Supplemental Material for *Elemental Composition and Oxidation of Chamber Organic Aerosol*

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Table 1. Average ratios of particle phase signals of CO^+ to ${CO_2}^+$. Ratios were determined from high-resolution spectra that had adequate separation of the CO^+ and ${N_2}^+$ ions, typically from experiments with high organic loadings. The average values found are close to the default value of 1.0 in the AMS High-Resolution Fragmentation Table and in agreement with other studies (Zhang et al., 2005; Takegawa et al., 2007) so this default value was used for all experiments in this study.

SOA Precursor	$CO^+/{CO_2}^+$
glyoxal uptake	5.6[a]
α-pinene[b]	0.9
toluene	1.1
m-xylene	1.3
isoprene	1.3
naphthalene	1.2
phenol	0.9
guaiacol	1.0
syringol	1.1
acrolein	ND[c]
methacrolein	ND[c]
crotonaldehyde	ND[c]

[a]A value of 5.0 was used for $CO^+/{CO_2}^+$ in glyoxal uptake experiments presented in this study
[b]Includes both ozonolysis and photooxidation experiments.
[c]Not Determined. CO^+ could not be adequately separated from ${N_2}^+$ to determine a ratio accurately.

Table 2. Elemental composition of SOA system. Values represent the average ratio for each experiment at the time of maximum O/C.

VOC System		O/C (max)	H/C	N/C	OM/OC
glyoxal uptake[a]		1.13	1.54	0.01	2.68
α-pinene + O_3[a]		0.43	1.47	0.00	1.70
α-pinene + OH		0.41	1.57	0.02	1.70
	low-NO_x	0.40	1.62	0.00	1.67
	high-NO_x	0.42	1.51	0.03	1.73
isoprene + OH[a]		0.61	1.55	0.02	1.96
	low-NO_x	0.59	1.64	0.00	1.92
	high-NO_x	0.62	1.46	0.04	2.00
aromatics + OH[a]		0.68	1.44	0.04	2.07
	m-xylene, high-NO_x	0.66	1.48	0.08	2.09
	m-xylene, low-NO_x	0.60	1.54	0.00	1.93
	toluene, high-NO_x	0.72	1.38	0.07	2.15
	toluene, low-NO_x	0.74	1.39	0.00	2.10
naphthalene + OH[a]		0.62	0.89	0.02	1.93
	low-NO_x	0.66	0.88	0.00	1.96
	high-NO_x	0.57	0.90	0.04	1.89
phenol + OH		0.90	1.11	0.03	2.32
	low-NO_x	0.88	1.10	0.00	2.26
	high-NO_x	0.92	1.12	0.05	2.38
guaiacol + OH		0.92	1.28	0.03	2.37
	low-NO_x	0.89	1.26	0.00	2.30
	high-NO_x	0.94	1.30	0.06	2.43
syringol + OH		0.95	1.47	0.02	2.41
	low-NO_x	0.97	1.41	0.00	2.41
	high-NO_x	0.93	1.52	0.03	2.41
acrolein + OH		0.79	1.31	0.03	2.20
methacrolein + OH		0.54	1.53	0.02	1.87
crotonaldehyde + OH		0.56	1.45	0.01	1.88

[a] Values first reported in Chhabra et al. (2010).

