



Comment on acp-2021-593

Anonymous Referee #2

Referee comment on "Diverse mixing states of amine-containing single particles in Nanjing, China" by Qi En Zhong et al., Atmos. Chem. Phys. Discuss.,
<https://doi.org/10.5194/acp-2021-593-RC2>, 2021

Review of "Diverse mixing states of amine-containing single particles in Nanjing, China"

This article describes mixing state information for amine-containing particles derived exclusively using a single particle mass spectrometer at a sampling site in Nanjing. TMA and DEA were found to exhibit differing chemical mixing states, particularly with respect to oxidized organic and sulfate content. DEA-containing particles are proposed to be more acidic than TMA-containing particles based on the SPAMS peak area data for ammonium/aminium ions and sulfate/nitrate. The dependence of enhanced particulate TMA formation upon ambient RH has been demonstrated by others previously as cited in the article. Although not particularly novel, the article provides some new information on amine mixing state for this location. The text would benefit from a discussion of the drawbacks of single particle mass spectrometry when attempting quantitative or semiquantitative analyses (such as the acidity calculations). A discussion of the likely sources of gas phase TMA and DEA in the region would also be helpful. Do the back trajectories help to inform the dominant sources of TMA vs DEA?

The abstract should be reduced in length.

Line 94: Use the word temperature

Line 102: rewrite

Line 113: rewrite, the species in parentheses are not amines

Line 170: what flow rate?

Line 206 "marker"

Line 252: Explain for readers why vehicle exhaust is expected to drive TMA particle formation

Figure 10: It is difficult to distinguish the red and orange lines in this figure