Supplemental Information for: Aqueous aerosol SOA formation: Impact on aerosol physical properties

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MAE Calculations

Mass absorption efficiency was calculated from model output following Hecobian et al. (2010)[1] as follows:

$$MAE = \frac{E_{365} - E_{700}}{C_{org}} \quad \text{(S1)}$$

where, C_{org} is the calculated organic aerosol loading (gC/m^3 air). E_λ is given by:

$$E_\lambda = \sum_i \varepsilon_{i,\lambda} c_i \quad \text{(S2)}$$

where $\varepsilon_{i,\lambda}$ is the molar absorptivity of the *i*th species (L mol^{-1}m^{-1}) at wavelength λ and c_i is its in-particle concentration (mol L^{-1}).

Tables

Table SI. Reactions leading to the formation and destruction of light-absorbing products in GAMMA

Reaction	*Rate Constant*	*Source*
GLYX + $NH4^+$ → PGly	5.42e-7 L·mol^{-1}·s^{-1}	2
MGLY + $NH4^+$ → PMgly	8.33e-8 L·mol^{-1}·s^{-1}	2
GLYX + H^+ → PGly	2.50e-3 L·mol^{-1}·s^{-1}	2
MGLY + H^+ → PMgly	1.67e-5 L·mol^{-1}·s^{-1}	2
ALD + $NH4^+$ → PAld	8.13e-8 L·mol^{-1}·s^{-1}	3
PGly → products	1.67e-2 s^{-1} [a]	4
PMgly → products	1.67e-2 s^{-1} [a]	4
PAld → products	1.67e-2 s^{-1} [a]	4

[a] Photolysis reaction.

Figures

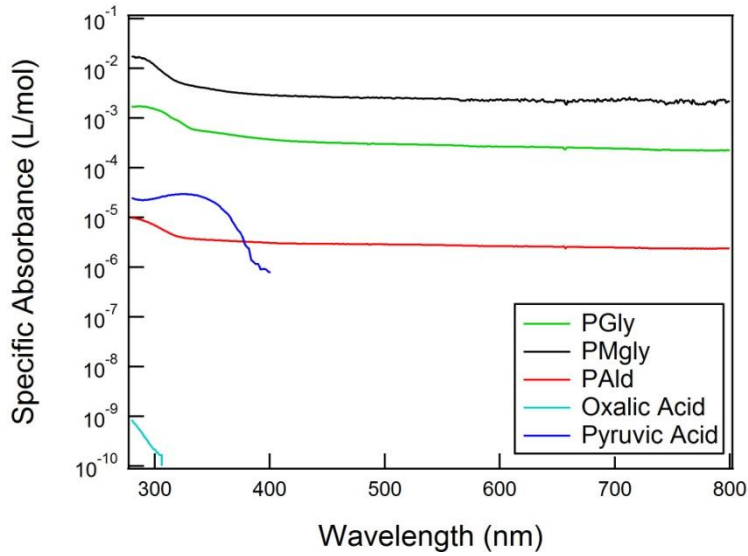

Fig. S1. Specific absorbances used for calculation of the composite absorption spectrum. Data unavailable for oxalic acid for $\lambda > 305$ nm and for pyruvic acid for $\lambda > 400$ nm.

References

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