

Supplement:

Real-time, controlled OH-initiated oxidation of biogenic secondary organic aerosol

J. G. Slowik^{1,2}, Jenny P. S. Wong¹, and Jonathan J. P. D. Abbatt¹

[1]{Department of Chemistry, University of Toronto, Toronto, ON, Canada}

[2]{Laboratory of Atmospheric Chemistry, Paul Scherrer Institute, Villigen, Switzerland}

Correspondence to: J. G. Slowik (jay.slowik@psi.ch)

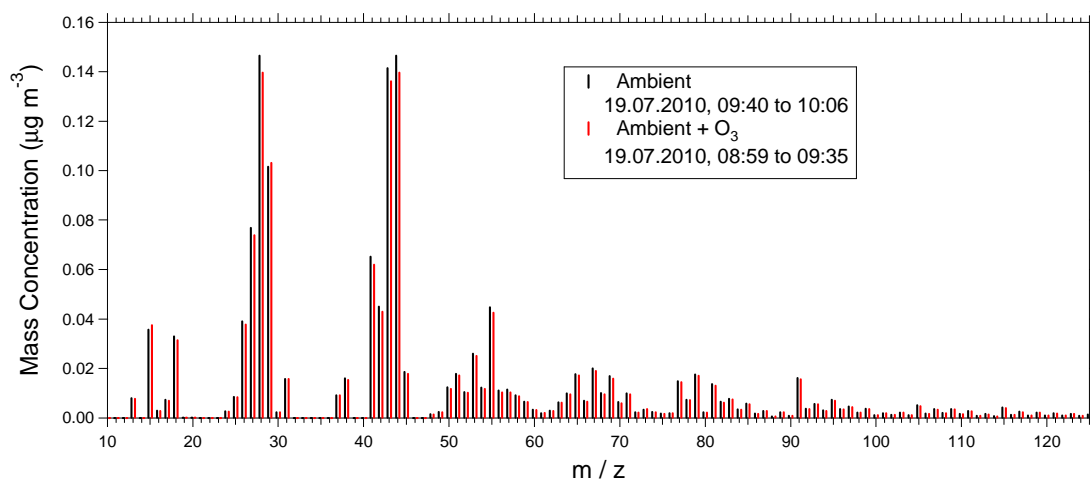


Figure S1. Sample mass spectra showing the effect of O₃ exposure on the organic mass spectrum. The O₃ concentration is ~1100 ppbv, which is the highest concentration used during the study. Spectra are obtained in sequence rather than as an average of alternating spectra. Therefore the slight mass decrease across the spectra (5% of organic mass) is likely influenced by changes in the ambient particle concentration. Mass increases of a similar magnitude are observed for some other control experiments of this type. In no case do mass increases or decrease exceed 5%.