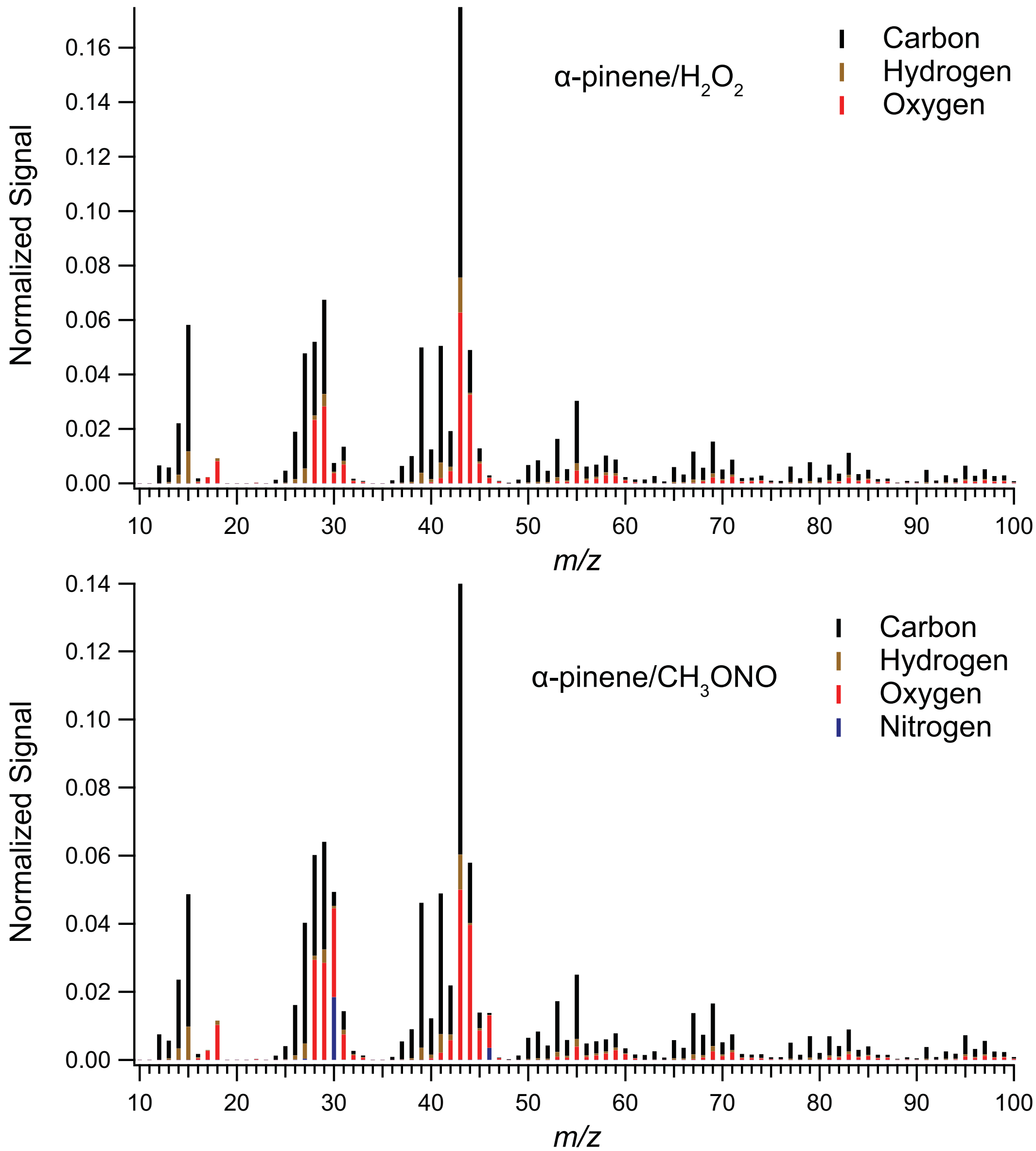

Fig. 1. High-resolution spectra of α-pinene photooxidation SOA formed under high- and low-NO_x conditions.

