Supplement of

The Impact of Aqueous Phase Replacement Reaction on the Phase State of Internally Mixed Organic/ammonium Aerosols

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Summary: 6 pages, 6 figures.
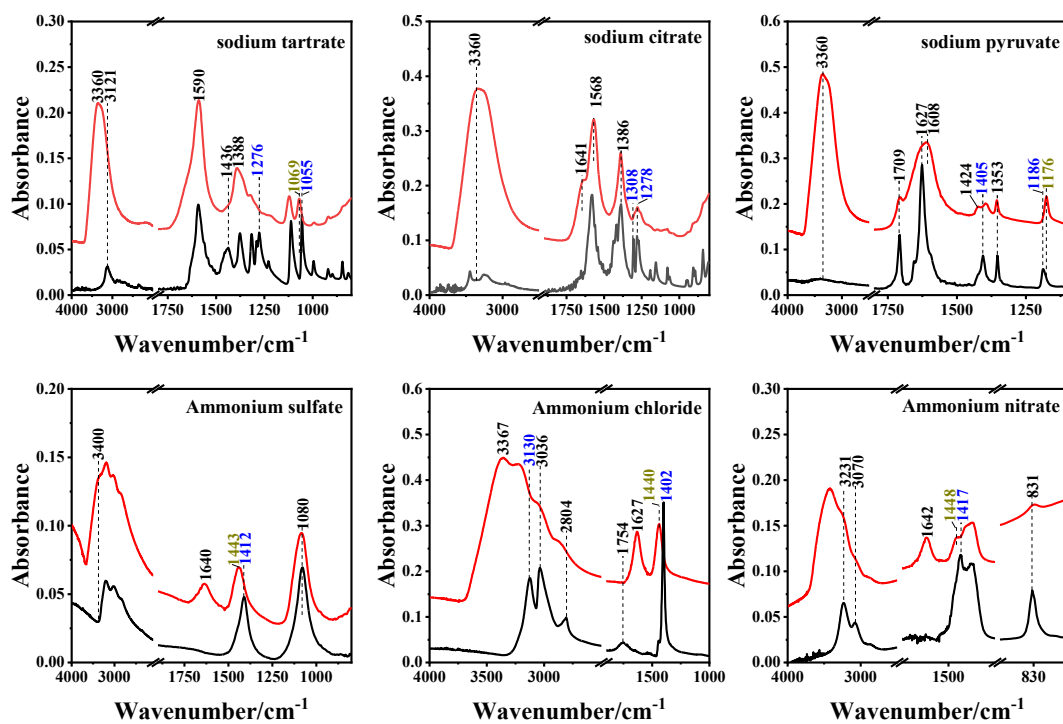
Fig. S1. The IR spectra at aqueous (red line) and solid (black) state, as well as the solid features (black value) and solution bands for organic salts and ammonium salts.
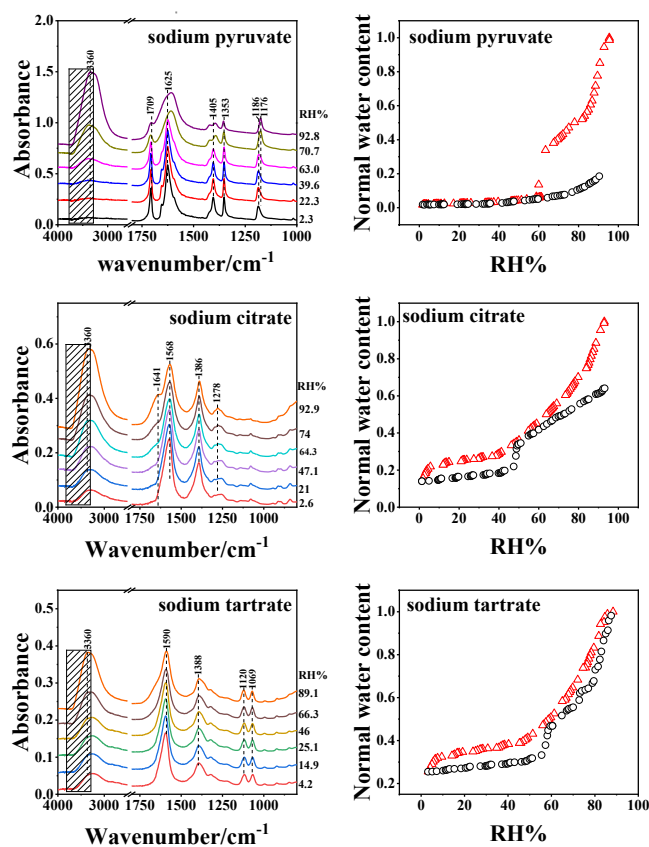
Fig. S2. The and IR spectra of organic salts on dehydration and hygroscopic behavior during a down-up RH cycle. The shaded area shows the chosen integration region for liquid water. The spectra for sodium pyruvate was previous reported by Yang et al (2019).
