

The authors characterized organic nitrates at an urban site in south China based on the measurements of aerosol mass spectrometer and volatile organic compounds (VOCs). The ratios of $\text{NO}^+/\text{NO}_2^+$ and positive matrix factorization were used to estimate the concentrations of organic nitrates. The authors found that organic nitrates contribute substantial fractions of total nitrate in spring, summer and autumn, and the reactions between biogenic VOCs and NO_3 radical were the major formation pathway. This manuscript is generally well written, and I have some comments below.

Comments:

1. Concerning the PMF results, the authors need to show more diagnostic plots to justify the results. For example, previous study by the same group (He et al., 2011) was able to identify four OA factors in autumn at the same site, while the biomass burning OA was not resolved in this study. The spectrum of LO-OOA in autumn (Figure S1) shows clear m/z 60 and 73 signals, suggesting that more factors are needed. In addition, I would suggest the authors checking the changes in NO^+ , NO_2^+ in OA factors across different fpeak values, and give an estimation of uncertainties.
2. High NO^+ signal and $\text{NO}^+/\text{NO}_2^+$ ratio were also observed in HOA spectrum, are they organic nitrates from direct emissions or some other sources. Please calculate the mass fractions of organic nitrates in three OA factors. A major fraction would be expected in LO-OOA, and not surprisingly, organic nitrates were well correlated with LO-OOA.
3. The authors calibrated AMS every two weeks, could the authors show the $\text{NO}^+/\text{NO}_2^+$ ratio for each calibration to check the stability of the instrument.
4. In the abstract and conclusions, the authors highlight the importance of organic nitrates using its contribution in total nitrates. I would suggest the authors using the mass fractions of organic nitrates in total OA. In addition, could the authors compare the mass concentrations of organic nitrates with previous studies in Pearl River Delta?
5. I suggest the authors adding the time series of non-refractory aerosol species during three seasons in supplementary. This is good for readers to evaluate the sources of organic nitrates. For example, the time series of organic nitrates in spring in Figure 2(a) showed clear plumes, which were very likely from regional transport. Without showing other aerosol species, it is hard to tell.
6. A more detailed description of VOC measurements is needed in experimental methods.
7. Spell out "VOCs" in the abstract, and show slopes in Figure 2(b)