

## ***Interactive comment on “Enhancing non-refractory aerosol apportionment from an urban industrial site through receptor modelling of complete high time-resolution aerosol mass spectra” by M. L. McGuire et al.***

### **Anonymous Referee #1**

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The manuscript by McGuire et al. applied positive matrix factorization to the full mass spectral matrix from a quadrupole AMS dataset collected at an urban industrial site. While such an approach was reported previously by Chang et al. (2011) and Sun et al. (2012), this work presented more detailed evaluations and highlighted its advantages by comparing the results from PMF organics only. This approach was more powerful in source apportionment analysis when it's used along with CPF and PSCF. With this, new insights into the sources and processes of submicron aerosols, in particular the amine and OOA factors were gained. New findings also include the estimation of a RIE of 6.0

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for amine and the separation of local sulfate from regional sources. The manuscript was well written and presented clearly, and the approach would be beneficial to the AMS community. I recommend publication for ACP.

I only have a few minor comments.

1. The collection efficiency needs to be further justified although it didn't affect the PMF analysis in this work. Higher mass fraction of ammonium nitrate than 30% doesn't necessarily guarantee a CE closing to 1 based on the composition-dependent CE ( $= \max(0.45, 0.0833 + 0.9167 \times \text{ANMF})$ , Middlebrook et al., 2012). Why didn't the authors use NR-PM1 + BC vs. PM2.5 (Fig. 2) to justify CE?
2. The sum of mass fractions for NO<sub>3</sub><sup>-</sup> in Figure 7d is not equal to 1.
3. P 5085, line 20, spell out “O/C”

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