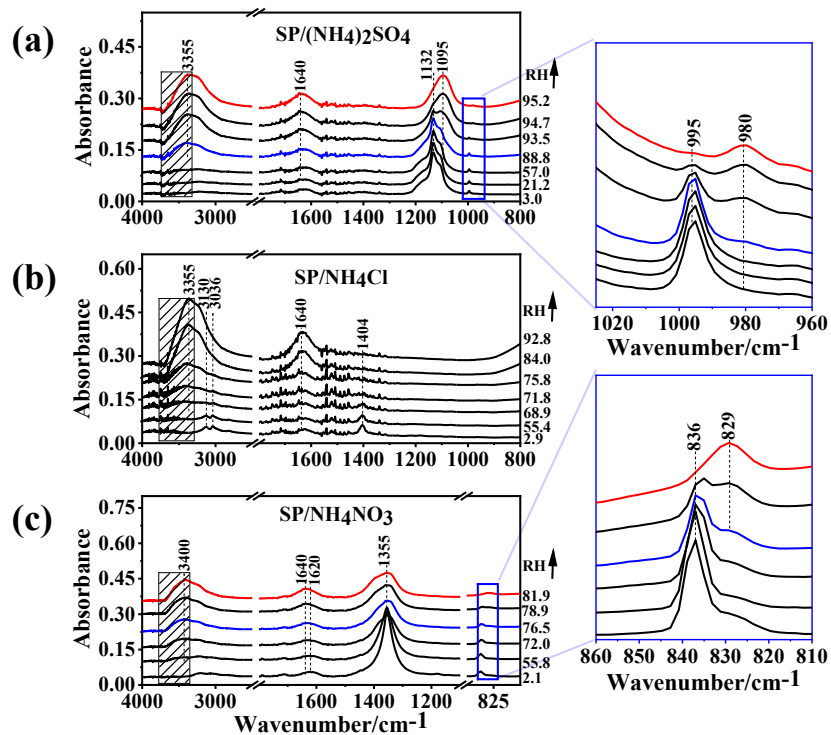
Fig. S3. The FTIR spectra of mixed aerosols containing pyruvate sodium and varied ammonium salts which are (a) (NH$_4$)$_2$SO$_4$ (b) NH$_4$Cl and (c) NH$_4$NO$_3$ on hydration. The shaded area shows the chosen integration region for liquid water.
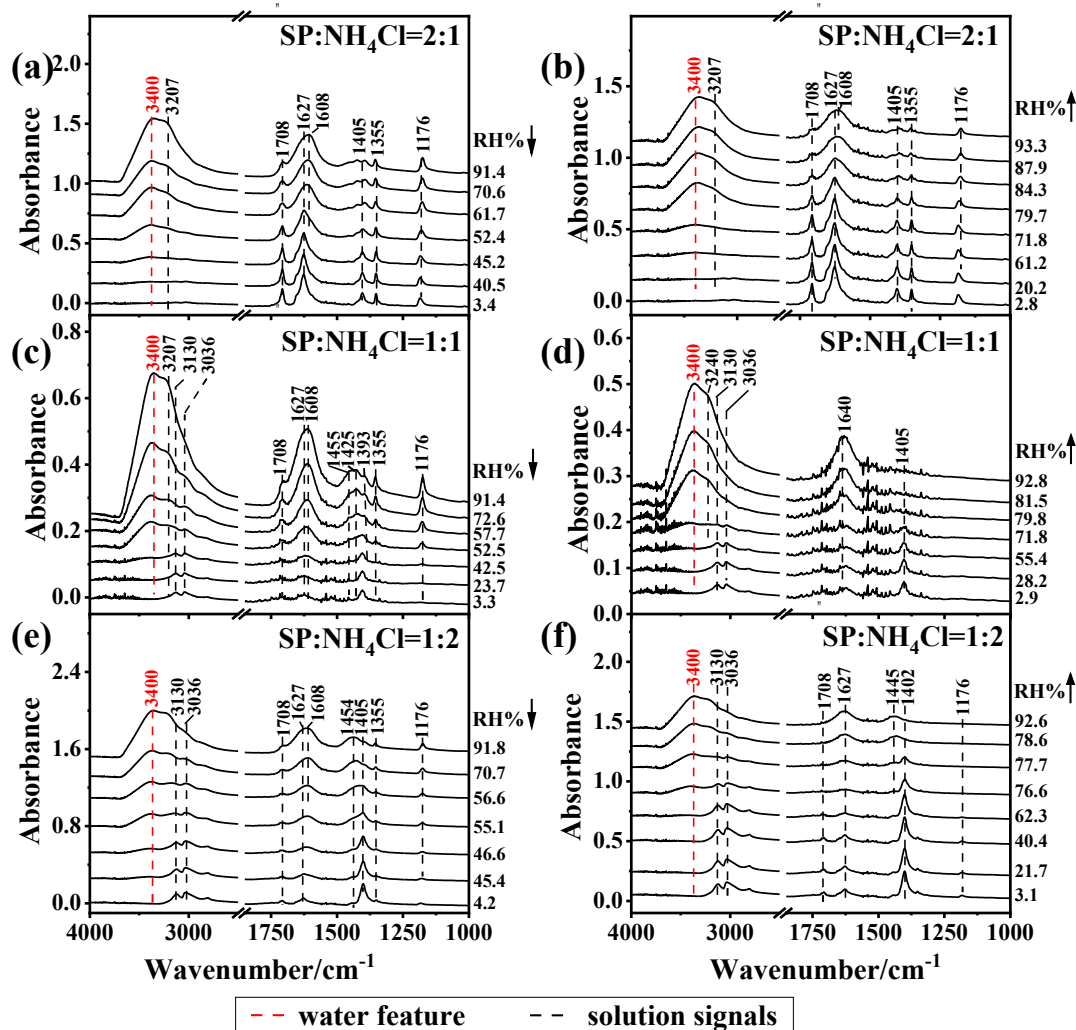
Fig. S4. The IR spectra of SP/NH₄Cl particles with the varied mole ratios during the dehumidification (a), (c), (e) and humidification (b), (d) and (f) respectively.