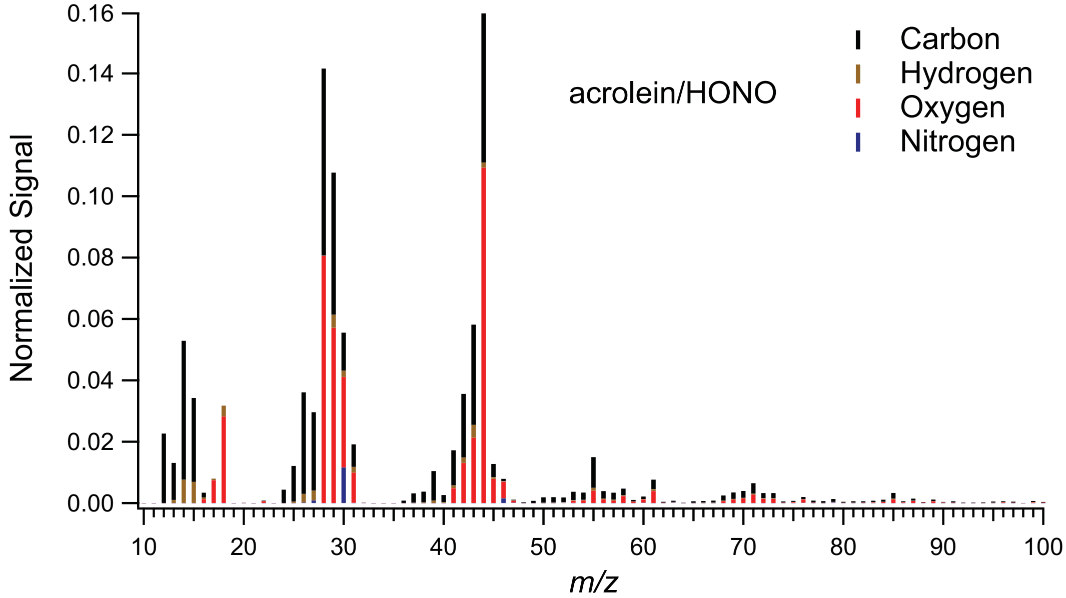

Fig. 2. High-resolution spectra of acrolein photooxidation SOA.

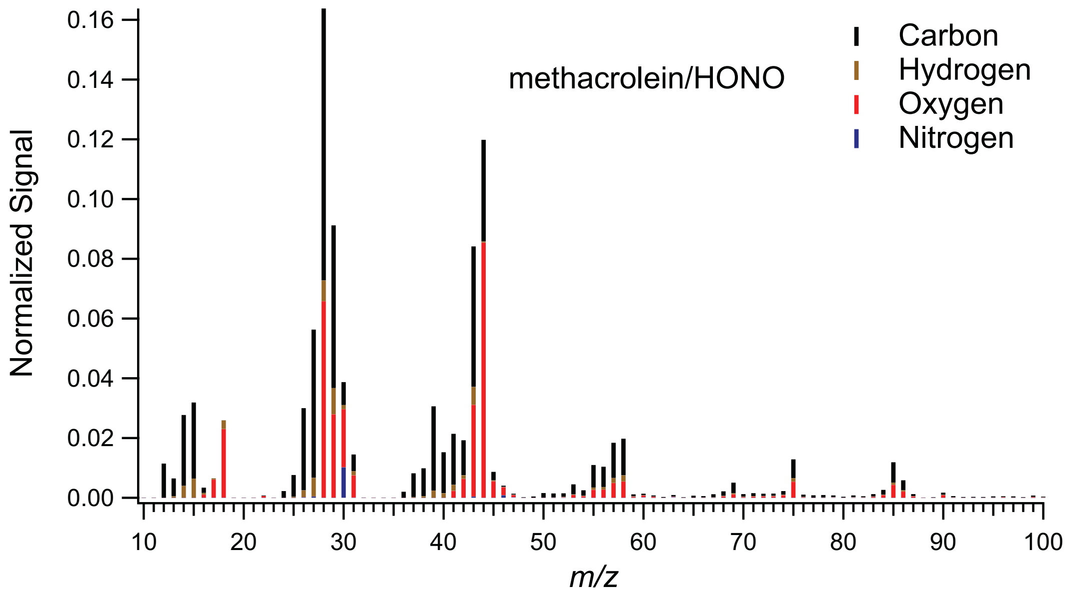

Fig. 3. High-resolution spectra of methacrolein photooxidation SOA.

