

Interactive comment on “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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Received and published: 28 October 2011

We would like to thank T.-E. Parts for the constructive comment to help us to improve the manuscript. Below is our answer to the short comment.

Answer to short comment by T.-E. Parts 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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A short comment – it seems incorrectly to write: Page 2104 line 15 - “An atmospheric pressure interface time-of-flight mass spectrometer (APi-TOF, Ehn et al., 2010; Junninen et al., 2010) was used to measure the composition of corona generated ions in both negative and positive polarity.” Page 2109 line 10 - “We also measured the chemical composition of the ions generated in the corona discharger.” Page 2112 line 5 - “The chemical composition of the ions was measured in parallel with the size measurements.” You measure the quantity mass/charge and propose the chemical composition according to these data. You cannot measure the chemical composition of ions by mass spectrometer.

That’s true; we don’t actually measure the chemical composition. But from the mass/charge ratios of the ions, we can make conclusions about their chemical composition. We measure mass/charge ratios of ions, from which we can find quite accurately (<20 ppm) their exact masses which correspond to certain elemental compositions. By comparing the isotopic patterns of those elemental compositions with the patterns observed, further aid us in determining the actual chemical composition of the ions.

We will keep the words “chemical composition” in the manuscript. But we don’t use it together with the word “measure” which we’ll replace with “characterize”. In addition, we’ll modify text on page 2104, lines 13-16:

“An Atmospheric Pressure Interface Time-Of-Flight Mass Spectrometer (APi-TOF, Tofwerk AG, Ehn et al., 2010; Junninen et al. 2010) was used to measure the composition of corona-generated ions in both negative and positive polarity. The APi-TOF measures mass spectra of small ions below a few nanometers with minimal perturbation of the sample.”

Modified text will be following: → “An Atmospheric Pressure Interface Time-Of-Flight Mass Spectrometer (APi-TOF, Tofwerk AG, Ehn et al., 2010; Junninen et al. 2010) was used to measure the mass/charge ratios of corona-generated ions, from which we can find quite accurately (<20 ppm) their exact masses which correspond to

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certain elemental compositions. By comparing the isotopic patterns of those elemental compositions with the patterns observed, further aid us in determining the actual chemical composition of the ions. The APi-TOF measures mass/charge ratios of small ions below a few nanometers with minimal perturbation of the sample.”

Please also note the supplement to this comment:

<http://www.atmos-meas-tech-discuss.net/4/C1857/2011/amtd-4-C1857-2011-supplement.pdf>

Interactive comment on Atmos. Meas. Tech. Discuss., 4, 2099, 2011.