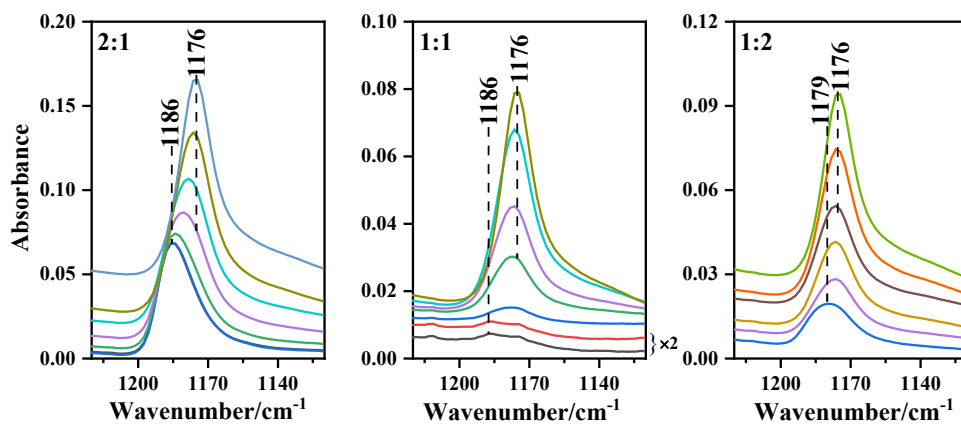
Fig. S5. The IR spectral comparison in the region of 1220 −1120 cm⁻¹ for 2:1, 1:1 and 1:2 SP/NH₄Cl particles during the dehumidification
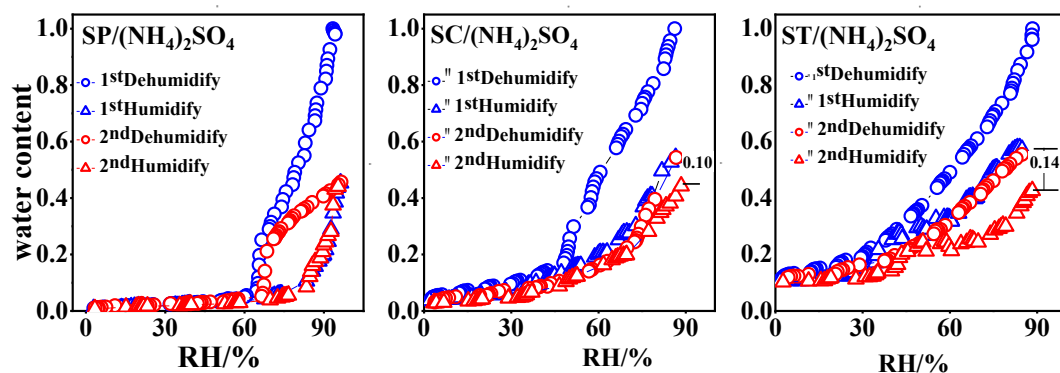
Fig. S6. Hygroscopicity curve comparison of particles containing SP : AS (ammonium sulfate) = 2:1, SC: AS = 2:3 and, ST: AS = 1:1 during two down-up RH cycles. The data for SP:AS = 2:1 was reported previous by Yang et al (2019).

Reference

Yang, H., Wang, N., Pang, S., Zheng, C., Zhang, Y.: Chemical reaction between sodium pyruvate and ammonium sulfate in aerosol particles and resultant sodium sulfate efflorescence, Chemosphere, 215, 554–562, https://doi.org/10.1016/j.chemosphere.2018.10.062, 2019.