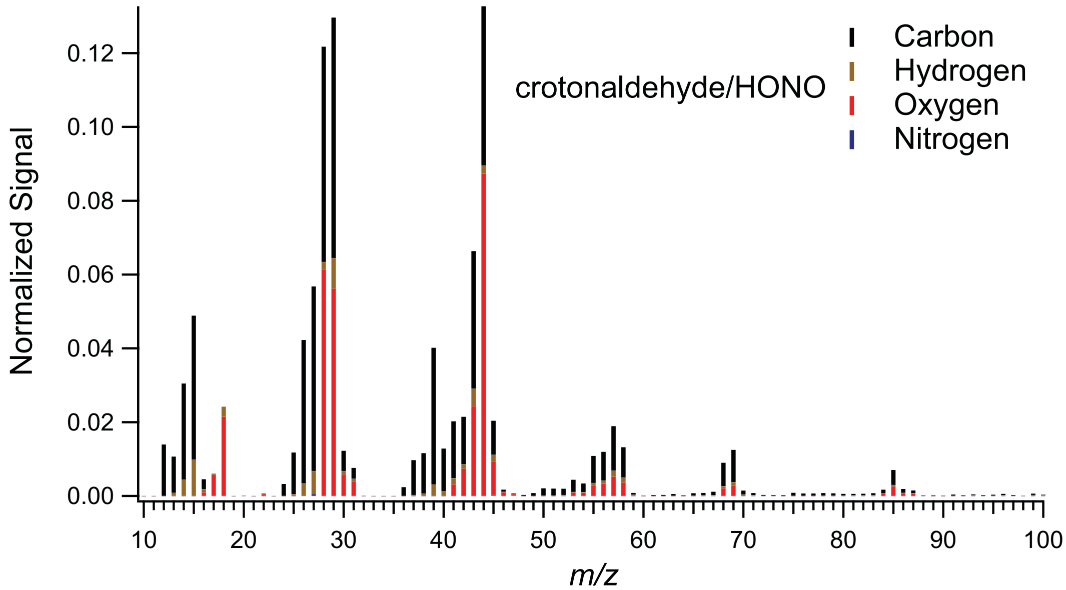

Fig. 4. High-resolution spectra of crotonaldehyde photooxidation SOA.

