

Interactive comment on “Summertime PM_{2.5} ionic species in four major cities of China: nitrate formation in an ammonia-deficient atmosphere” by Ravi Kant Pathak et al.

Anonymous Referee #2

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This manuscript discussed the PM_{2.5} ionic composition and the nitrate formation at four sites in China. The idea was good and the theoretical methodology was encouraged. However, several basic issues were not appropriate in the sampling and analysis, which may bias the results and conclusion. Major concerns are listed as follows.

1. Sampling site. The authors used different types sampling sites like urban, suburban, rural microenvironments for the comparison of formation mechanisms of nitrate. Do these microenvironments have potential impact for the comparison? Tai Cang site located in Tai Cang Meteorological Station, which should be mirrored to the more influence from local emission due to Tai Cang is an active industrial town rather than the

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impact from Shanghai pollutants. As such, the Wan Qing Sha site should reflected the impact not only from Guangzhou pollutants but also the emissions from the adjacent counties like Zhuhai and Zhongshan cities especially in summer time. In the third paragraph of introduction, the authors described the four cities situated in northern, eastern, southern, and central regions of China. However, no one think Lanzhou represent the central regions of China. 2. Sampling time. Since the monsoon climate in China, May should belong to spring time. It is not appropriate to compare the properties of spring aerosol with summer aerosol. 3. Author should be careful in discussing the formation of NO₃- because there are a lot of nitrate losses when sampling with Teflon filters in summer time. This loss should not be neglected because it has great impact on the discussion of nitrate formation. 4. The PM_{2.5} filters after sampling should keep in cool container in order to prevent the loss of ammonium. How do the authors keep the filters in cool environment at four cities during two years sampling? Ammonium in the Teflon filter is sensitive to the temperature change.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 11487, 2008.

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