

Supporting material:

Particle size and extinction infrared spectra for dry oxalic and glyoxylic acid aerosols

Dry oxalic and glyoxylic acid aerosol particles were also nebulised and studied under similar experimental conditions since these compounds were characterized as reaction products of the ozonolysis of maleic and fumaric acid aerosol particles. Anhydrous oxalic acid (>99% Fluka) and glyoxylic acid monohydrate (98% Aldrich) were used without further purifications to make the solutions in deionised water. Particles were nebulised from 0.84 M aqueous solutions. Aerosol size dimensions were $D_p=2.4 \mu\text{m}$; $N^*=6.0 \times 10^5 \text{ particles.cm}^{-3}$ for oxalic acid, and $D_p=0.8 \mu\text{m}$; $N^*=1.4 \times 10^6 \text{ particles.cm}^{-3}$ for glyoxylic acid.

Representative extinction infrared spectra of dry oxalic (3.8 %RH) and glyoxylic (9.0 %RH) acid aerosol particles acquired are shown in Fig. S1. Oxalic acid aerosols characteristic infrared absorption features are a broad band at 3350-2400 cm^{-1} with peaks centred at 3008, 2868, 2667, 2519 cm^{-1} , sharp bands at 1725, 1405, 1307, 1228 and 721 cm^{-1} , and a double peak at 918-876 cm^{-1} . Glyoxylic acid aerosols characteristic infrared absorption features are a broad band at 3600-2400 cm^{-1} , a sharp band centred at 1750 cm^{-1} , and a series of bands at 1400, 1232 and 1110 cm^{-1} .

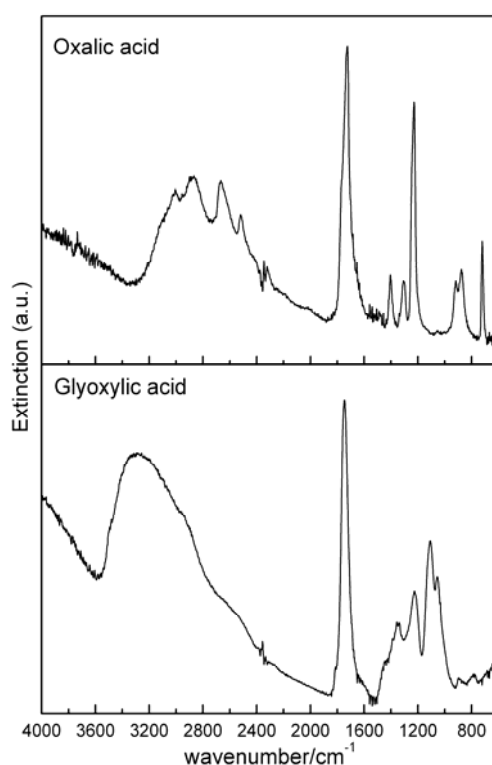


Fig. S1: Extinction infrared spectra of dry oxalic acid at 3.8 %RH (top panel) and glyoxylic acid at 9.0 %RH (bottom panel) aerosol particles obtained in the flow tube.