

## ***Interactive comment on “Development and application of a mass closure PM<sub>2.5</sub> composition online monitoring system” by Cui-Ping Su et al.***

### **Anonymous Referee #2**

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This paper reports the development of an online monitoring system for PM<sub>2.5</sub> composition. The unique feature for this system is the capability to measure more than 90% of PM<sub>2.5</sub> mass with a high time resolution. This advance makes this system a powerful tool for understanding PM<sub>2.5</sub> sources and deciding the corresponding control measures. Another novelty of this paper is the resolving of secondary organic aerosol (SOA) from the total PM<sub>2.5</sub> mass by the usage of  $m/z$  44, a good SOA tracer, in the PMF modelling. This system has been successfully applied in a megacity in China, with nine sources well identified, supporting its effectiveness and usefulness in PM<sub>2.5</sub> control. Overall, I think it is a well-written paper with novelty and recommend its publication after considering the following concerns.

1. The author should make a clearer statement of the advantage of the new system

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compared to the separate instruments in the introduction part.

2. Line 31. “serious” might not be suitable to the current PM<sub>2.5</sub> pollution status. A description of long-term problem should be better.

3. Why Na was not measured? Could sea salt be a major source for PM<sub>2.5</sub> in Shenzhen, a coastal city?

4. 2.4 Design of the data analytics platform. More details for data conversion of each instrument should be given.

5. Figure 2a. The mass closure is generally good. However, the authors should comment on some periods when a significant mass discrepancy appeared.

6. Figure 4. The elements with low concentrations should be displayed with enlargement.

7. Figure 7. There is a spike at 1:00 am for both biomass burning and fugitive dust. Why?

8. Conclusions. For a technical paper, the prospects of further development of the new system should be given.

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