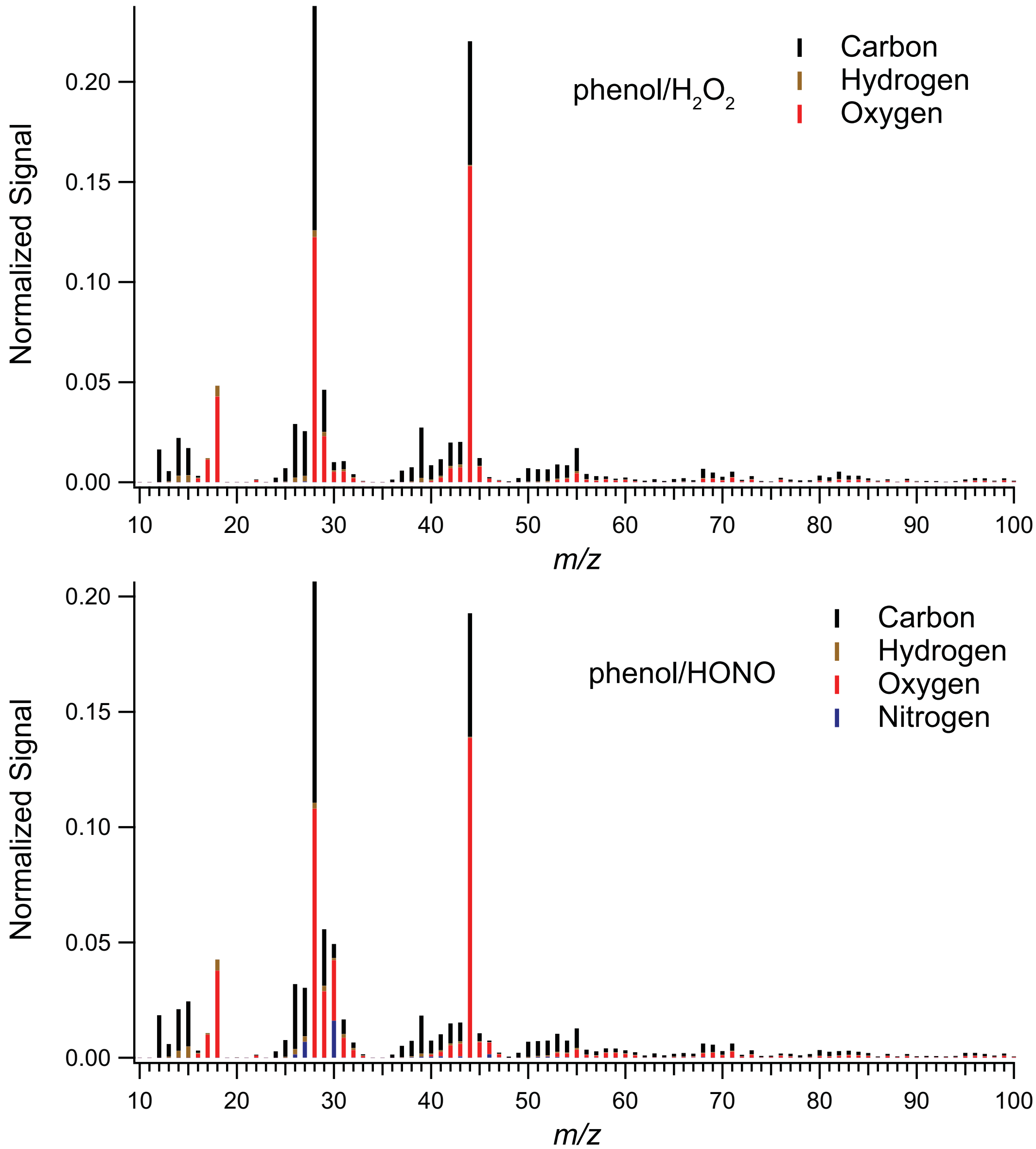

Fig. 5. High-resolution spectra of phenol photooxidation SOA under high- and low-NO_x.

