Review of
Rauber et al., An Optimised OC/EC Fraction Separation Method for Radiocarbon Source Apportionment Applied to Low-Loaded Arctic Aerosol Filters (https://doi.org/10.5194/egusphere-2022-625)

RC1: Comments by Anonymous Referee #2

RC1R: Reply on behalf of all co-authors

RC1:

Accepted as is.

RC1.01R

We thank the Anonymous Referee #2 for reading the revised manuscript and the positive feedback.

RC2: Comments by Anonymous Referee #1

RC2R: Reply on behalf of all co-authors

RC2.01:

Anyway, in the reviewer's opinion, there is still an aspect that must be modified.
The method cannot be considered validated. Thoroughly analysis of high-volume filters performed by the authors was needed for methodology development. But it cannot be claimed as a methodology validation – as no reference material exists, and intercomparison with other methodologies was not carried out.
This must be clearly stated in the conclusions and in par. 3.1 before manuscript publication.

RC2.01R:
We thank the Anonymous Referee #2 for reading the revised manuscript. We agree that the method cannot be seen as fully validated due to the unavailability of suitable reference material. We updated the manuscript and included a clear statement in 3.1 (line 366-367):

"Nevertheless, as no suitable reference material exists, the validation of this method is currently not possible and therefore it cannot be considered as fully validated."

as well as in the conclusion (line 550-551):

"Intercomparison with other methodologies are pending. Furthermore, complete method validation is not feasible due to the unavailability of suitable reference material."

RC2.02:

- Line 66: “pyrolyses into and forms”: please verify

RC2.02R:
We corrected the sentence by removing the word “into” (line 68).

RC2.03:

- Line 90: “quantification of EC losses and PC formation remain challenging”. Please check subject/verb conjugation (singular/plural)
RC2.03R:
We modified and improved the sentence accordingly (line 90-91).

RC2.04:

- Line 111: the added text: “if this provides sufficient filter loading” is totally obscure to the reviewer.

RC2.04R:
We agree that due to the length of the sentence this may be difficult to read. We changed the wording from “if this provides sufficient filter loading” to “if sufficient filter loading is provided” to be better understandable (line 109).

RC2.05:

- Line 293-295: another consideration reported in the answers to the reviewers merits to be added: “We cannot exclude, however, that PC formation that may have developed later in the temperature steps was masked by large EC losses. Nevertheless, we regard this as negligible, as the fractions of charring were anyway rather small

RC2.05R:
We thank the reviewer for this remark and added this missing information into the manuscript (line 290-292).

RC2.06:

- lines 519-536: independently of the number of samples, what is the time-covering of the periods considered in the different years? Are seasons suitably represented by the analysed samples (e.g. how many days per season are represented in the analysed samples)? If not, all the comparison among different years is nonsense.

RC2.06R:
The time covered overall is 175 days, of which 105 were sampled in 2017 and 70 in 2018. Overall, 49 days were covered in winter versus 126 days for summer. Although the periods covered between the seasons are different, we do not consider this time-covering inconsistent with the comparisons performed in this work.