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Interactive comment on "Highly time-resolved urban aerosol characteristics during springtime in Yangtze River Delta, China: Insights from soot particle aerosol mass spectrometry" *by* J. Wang et al.

Dr. Chen (Referee)

jmchen@fudan.edu.cn

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This manuscript reports the measurement results of submicron aerosols by the SP-AMS in Nanjing. Recently the Aerodyne AMS has been widely used around the world, and this work presents for the first time the results using the SP-AMS in the YRD region. This is overall a very well written paper with quite thorough analyses of the data, the figures are informative and the results provide new insights regarding the aerosol chemistry in this region. I recommend its publication in ACP after addressing of the following comments:

(1) As the paper is submitted to the PEEX special issue, it will be good for the authors to describe the link of the results presented in this work with the overall scientific goal of this special issue. (2) "A constant collection efficiency (CE) of 0.5 was used for the mass quantification, in consistent with many other AMS studies, as indeed the mass fraction of ammonium nitrate (mostly <40%), particle acidity (near neutral) and RH(<10%) do not affect the CE significantly for this dataset (Middlebrook et al., 2012)."It is a bit difficult for non-AMS users to understand this point. Consider rephrasing to make the statement clear. (3) In Fig.2, the authors used the KpAN values to elucidate the formation mechanism of nitrate. Do the authors have gaseous NH_3 and HNO_3 data to make the argument more robust? (4) In Fig.2b and Fig.10d, the authors seperated the data into bins with 5ug/m3 increment, i think it will be better to make similar plots that describes the variations of aerosol compostions continously against the mass loadings. (5) Reconstruction of the light extinction by using the IMPROVE method is interesing and valuable. However, the parameters of the IMPROVE formula used were taken from the dataset in US, are there more appropraite values that can be used? (6) It is interesting to use polar plots to demonstrate the characteristics of organic aerosols. How about similar plots for the inorganic species? (7) As the SP-AMS can measure both non-refractory and refractory species, it may provide unique information regarding the composition of refractory organics which cannot be measured by other AMS, this reviewers feel relevant discussion is lacking in the current manuscript. (8) In Fig.12, the authors show the O/C vs. RH. Instead, i suggest to show the SV-OOA and LV-OOA mass concentrations with the increase of RH, so as to better demonstrate the influences of RH on the SOA formation.

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