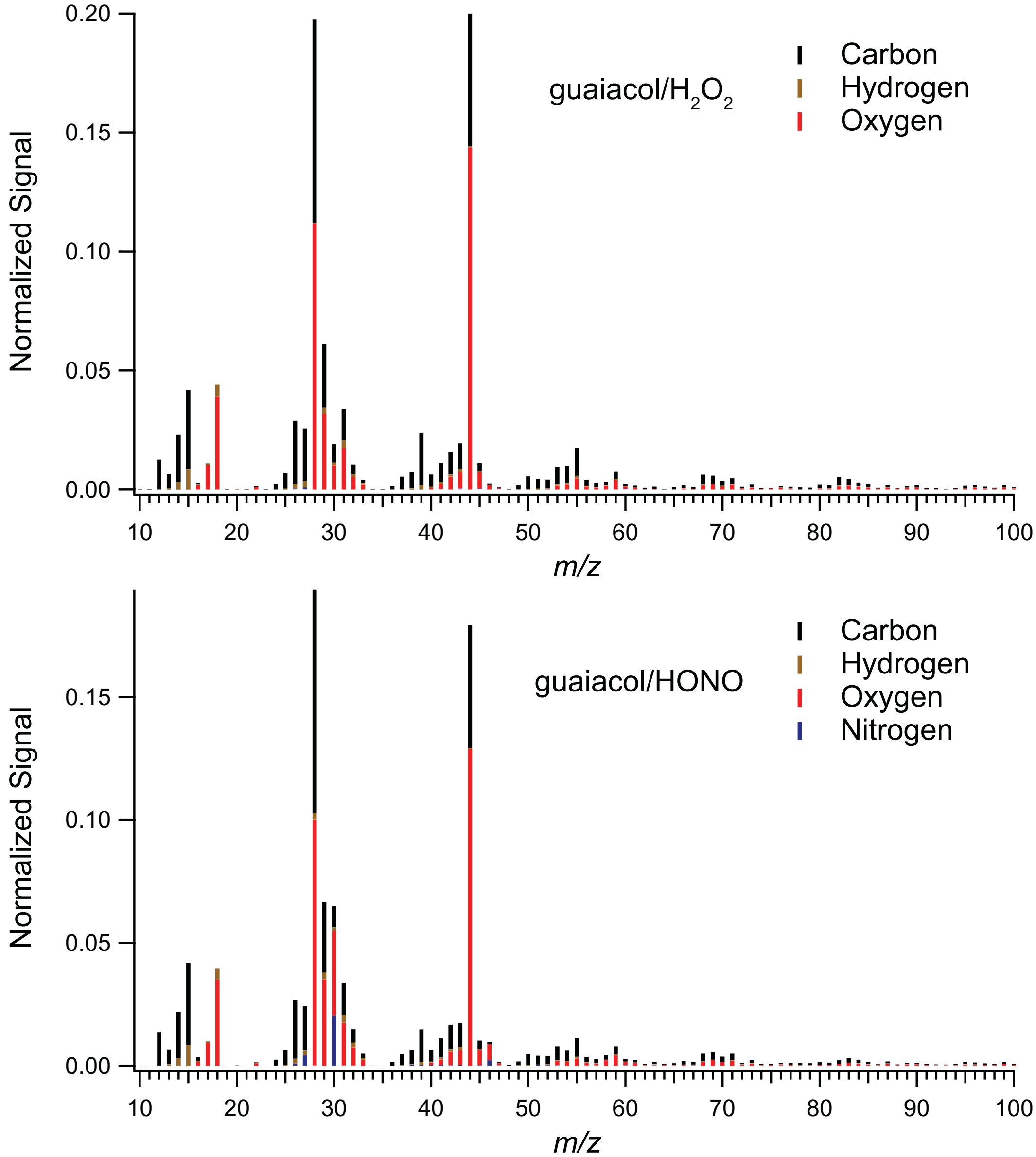

Fig. 6. High-resolution spectra of guaiacol photooxidation SOA under high- and low-NO_x.

