Supplement of

Estimation of particulate organic nitrates from thermodenuder-- aerosol mass spectrometer measurements in North China Plain

WeiQi Xu¹, Masayuki Takeuchi², Chun Chen^{1,3}, Yanmei Qiu^{1,3}, Conghui Xie^{1,3,a}, Wanyun Xu⁴, Nan Ma⁵, Douglas R. Worsnop⁶, Nga Lee Ng^{2,7,8,*} and Yele Sun^{1,3,9,*}

¹State Key Laboratory of Atmospheric Boundary Layer Physics and Atmospheric Chemistry, Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing 100029, China

²School of Civil and Environmental Engineering, Georgia Institute of Technology, Atlanta, GA 30332, USA

³College of Earth and Planetary Sciences, University of Chinese Academy of Sciences, Beijing 100049, China

⁴State Key Laboratory of Severe Weather & Key Laboratory for Atmospheric Chemistry, Institute of Atmospheric Composition, Chinese Academy of Meteorological Sciences, Beijing, 100081, China

⁵Institute for Environmental and Climate Research, Jinan University, Guangzhou 511443, China

⁶Aerodyne Research Inc., Billerica, Massachusetts 01821, USA

⁷School of Earth and Atmospheric Sciences, Georgia Institute of Technology, Atlanta, GA 30332, USA

⁸School of Chemical and Biomolecular Engineering, Georgia Institute of Technology, Atlanta, GA 30332, USA

⁹Center for Excellence in Regional Atmospheric Environment, Institute of Urban Environment, Chinese Academy of Sciences, Xiamen 361021, China

^anow at: State Key Joint Laboratory of Environmental Simulation and Pollution Control, College of Environmental Sciences and Engineering, Peking University, Beijing 100871, China

Correspondence: Yele Sun (sunyele@mail.iap.ac.cn) and Nga Lee Ng (ng@chbe.gatech.edu)

Figure S1. Average mass spectral profiles of OA from biomass burning (BBOA), cooking emission (COA), wood burning (WBOA) and coal combustion (CCOA) experiments.

Figure S2. High resolution mass spectra and time series of PMF factors resolved from PMF_{Org} and PMF_{Org+NO3} in summer in Beijing. The time series of OA factors resolved from PMF_{Org} are also shown.

Figure S3. High resolution mass spectra and time series of PMF factors resolved from PMF_{Org} and PMF_{Org+NO3} in winter in Beijing. The time series of OA factors resolved from PMF_{Org} are also shown.

Figure S4. the contribution of ions to total N mass for standard non-ON organic nitrogen compounds.

Figure S5. Diurnal cycles of correlations of each OA component with $\text{NO}_{3,\text{org}}$ in (a) summer and (b) winter in Beijing.

Figure S6. Variations of OA factors as a function of PM loadings in (a) summer and (b) winter in Beijing