We would like to thank the referee for the encouraging review and the constructive comments and to help us to improve the manuscript. Below are our answers to the comments by the referee.

Answers to the referee comments by Anonymous Referee #1 on our manuscript "How to reliably detect molecular clusters and nucleation mode particles with Neutral cluster and Air Ion Spectrometer (NAIS)" by Hanna E. Manninen et al.

There are several typo's and grammatical errors that should be corrected. There are other possible minor improvements that could be made. Some obvious ones are listed below:

We revised the manuscript and corrected the language.

P 1, line 23: replace "happen" with "occur".

Done.

P 2, lines 21-24 should be improved or replaced. I would suggest text similar to that used by Manninen et al (2009).

Unclear comment. We don't understand which corrections the referee is suggesting. If the comment is related to a chapter few lines after starting with words "Special considerations", we have moved it to earlier location in the Introduction to fit the text better.

P 3, line 11: Replace "descripted" by "described". And, perhaps delete "in a Nature protocols article".

Done.

P 5, line 19: "It is recommended that ion spectrometers take part in the calibration and intercomparison workshops…". Not clear. Do you mean that "ion spectrometer users take part" or that "ion spectrometers should be brought and calibrated … at … " ?

Yes, the users should take part in the workshops. The ion spectrometers should be calibrated often enough, preferably at the calibration workshops.

We modified the text to make it clearer: *"It is recommended that ion spectrometer users take part in the calibration and intercomparison workshops organized in co-operation by University of Helsinki and Airel Ltd. The ion spectrometers should be calibrated often enough, preferably at the calibration workshops. The goal is to organize these workshops on a regular basis. During the workshops the ion spectrometer flows are calibrated and their mobility classification and concentration measurements are verified."*

P 9, lines 15-16: "The instrument is operational both in vertical and horizontal position" – Do you mean the instrument or the inlet line? Can the instrument be placed horizontally? It continues as "However, the vertical orientation for inlet line is not recommended". Does

this mean that the inlet line should not be placed vertically? Could you provide your reasons for this? Is it the electrode effect?

We modified the text to answer referee's questions: *"Although the instrument and the inlet line can be placed vertically or horizontally, the horizontal orientation for the inlet line is recommended. In the vertical inlet setup the precipitation may easily enter the instrument and damage the instrument and lead to poor data quality."*

"Recommended inlet height is 2 metres above the ground level". To my knowledge, several NAIS instruments are being used with the sampling tube out of upper floor windows and on the roofs of buildings. Is this not recommended?

Very good point. Inlet sampling height depends on the surroundings. It can vary from 2 m above ground level to 15 m above ground level. The user does need to select the sampling site according to environment conditions.

We modified the text accordingly: *"Sampling height depends on the surroundings. It can vary from 2 meters above ground level to 15 meters above ground level (height of the surrounding canopy/buildings)."*

P 14, line 30: Replace "notice to" by "ensure that you".

Done.

P 15, line 7: Replace "place" with "position".

Done.

P 20, line 22 is very unclear. I would recommend, replacing "stay" with "remain" and delete either "no" or "not" from later in this sentence.

Done.

Table 2 P 34 Top Row: "inlet is too long". I think you mean that the "inlet tube is too long" ? Bottom Row: "Whole particle spectra is continuously red.." Do you mean "total particle" or "Both particle" ? Suggest "appears continuously red in colour"

Both corrected as suggested above: "*... and inlet tube is too long*" and "*Total particle spectra appears continuously red in colour at Spectops screen with very high concentrations (~10^5-10^6).*"

P 36 Airflow Issues: "Blower stops soon working". Do you mean "Blower soon stops working" ? But, I am not sure how this could be the "Possible Reason" for the issue. Is it not a consequence of the issue?

We modified the text accordingly: "*The blower soon stops working as it is worn-out".*

A comment on P 22, line 26: "The only exception where no cluster ions were observed is when measured inside cloud (Lihavainen et al., 2007)". While this is so, another clear

example is shown in Jayaratne et al: Suppression of cluster ions during rapidly increasing particle number concentration events in the environment. Aerosol and Air Quality Research. 15, 28-37, 2015. They used a NAIS to monitor ions and particles during a local fireworks display and observed that, owing to the very high concentration of particles, the cluster ion concentration was suppressed to zero for a short time.

We added citation to paper: Jayaratne, R. E., Ling, X., and Morawska, L.: Suppression of cluster ions during rapidly increasing particle number concentration events in the environment. Aerosol and Air Quality Research, 15(1), 28-37, 2015.

And modified the manuscript accordingly: *"The only exception where no cluster ions were observed is when measured inside a cloud (Lihavainen et al., 2007) or during a rapid, extreme increase in particle number concentration (Jayaratne et al. 2015)."*

Some references are missing from the reference list. E.g. Alguacil and Alonso (2006), Alonso et al (2006), Huang and Alonso (2011).

We added following papers to reference list:

Alguacil, F.J. and Alonso, M.: Multiple charging of ultrafine particles in a corona charger, J. Aerosol Sci., 37, 875–884, 2006.

Alonso, M., Martin, M.I., and Alguacil, F.J.: The measurement of charging efficiencies and losses of aerosol nanoparticles in a corona charger. J. Electrostat., 64, 203-214, doi: 10.1016/j.elstat.2005.05.008, 2006.

Huang, C-H, and Alonso, M.: Nanoparticle electrostatic loss within corona needle charger during particle-charging process. J. Nanopart. Res., 13: 175-184, 2011.

Both Supplementary Sections are written in great detail and will, I am sure, be of great help to all present and future users of the NAIS. Just a minor suggestion – the Supplement giving the cleaning instructions could benefit with some improvement of the grammar.

We will revise the supplements and correct the language.