

## ***Interactive comment on* “Characteristics, sources and formation of aerosol oxalate in an Eastern Asia megacity and its implication to haze pollution” by Y. Jiang et al.**

### **Anonymous Referee #2**

Received and published: 27 September 2011

#### General comments:

This paper presents aerosol oxalate variation in Shanghai in 2007, and tries to give some information on oxalate formation. But little new insights can be taken from the Abstract. The main idea in this manuscript is the formation pathway of oxalate, however, it is mainly from the correlation analysis between oxalate and  $K^+$ ,  $NO_3^-$ ,  $nss-SO_4^{2-}$ . This is apparently not enough as there are no solid evidences and such suggestions have been published in many other papers. Most of the conclusions in the manuscript are from speculations and some seem incorrect. I agree with the other reviewer that deep analyses are needed before the publication.

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Specific comments: Abstract, Page 22076, Line 13, why  $K^+$  is an evidence for secondary formation? Isn't it is an evidence for biomass burning as what you said in Line 8? In fact, in the manuscript the secondary formation is from relatively high ratio of oxalate/ $K^+$ , although this point seems also incorrect.

Page 22076, Line 21-25. It is not easy to determine that “aerosol oxalate contributed to the haze pollution and visibility” just based on the correlation analysis. Although it shows good correlation between aerosol oxalate and visibility, it is hard to say that oxalate contributes to visibility since oxalate accounts for only very small amount in aerosol mass compared with sulfate and nitrate. In the manuscript it has been suggested that both oxalate and sulfate and nitrate are associated with the secondary formation and they have good correlations. It is also the possibility that sulfate and nitrate contribute to visibility, which influence the correlation between oxalate and visibility. So this is just from a speculation. Don't say such exactly.

I would like to suggest more references in the manuscript when these works are based on other researches. For example, when discussing about the formation of aerosol oxalate, there are lots of sentences, which have been reported by other works and cannot be inferred from your own study. Such sentences should be referenced. Not just limited to this part, as well al other parts.

Page 22088, the discussion about “the high oxalate/ $K^+$  ratio suggested a secondary formation of oxalate formation from biomass burning”. I cannot get such information from the discussion. With the only discussion about relatively higher ratio of oxalate/ $K^+$  ratio in ambient atmosphere than that in biomass plume, such conclusion cannot be reasonably inferred. The higher ratio can also originate from the mixing of biomass burning emissions with other sources. Only when you can prove that there is only one kind of emission in this area (biomass burning), you can made such conclusion. But this is definitely not the truth.

Page 22091, Lines 19-21, I would like to see the correlation coefficient between oxalate

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with other ions such as sulfate, nitrate. Such information lend itself to the understanding the comparison of relative contribution of oxalate, as well as the ions contribution to the visibility in this city.

Page 22093, the first paragraph, you just suggest the contribution of organics in the formation of haze. I cannot see any message as what you state in the Abstract "Aerosol oxalate contributed to the haze pollution and visibility degradation of the local environment." The contribution of organics on haze pollution is not directly equal to the contribution of oxalate to haze pollution.

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Interactive comment on Atmos. Chem. Phys. Discuss., 11, 22075, 2011.

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