

Response to Referee #3

The authors would like to thank Referee #3 for his/her detailed and valuable comments to further improve and clarify the MS. We have considered all recommendations, and made the appropriate alterations. The changes can be explicitly tracked in the annotated version of the MS. Our specific responses to the comments are as follows.

Major comment

The authors did not discuss their data and results adequately within the framework of current knowledge in the literature. Thus, it is not clear to the readers how atmospherically important of this work is and what new information it has offered. The authors could expand the discussion section by framing the results in this study into the existing literature to highlight the contribution to scientific progress. In addition to this very general comment, several specific comments and some requested clarifications are outlined below.

We revised thoroughly and improved the Results and discussion section at several places and from several aspects with more detailed arguments. We also modified the body text to make our intentions and statements more detailed, specific, and further literature sources were also included to support our conclusions.

Specific comments

P1 L7: “atmospheric aerosol particles” should be “atmospheric particles” or “aerosol particles”.

The formulation “atmospheric aerosol particles” was selected to express that we investigated aerosol particles in the ambient air with a larger and open spatial scale, and that we did not confine our study to specific or more closed urban environments. This is an ordinary concept in aerosol science manifested in several key textbooks such as e.g. Hinds, C. W.: *Aerosol Technology*, Wiley, 1999, chapter 14 or Seinfeld, J. H. and Pandis, S. N.: *Atmospheric Chemistry and Physics*, Wiley, 1998, chapter 7.

P1 L12: “it was decreasing monotonically from 71% to 41% with particle diameter.” With INCREASING OR DECREASING particle diameter? It should be expressed accurately. The corresponding modifications should be made throughout the whole manuscript. For example, P1 L17 and P1 L19.

An increase or decrease of a function with an independent variable expresses the change caused by an increasing tendency in the variable. This type of the possible formulations is indeed a simplification, but it avoids disturbing over-detailed wording and repetitions if one gets used to it. We chose and adopted this, progressively acknowledged convention consequently throughout the MS.

P1 L28-31: The last sentence in the abstract is rather tedious. It should be rephrased to make it clear. I suggest the authors check throughout the manuscript as there are a few other cumbersome statements.

The abstract was revised and restructured substantially including the last sentence. In addition, we checked thoroughly and modified some other sentences to clarify and improve their meaning.

P2 L9-12: The sentence should be rephrased or broken into two.

The sentence was split into 2 sentences.

P2 L26-27: As is listed, there are many references on the measurements on complex urban aerosols. Why the authors stated that corresponding measurements are so scarce?

The sentence was modified to express our intention more clearly, and new recent references were also added.

P2 L29: This sentence should be rephrased to make it clear.

The sentence was reformulated.

P3 L17: “using a silica-gel diffusion dried at indoor temperatures”. “dried” should be deleted.

The word “dried” was misspelled, and it was corrected to “dryer” now.

P3 L29: This temperature was selected by considering previous experience. The authors should clarify how the temperature was selected based on previous experience.

We included more details on this argument.

P5 L3: It is not clear which surface tension value ($\sigma=72 \text{ mN m}^{-1}$ or 60 mN m^{-1}) was used in the calculations. Please clarify it in the manuscript.

The calculations were performed by using the surface tension of pure water, thus 72 mN m^{-1} . A brief sentence was added to clarify this.

P5 L6: Please clarify the experimental uncertainties in detail.

The estimated uncertainty was added.

P5 L28: What is the size range for UF particles?

The size range of UF particles ($d < 100 \text{ nm}$) was specified at its first occurrence in the body text (on page 2).

P6 L1: The contribution of the two modes was size dependent. It is not clear how it can be concluded from Fig.1 as only data for particles with a dry diameter of 145 nm was given.

The size dependence does not follow from the Fig. 1. It can be inferred from Table 1. We modified the related sentence, and added some new information on this for the clarification.

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