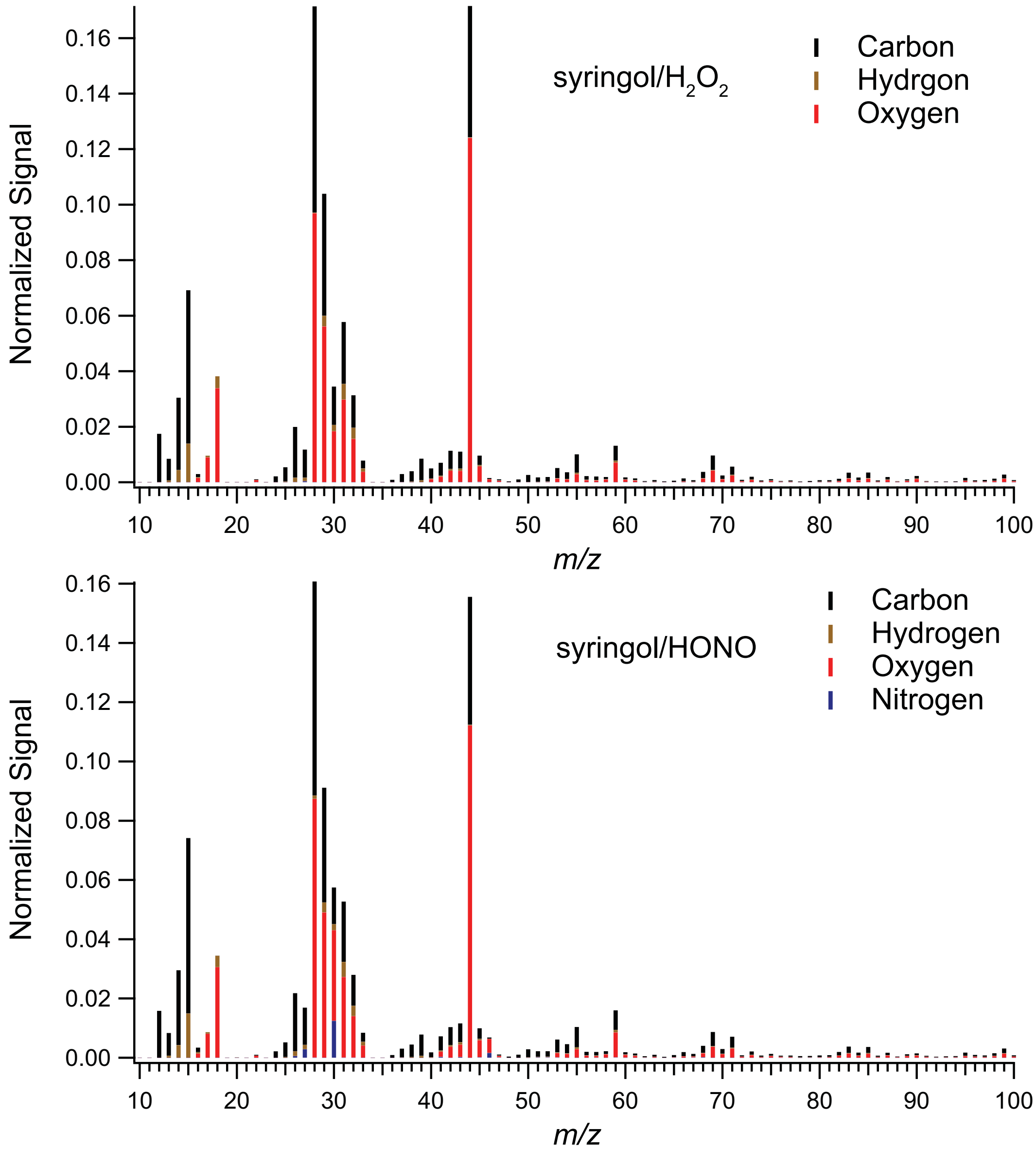

Fig. 7. High-resolution spectra of syringol photooxidation SOA under high- and low-NO_x.

