Atmos. Chem. Phys. Discuss.,
https://doi.org/10.5194/acp-2018-185-RC2, 2018


Atmospheric Chemistry and Physics Discussions

# *Interactive comment on* "Particle acidity and sulfate production during severe haze events in China cannot be reliably inferred by assuming a mixture of inorganic salts" *by* Gehui Wang et al.

**Anonymous Referee #2**

Received and published: 18 April 2018

The manuscript "Particle acidity and sulfate production during severe haze events in China cannot be reliably inferred by assuming a mixture of inorganic salts" of Gehui Wang et al. presents laboratory measurements on the hygroscopicity and particle growth of selected particles under controlled conditions. The work contributes to the current understanding of the aqueous oxidation of SO2 by NO2. The authors also report on field measurements of the chemical composition of the water soluble fraction of fine PM in three sites in China during winter episodes. The results suggest little sulfate production in aqueous ammonium sulfate particles due to high acidity, whereas high sulfate production is observed from oxalic acid particles due to low acidity. The manuscript is well written and the results are relevant and I recommend the publication



of the manuscript after the following aspects are addressed.

In Section 2, add a detailed description of the sampling conditions during the field measurements for the three sites in terms of meteorology (with emphasis on RH and T), sampling size, and a qualitative description of the emission sources potentially impacting the observations. In Section 4, discuss whether any of these sampling conditions can also contribute to the observed differences.

How similar are the chemical and thermodynamic conditions in the laboratory measurements to actual haze conditions during the field measurements? The authors should also explicitly address the caveats of extrapolating the laboratory results in terms of mixing state, acidity, and chemical organic composition (organic mass factions are typically large during these events).

The results in figure 2 show a large increase in the hygroscopic growth factor of oxalic acidy particles when increasing RH. Can the authors discuss possible reasons why these results differ from those of Peng et al., 2001 under high RH?

---

Interactive comment on Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2018-185, 2018.