Atmos. Chem. Phys. Discuss.,
https://doi.org/10.5194/acp-2019-1180-RC3, 2020

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Molecular Characterization of Firework-Related Urban Aerosols using FT-ICR Mass Spectrometry" *by* Qiaorong Xie et al.

Anonymous Referee #3

Received and published: 5 March 2020

General Comments:

The article studied the characteristic of CHO, CHNO, and CHOS before, during, and after FW event. Many species were detected by FT-ICR MS, and were analyzed through the manuscript. Furthermore, potential sources of these subgroups were also discussed through many calculations. There are many data and analysis methods which help the reader to understand the different pollution characters of aerosols during six periods. The whole article was aimed to discuss the event of firework-related urban aerosols before, during, and after New Year's Eve evening. The author just discussed the redox chemistry driven by NOx, O3, and OH, but the impact of combustion pro-

Printer-friendly version

Discussion paper

cesses during the FW event wasn't discussed. What the relation between combustion processes and the three subgroups? I think the combustion processes is an important factor for the pollution during FW event. For example, there are amount of sulfur in the firework which many contribute the formation of CHOS species. Besides, the meteorology parameters were not contained in the article, which is hardly to analysis the sources of these subgroups studied in the article. for example, the author indicated the "multiphase" redox chemistry is important for the detected species formation, but how about the RH during these periods? The article should be revised according the comments and then can be published.

Specific Comments:

Introduction: Why the author studied subgroups of CHO, CHNO, and CHOS during these periods?

Page 5 Line 28-30: The author ascribed the increase of Mg2+ and Ca2+ to the dust particles increased were not exactly. Mg would exist in the FW. Did the author get the PM10 data?

Page 6 Line 20: CHNOS was mentioned here and also in Figure 1. Why the author didn't discuss CHNOS? What the relationship between CHNOS with CHNO and CHOS?

Page 7 Line 8: while the relative abundance of "four" categories compounds: "four" or "three"?

Page 8 Line 18: Xc can help to more precisely identify and characterize aromatic and condensed aromatic compounds in highly complex WSOC mixtures, why AI method was used in the manuscript?

Figure 6: I can't understand this picture, the markers can't be seen clearly, the green areas can't be understood.

Page 10 Line21-24, Page 11 Line 25: The author highlights the importance of nighttime

chemical oxidation to the formation of CHOS compounds, what was the evidence? How the combustion process impacted the formation of CHOS during FW event?

Interactive comment on Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2019-1180, 2020.

Printer-friendly version

Discussion paper