>3</sub> H <sub>3</sub> N	CHN	42.034, C <sub>2</sub> H <sub>4</sub> N
7	NO	45.993, NO <sub>2</sub>	CHN	51.011, C <sub>3</sub> H <sub>3</sub> N	CHN	27.011, CHN
8	CHN	43.042, C <sub>2</sub> H <sub>5</sub> N	CHN	27.011, CHN	CHN	28.019, CH <sub>2</sub> N
9	CHN	28.019, CH <sub>2</sub> N	NH	18.034, NH <sub>4</sub>	NH	18.034, NH <sub>4</sub>
10	CHN	29.027, CH <sub>3</sub> N	CHO <sub>1</sub> N	55.006, C <sub>2</sub> HON	CHN	43.042, C <sub>2</sub> H <sub>5</sub> N
11	CHN	58.066, C <sub>3</sub> H <sub>8</sub> N	CHN	30.034, CH <sub>4</sub> N	CHN	30.034, CH <sub>4</sub> N
12	NH	17.027, NH <sub>3</sub>	CHN	43.042, C <sub>2</sub> H <sub>5</sub> N	NO	45.993, NO <sub>2</sub>
13	CHN	45.058, C <sub>2</sub> H <sub>7</sub> N	CHN	95.074, C <sub>6</sub> H <sub>9</sub> N	CHN	41.027, C <sub>2</sub> H <sub>3</sub> N
14	CHN	40.019, C <sub>2</sub> H <sub>2</sub> N	CHN	50.003, C <sub>3</sub> N	CHN	40.019, C <sub>2</sub> H <sub>2</sub> N
15	CHO <sub>&gt;1</sub> N	123.032, C <sub>6</sub> H <sub>5</sub> O <sub>2</sub> N (nicotinic acid)	CHN	41.027, C <sub>2</sub> H <sub>3</sub> N	CHO <sub>&gt;1</sub> N	123.032, C <sub>6</sub> H <sub>5</sub> O <sub>2</sub> N (nicotinic acid)



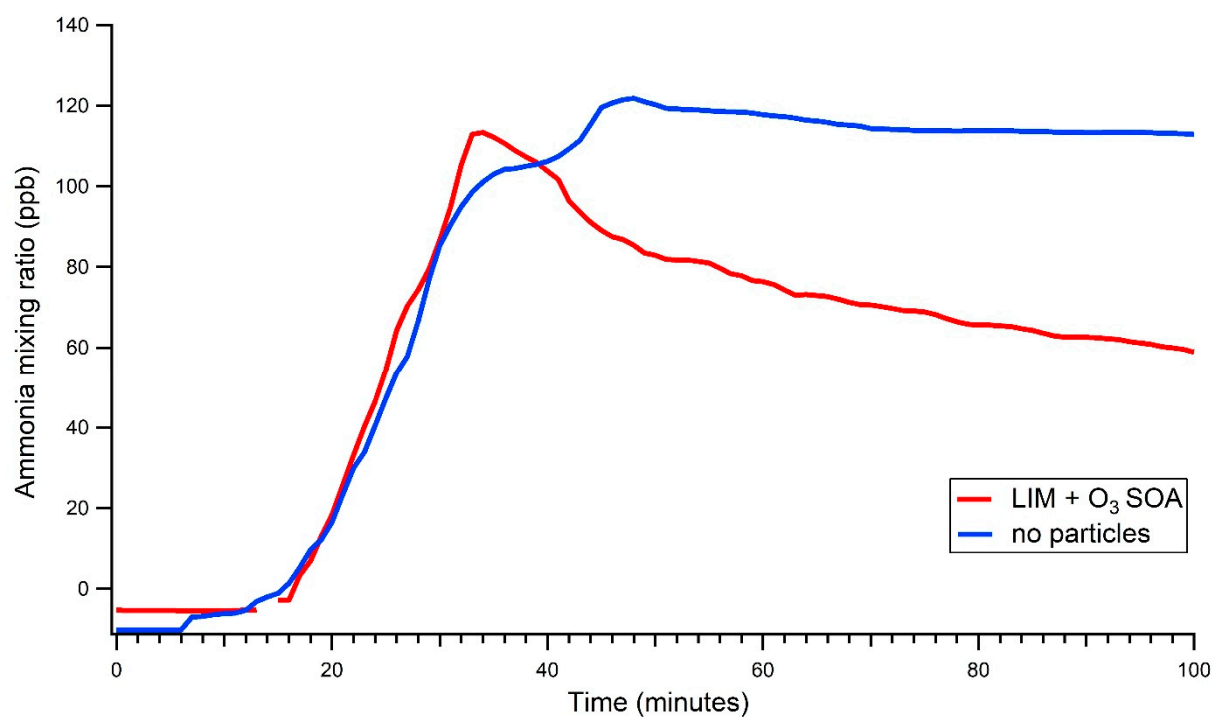
**Figure S3.** Nitrogen-containing fragments and families extracted from AMS data corresponding to a) nicotinic acid seed and b) average mass spectrum for LIM/O<sub>3</sub> SOA after DMA exposure at low RH.

**Table S2.** The top 6 most prominent N-containing fragments and their families for nicotinic acid. Fragments are listed in descending order with respect to their signal.

Nicotinic acid		
	family	m/z, fragment
1	CHO <sub>&gt;1</sub> N	123.032, C <sub>6</sub> H <sub>5</sub> O <sub>2</sub> N (nicotinic acid)
2	CHN	27.011, CHN
3	CHN	79.042, C <sub>5</sub> H <sub>5</sub> N
4	CHN	52.019, C <sub>3</sub> H <sub>2</sub> N
5	CHN	51.011, C <sub>3</sub> HN
6	CHN	53.027, C <sub>3</sub> H <sub>3</sub> N



**Figure S4.** Uptake of DMA onto LIM/O<sub>3</sub> SOA at 20% RH with nicotinic acid seeds fitted to a first-order exponential decay (red).



**Figure S5.** Uptake of ammonia onto LIM/O<sub>3</sub> SOA at 50% RH with nicotinic acid seeds (red) and gas-phase ammonia wall loss in an empty chamber without particles present (blue).