

## ***Interactive comment on “Unexpectedly acidic nanoparticles formed in dimethylamineammonia-sulfuric acid nucleation experiments at CLOUD” by Michael J. Lawler et al.***

**Anonymous Referee #2**

Received and published: 31 July 2016

This is a nicely performed study with very clearly explained measurements. My only suggestions are for revision of the discussion section, where I think the authors may be speculating a bit too much on the implications of their data:

1. Section beginning with: “The TDCIMS data overall indicate a large increase of base fraction as the particles grew from 10 to 20 nm.” I think the authors should be bit more cautious in interpreting their data in this section. Aside from 3 data points, it appears that the base:acid ratios in figure 11 are bound between 0.2 and 0.5 for all measurements. While the results presented are very interesting I think it is premature to conclude that the chemical composition of particles is unquestionably changing as they grow from 10-20 nm.

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2. Similarly, there is no evidence in the measurements reported here for a phase transition in particles as they grow from 10-20 nm. They do show that 10-20 nm particles sampled are more acidic than basic, and are composed of slightly more ammonia than dimethylamine. More analysis seems necessary to examine the phase of the detected particles.

Minor Comment:

1. The manuscript refers to “Kim et al 2016”. However, this citation does not appear in the references section. Also, I do not believe the “Alhm et al, 2016” citation is published in *Aerosol Science and Technology* (perhaps it is in review).

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[Interactive comment on Atmos. Chem. Phys. Discuss., doi:10.5194/acp-2016-361, 2016.](#)

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