Reply to the reviewer comments on the revised version.

Reviewer #1:

Reviewer #1 did not provide any comments and suggested publication as is.

Reviewer #2:

Comments on revised Pikmann et al.

The authors did a good job addressing the comments from myself and the other reviewer. Two important notes should be addressed from my initial review before publication.

(1) In the original paper, the authors claimed a difference was 'partially significant,' and I asked for clarification. They corrected the sentence to say, 'partially statistically significant' (Line 499-500). To my knowledge, there is no such thing as 'partially statistically significant.' Any 'significant' claim should be backed by a specific significance test (e.g., the Student's T-Test) and have a corresponding p-value. If the resulting p-value is lower than the accepted p-value for rejecting the null hypothesis (e.g., $p<0.05$), the authors can claim that a difference is significant, but there is no grey area with these tests. The result is either significant or it is not. Which significance test and p- value were used here?

Reply: Reviewer #2 is completely right. Of course, there is nothing like "partially significant" and this is not what we actually meant with the sentence. The sentence was unfortunately poorly worded from our side. Therefore, we revised the sentence:

"Therefore, the observed differences between the distributions for the different cooking methods were partially statistically significant."

Into what we really meant:

"Therefore, several of the observed differences between the distributions for the different cooking methods were statistically significant."

To determine significance, we did not use a dedicated significance test. We claim differences to be significant if the respective values disagree, taking their ranges of uncertainty (determined by, e.g., one standard deviation) into account.

The authors use the word 'significant' elsewhere in the text (Lines 252, 299, 345, 381, 383, 419, 427, 637, 701, 738). I believe that for many of these instances, they do not mean statistically significant, and the word should be replaced with e.g., 'substantially', 'notable', 'considerably', or 'to a marked extent'. Where the authors do mean statistically significant, they should denote the significance test used and the result (e.g., $p<0.05$).

Reply: Thank you for this important hint. We revisited all instances of "significant" or "significantly", which were mentioned by the reviewer. In lines 299, 345, 381, and 383 the word "significant" was actually used in its statistical meaning and we kept it as it was. In lines 252, 419, 427, 637, 701, and

738 it was not used in its statistical meaning and we replaced it by "substantial" or "substantially" in the revised version.

(2) Some grammar, especially in the introduction, requires further attention. Below are my line-by-line suggestions for improving the grammar and context for some of the claims.

Line 34-35: Change 'People tend to spend an increasing proportion of their time indoors, particularly in developed countries with about 90%, and are therefore exposed to indoor aerosol and its pollutants for long periods of time.'

Suggestion: 'People, especially in developed countries, spend a large portion of their time indoors (~90%), and are therefore exposed to indoor aerosol and other pollutants for long periods of time.'
Line 36-37: Change 'resulting health effects' to e.g., 'possible health effects of aerosol exposure'. Also, in line 36, when you write 'these pollutants', please specify what you mean. Is that aerosols? Or other pollutants which aren't mentioned?

Reply: We adopted the reviewer's suggestion.

Line 40: Change to 'Indoor aerosol composition is influenced by atmospheric infiltration, as well as multiple…'

Reply: We adopted the reviewer's suggestion.

Line 40 – 45: While evaporation/condensation could be a source of indoor particle mass, I think it is important to note that this an extremely minor source. The way it is currently worded as 'Aerosols can be generated by the evaporation…' also implies that evaporation is a source of new particle formation indoors, which I haven't seen, and is not supported by the Abbatt and Wang reference used in the paragraph. The Abbatt and Wang reference compares indoor surfaces and aerosol particles as potential surfaces for SVOCs to condense, and indoor surfaces are far more important than indoor aerosols. Major indoor aerosol sources are infiltration and combustion (including cooking), and I think that the review of these sources in line 40-45 should reflect that. I provided recommendations to edit the paragraph below.

Change 'Aerosols can be generated by the evaporation of substances…' to 'Though a relatively minor source, evaporation and subsequent condensation of substances from furnishings, building materials, and consumer products, can contribute to indoor aerosol mass.' In line 45, change 'strong indoor emissions' to 'high indoor emissions.'

Reply: We adopted the reviewer's suggestion.

Line 51: delete ‘through the stronger emissions’

Reply: We deleted “through the stronger emissions” as suggested by the reviewer.

Line 53: delete ‘such ones with’

Reply: We deleted “such ones with” as suggested by the reviewer.

Line 91: Original sentence: ‘The analysis of cooking emissions is challenging due to the high complexity of the emitted substance mixture, as well as the high emission dynamics with strong concentration variability during cooking.’

Suggestion: ‘The analysis of cooking emissions is challenging due to the complexity of the emitted mixture, as well as the emission dynamics and concentration variability during cooking.’

Reply: We adopted the reviewer’s suggestion.

Lin 598: Change ‘That oil-based cooking (e.g. deep-frying and stir-frying) results in higher particle number concentrations compared to water-based cooking (boiling and steaming) has also been observed by See and Balasubra…’

Suggestion: ‘Oil-based cooking (e.g. deep-frying and stir-frying) causing higher particle number concentrations compared to water-based cooking (boiling and steaming) has also been observed by See and Balasubra…’

Reply: We adopted the reviewer’s suggestion.

Line 626: Include the references used in figure 11 here and in the figure caption instead of just saying ‘from the literature’

Reply: We understand that all relevant information should be in the main text. However, the bars of the pollutant sources, which were used for comparison, were determined from multiple values from

multiple studies in the literature. No individual values from these references were included in Figure 11. Since the literature search resulted in 26 values from 26 publications, we decided not to include all these references in the main text and in the figure caption but to summarize them in the supplement. Including 26 references in the main text (and in the figure caption) seems us to be inappropriate and we prefer to refer to the supplement for this in-detail information.

We referenced Table S7 that includes all 26 references in the figure caption to make clear that the references are listed in the supplement.

Please let us know if you insist that we include this whole list of references in the main text. Then we will add it to the text.

Line 707-708: Change both instances of 'the one' to 'the fraction'

Reply: We changed both instances of "the one" to "the fraction", as suggested by the reviewer.