

***Interactive comment on “High humidity tandem differential mobility analyzer for accurate determination of aerosol hygroscopic growth, microstructure and activity coefficients over a wide range of relative humidity” by Eugene F. Mikhailov and Sergey S. Vlasenko***

**Anonymous Referee #3**

Received and published: 17 February 2020

Summary:

The manuscript “High humidity tandem differential mobility analyser for accurate determination of aerosol hygroscopic growth, microstructure and activity coefficients over a wide range of relative humidity” presents a revised and improved instrument design to cover the relative humidity range from 2–99.6% for hygroscopicity measurements with high measurement accuracy. The instrument is further used to study ammonium

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sulphate and glucose particles and results are compared to former literature results and model studies. Particularly, the effect of aerosol restructuring is investigated and discussed to improve the analysis of the water uptake. I believe that the manuscript is very interesting and well written and I therefore recommend the paper for publication after the following minor comments have been addressed:

Minor comments:

I would strongly recommend revising the use of the English language throughout the manuscript as many small mistakes (see specific comments) are currently present and some sentences could profit from being re-written for a better understanding.

Specific comments:

Page 2, line 52: replace “result” with “resulting”

Page 2, line 63: replace “due” with “to”

Page 2, line 67: add missing parenthesis after the citations

Page 2, line 68: replace “effect” with “effects”

Page 3, line 76: rephrase the sentence starting with “However, due to . . .”

Page 3, line 82: add “for” after “this instrument allows”

Page 3, line 88: rephrase the sentence starting with “The averaged in the 80–99%...”

Page 4, line 110: add “a” in front of “circulation thermostat”

Page 4, line 111: add “are” before “operated at 26C..”

Page 4, line 114 and following: I would suggest to use present tense and not past tense to describe the difference in e.g. PT100 sensors uncertainty.

Page 5, line 145: replace “nebulize” by “nebulizing”

Page 5, line 162: the units of 1 l/m should rather be 1 l/min

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Page 5, line 172: rephrase the whole sentence, very unclear

Page 7, line 214: wrong units for the error of the dry mobility diameter (should be nm)

Please check carefully the whole manuscript for missing articles like “the” or “a”, singular and plurals and the use of past and present tense.

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Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2019-478, 2019.