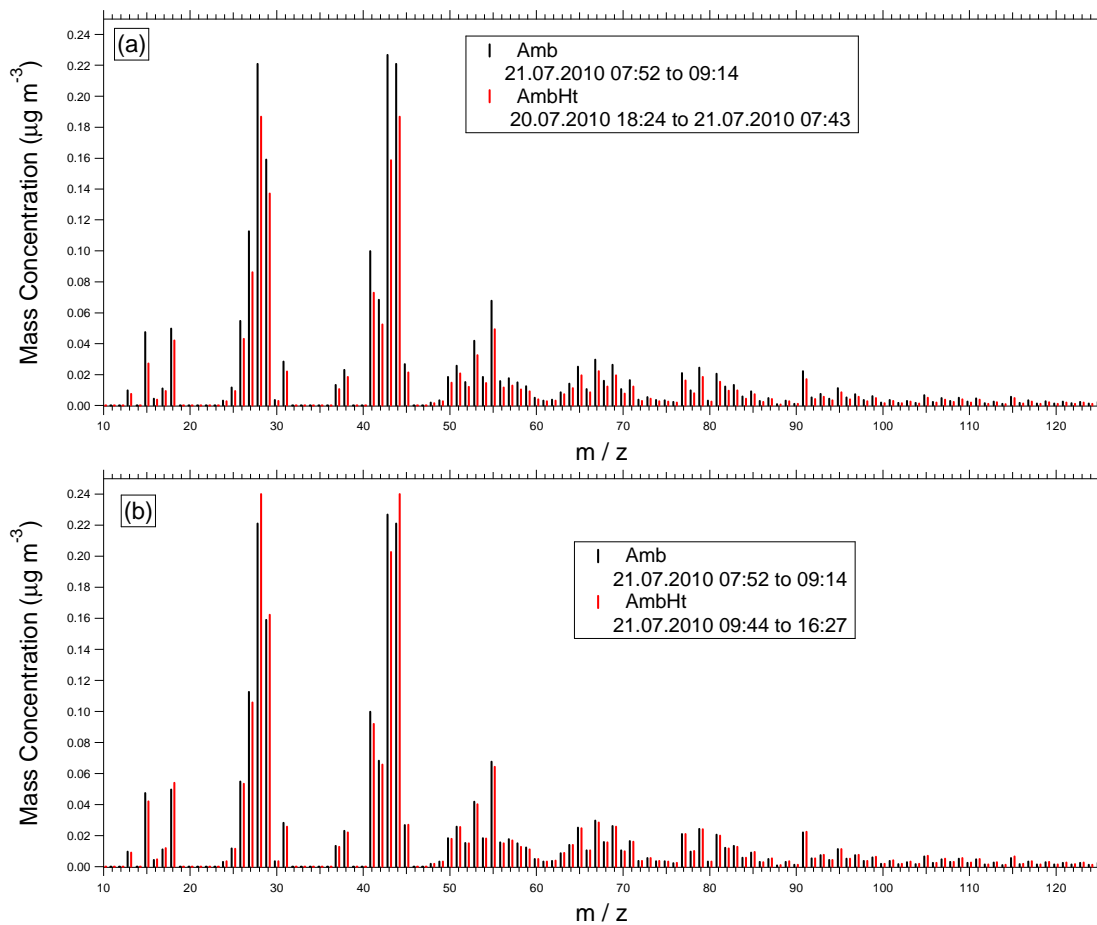


Figure S2. Sample organic mass spectra showing the effect of volatilization resulting from a 4 °C temperature increase on organic aerosol mass spectra. The two AmbHt spectra are the same as those displayed below in the AmbHt/AmbHtOH comparison in Fig. S3. Amb and AmbHt spectra are obtained in sequence.

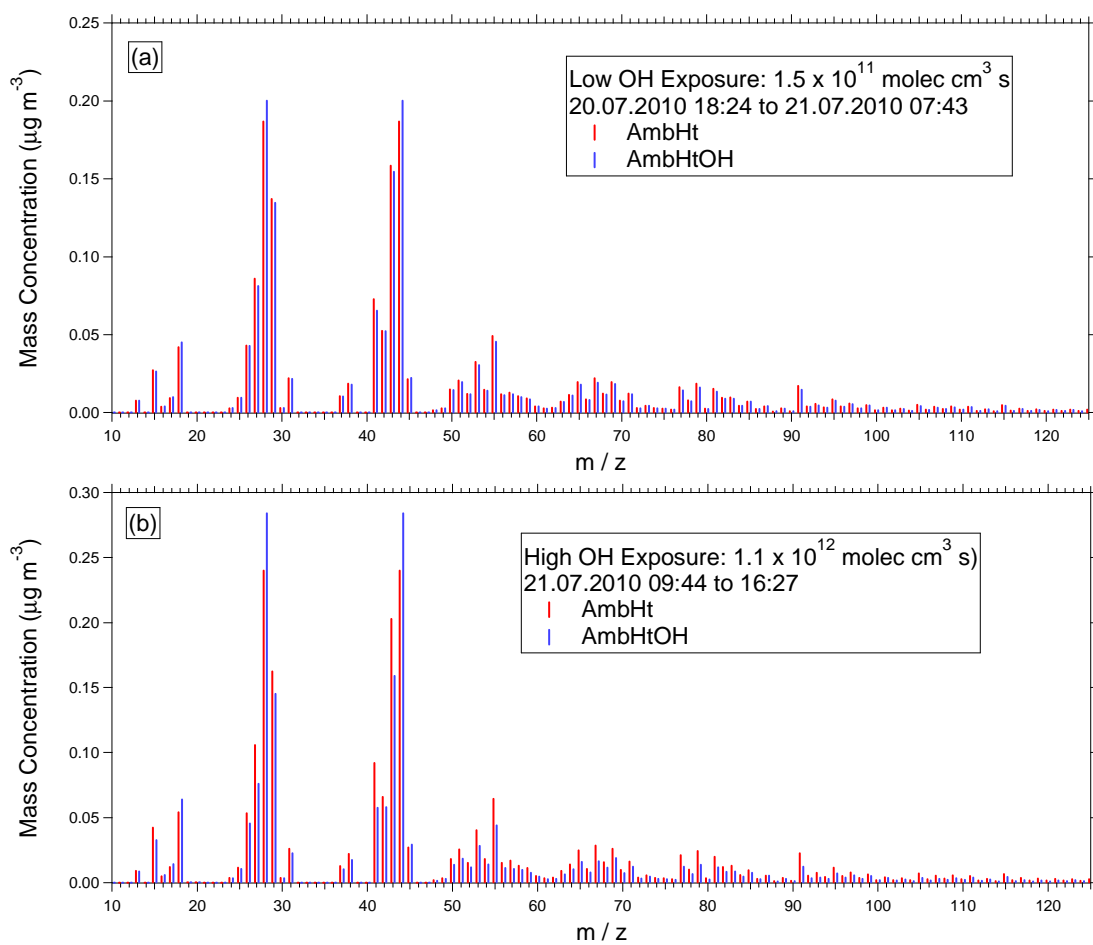


Figure S3. Sample organic mass spectra showing the effect of OH oxidation. The two AmbHt spectra are the same as those displayed in Fig. S2. AmbHt and AmbHtOH spectra are collected alternately (12 min per spectra) and averaged over the entire time period shown.

