

## ***Interactive comment on “Characterisation of corona-generated ions used in a Neutral cluster and Air Ion Spectrometer (NAIS)” by H. E. Manninen et al.***

**H. E. Manninen et al.**

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We would like to thank M. Gonin for the constructive comments to help us to improve the manuscript. Below are our answers to the short comments.

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Answers to short comments by M. Gonin on our manuscript “Characterisation of corona-generated ions used in a Neutral cluster and Air Ion Spectrometer (NAIS)” by H. E. Manninen et al.

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1) Mobility: There are three quantities mentioned: - mobility - electric mobility - ion Mobility. It is my understanding that these three are the same. Is this correct? Why using three different names for the same thing?

Yes, all of these three are the same. We unified the terminology in the manuscript.

2) Manufacturers: Please indicate the manufacturers of the instrument you used. This will help readers to reproduce your results.

We added more detailed information of the instrument to the manuscript (addition to text marked with green color). Page 2101, line 7: “Our focus is to study particle charging down to nanometer sizes with a Neutral cluster and Air Ion Spectrometer (NAIS, Airel Ltd, Kulmala et al., 2007).” Page 2104, line 13: “An Atmospheric Pressure Interface Time-Of-Flight Mass Spectrometer (APi-TOF, ToFwerk AG, Ehn et al., 2010a; Junninen et al. 2010) was used to measure the composition of corona generated ions in both negative and positive polarity.”

3) Mass/charge: The correct symbol for the quantity mass is  $m$ . The correct symbol for the quantity charge is  $Q$ . Therefore the correct symbol the quantity mass/charge is  $m/Q$ .  $m/z$  is widely used but wrong. Since  $z$  is the symbol of the quantity “charge state”,  $m/z$  denotes a quantity mass/charge state which is not what mass spectrometers measure. The Th is a unit for  $m/Q$ , not  $m/z$ . Therefore I recommend: - replace  $m/z$  by  $m/Q$  - replace indications like “ $m/z$  99” by “99 Th” - correct header of Table 1 with  $m/Q$  (Th).

Thank you, we corrected this.

4) Units in axis labels: This is a minor issue: many people use square brackets to indicate units on axis labels. This is not quite correct.  $[\ ]$  means “unit of”. Hence, for example  $[m/Q] = \text{Th}$ . Units should be indicated in round brackets:  $m/Q$  (Th), or axis should be labeled as a fraction  $(m/Q)/\text{Th}$ . See IUPAC green book.

We will take into account this fact.

5) Page 2108 line 24: spelling error: generated instead of generted.

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We corrected this.

6) How is the particle diameter obtained? Is this diameter calculated from the mobility? Is so, by which formula?

We added following sentence to page 2101, line 18: "All diameters are reported as Millikan-Fuchs equivalent mobility diameters (Mäkelä et al., 1996; Ku and de la Mora, 2009; Ehn et al., 2011)."

Please also note the supplement to this comment:

<http://www.atmos-meas-tech-discuss.net/4/C1854/2011/amtd-4-C1854-2011-supplement.pdf>

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