Heterogeneous uptake of ammonia and dimethylamine into sulfuric and oxalic acid particles

Meike Sauerwein¹ and Chak K. Chan^{1,2,3}

¹ Division of Environment, Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong

² Department of Chemical and Biomolecular Engineering, Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong

³ School of Energy and Environment, City University of Hong Kong, Kowloon, Hong Kong

Correspondence to: Chak K. Chan (Chak.K.Chan@cityu.edu.hk)

Supplementary Figures

Figure S1: Experimental setup of simultaneous absorption of dimethylamine and ammonia in sulfuric acid
and oxalic acid particles. The experimental procedure includes RH conditioning, Gas generation, Flow
cell reaction, Particle analysis with the Ion Chromatograph, and Phase state and morphology observation
with a Microscope Raman. Abbreviations: HP N2, high purity nitrogen gas, RH, relative humidity; DMA,
dimethylamine2
Figure S2: Morphological changes during the uptake of 1.0 ppm DMA and 1.9 ppm NH ₃ into oxalic acid
particles at 70% RH

Methods

Experimental setup

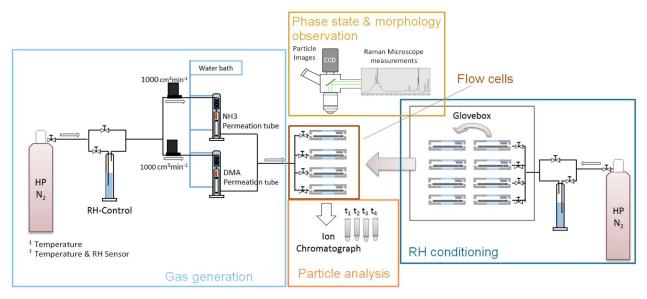


Figure S1: Experimental setup of simultaneous absorption of dimethylamine and ammonia in sulfuric acid and oxalic acid particles. The experimental procedure includes RH conditioning, Gas generation, Flow cell reaction, Particle analysis with the Ion Chromatograph, and Phase state and morphology observation with a Microscope Raman. Abbreviations: $HP N_2$, high purity nitrogen gas, RH, relative humidity; DMA, dimethylamine.

Results and discussion

Section 3. Uptake into oxalic acid particles

ox0.570%

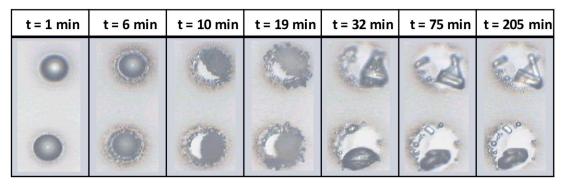


Figure S2: Morphological changes during the uptake of 1.0 ppm DMA and 1.9 ppm NH_3 into oxalic acid particles at 70% RH.