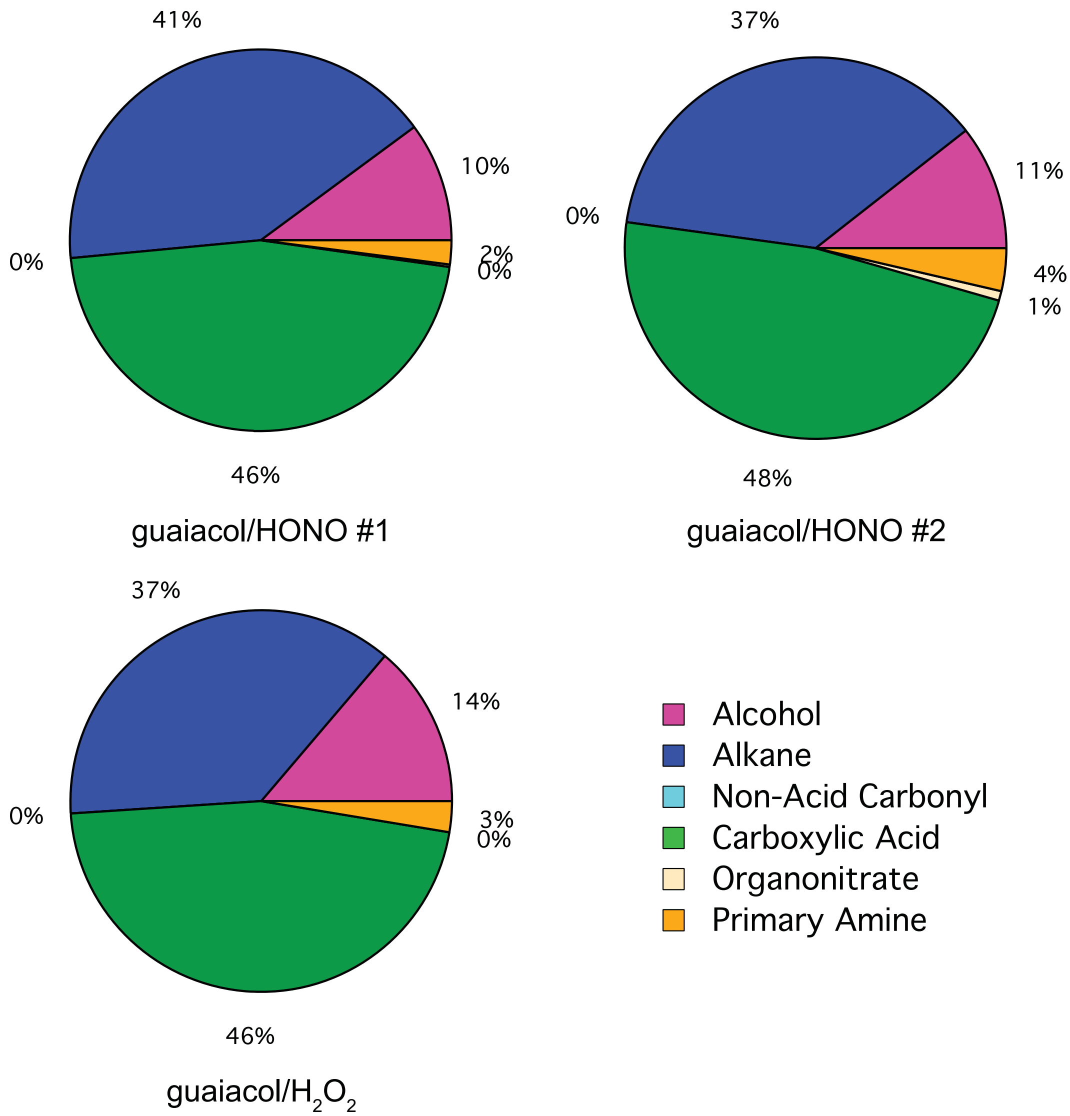

Fig. 8. Average composition by mass of guaiacol photooxidation SOA as measured by FTIR analysis.

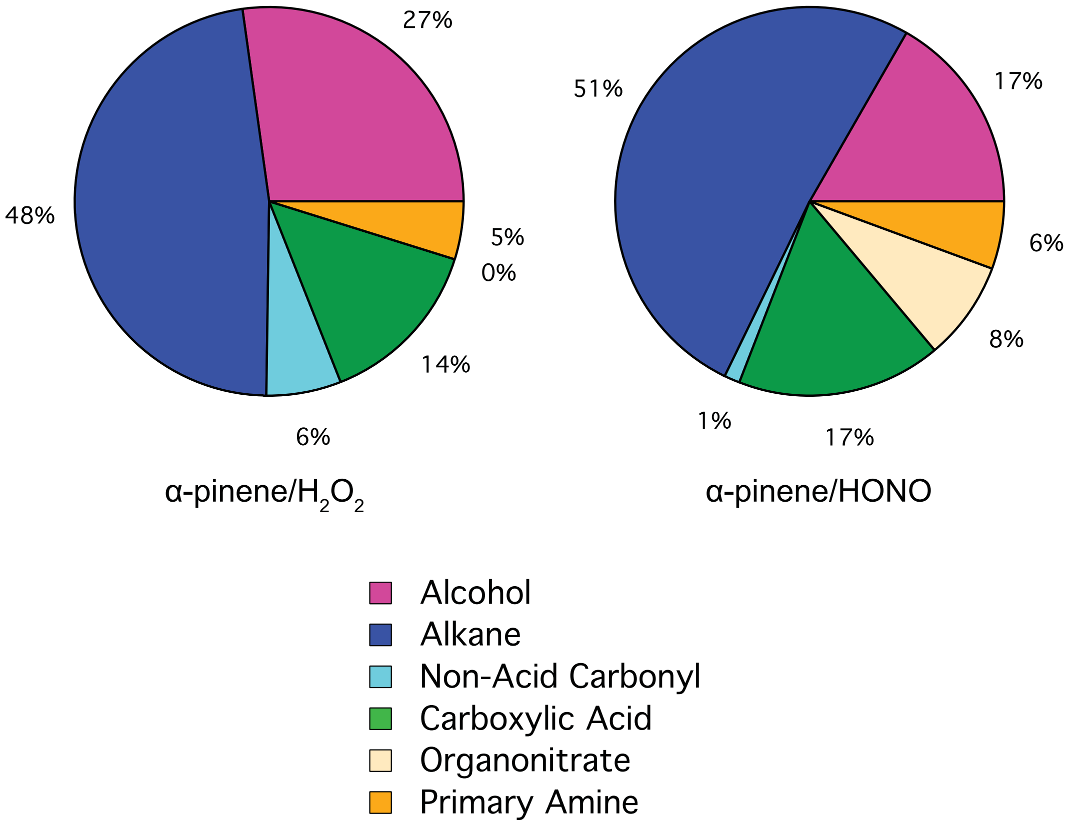

Fig. 9. Average composition by mass of α-pinene photooxidation SOA as measured by FTIR analysis.

References

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