Start	Stop	Org ($\mu\text{g m}^{-3}$)	f_{43}	f_{44}
17.07.2010 11:05:00	17.07.2010 12:11:00	0.92	0.11	0.10
17.07.2010 14:21:00	17.07.2010 15:20:00	1.06	0.097	0.098
19.07.2010 08:59:00	19.07.2010 10:04:00	1.40	0.098	0.10
19.07.2010 11:41:00	19.07.2010 13:05:00	1.55	0.094	0.11
19.07.2010 15:19:00	19.07.2010 16:09:00	1.67	0.088	0.11
20.07.2010 07:55:00	20.07.2010 09:19:00	2.36	0.097	0.098
20.07.2010 13:02:00	20.07.2010 14:25:00	3.06	0.093	0.095
20.07.2010 16:40:00	20.07.2010 18:04:01	2.01	0.097	0.10
21.07.2010 07:52:00	21.07.2010 09:14:01	2.16	0.10	0.10
21.07.2010 12:17:00	21.07.2010 13:40:00	2.74	0.099	0.10
21.07.2010 16:54:01	21.07.2010 18:21:00	2.41	0.098	0.11
26.07.2010 08:25:01	26.07.2010 09:48:01	7.89	0.069	0.092
26.07.2010 12:32:01	26.07.2010 14:01:00	5.34	0.073	0.12
26.07.2010 17:13:00	26.07.2010 18:41:00	3.79	0.08	0.11

Table S1. Sampling times, organic mass loadings, f_{43} , and f_{44} for the Amb condition.

Start	Stop	OH Exposure	AmbHt Condition			AmbHtOH Condition		
			Org	f_{43}	f_{44}	Org	f_{43}	f_{44}
16.07.2010 18:20:00	17.07.2010 08:00:00	1.3e+12	0.59	0.092	0.12	0.5	0.086	0.23
17.07.2010 08:43:00	17.07.2010 14:19:01	1.3e+12	0.79	0.091	0.099	0.68	0.083	0.18
17.07.2010 12:20:00	17.07.2010 14:19:01	1.3e+12	0.76	0.087	0.098	0.67	0.081	0.17
17.07.2010 19:59:00	17.07.2010 22:32:00	1.8e+12	0.98	0.082	0.11	0.85	0.067	0.19
17.07.2010 22:47:00	18.07.2010 07:56:00	1.8e+12	0.9	0.089	0.1	0.74	0.071	0.19
19.07.2010 10:06:00	19.07.2010 13:01:00	1.7e+12	1.2	0.09	0.11	0.93	0.073	0.19
19.07.2010 16:13:00	19.07.2010 18:10:00	1.9e+10	1.5	0.084	0.12	1.6	0.084	0.12
19.07.2010 18:36:01	20.07.2010 05:18:00	1.5e+11	1.4	0.085	0.11	1.4	0.083	0.13
19.07.2010 18:38:00	21.07.2010 07:46:00	1.5e+11	1.7	0.09	0.11	1.7	0.088	0.12
20.07.2010 05:55:00	20.07.2010 18:21:00	1.5e+11	2.2	0.089	0.1	2.1	0.088	0.11
20.07.2010 18:23:00	21.07.2010 07:48:00	1.5e+11	1.7	0.094	0.11	1.7	0.093	0.12
21.07.2010 07:49:00	21.07.2010 16:52:00	1.1e+12	2.2	0.094	0.11	1.9	0.085	0.15
21.07.2010 16:53:00	21.07.2010 22:20:00	1.5e+12	1.9	0.09	0.11	1.6	0.08	0.16
21.07.2010 17:10:00	21.07.2010 22:43:00	1.5e+12	1.9	0.089	0.11	1.6	0.08	0.16
23.07.2010 18:54:00	24.07.2010 07:38:01	5.8e+11	1	0.086	0.11	0.87	0.07	0.17
21.07.2010 22:21:00	22.07.2010 04:44:00	1.5e+12	1.4	0.09	0.11	1.2	0.079	0.17
25.07.2010 19:54:00	26.07.2010 05:13:00	7.5e+11	1.8	0.086	0.11	1.6	0.074	0.15
26.07.2010 05:14:00	26.07.2010 08:21:00	7.5e+11	2	0.085	0.11	1.8	0.074	0.15
26.07.2010 08:24:01	26.07.2010 12:13:00	1.6e+11	7.4	0.067	0.11	7.8	0.067	0.11
26.07.2010 12:14:01	26.07.2010 19:40:00	1.6e+11	3.8	0.073	0.12	4	0.073	0.12

Table S2. Sampling times, OH exposures ($\text{molec cm}^{-3} \text{ s}$), organic mass loadings ($\mu\text{g m}^{-3}$), f_{43} , and f_{44} for the AmbHt and AmbHt OH conditions. Note that these conditions

alternate every 12 minutes throughout the sampling period.