

Response to editor:

Thanks for the editor's comments on the manuscript and the point-by-point responses are listed below.

Comment: I kindly ask you to answer the question below and also to consider and correct the following indicated typos for the acceptance of the manuscript.

Reply: Thanks for the comments.

Comment: Question:

How the optical diameter compares so well with mobility diameter when BC is thinly coated in Fig. R2 (author response file), as it shouldn't be spherical.

Reply: Thanks for the comments. The color in the figure represents the probability distribution of the optical diameter at a given mobility diameter. As noted in the figure, some uncertainties remain when comparing the mobility diameter and optical diameter of thinly-coated and thickly coated BC particles. If figure R1, the uncertainties of retrieved optical diameter of the thickly-coated BC is smaller than that of the thinly-coated BC particles, which is in agreement with the fact that the thinly coated BC is less spherical.

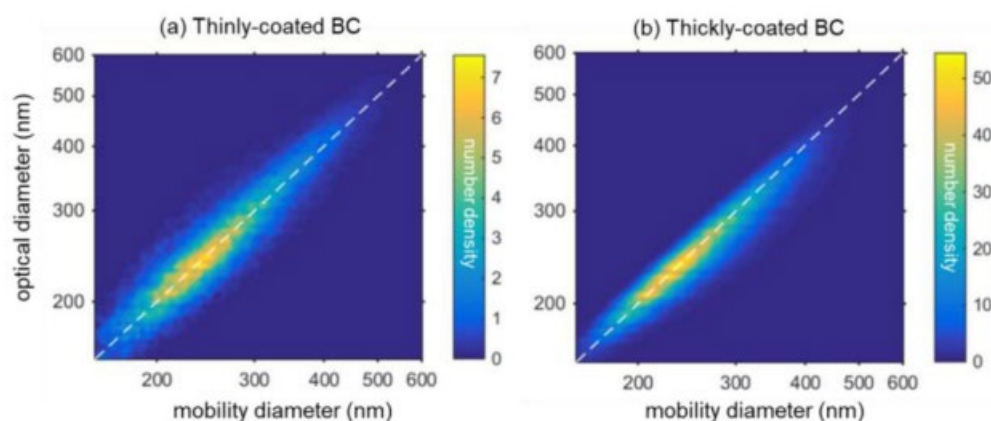


Figure R1. Comparison between optical diameter and mobility diameter for (a) thinly-coated BC and (b) thickly-coated BC.

Comment: Typos:

L150-156: Despite, sourced, two, containing.

L167: materials

L355: I believe the word “rather” is missing before “...than the thickly coated BC.”

L368: geometric

L369: ... comparable to Zhang et al. (2018a)...

L397: would coat

L400: add “be” before comparable.

Reply: Thanks for the comment. The typos are corrected correspondingly.

Comment:

Rewrite the sentences:

L150-153: That sentence is not readable/understandable.

Reply: Thanks for the comment. We have rewritten this paragraph.

Comment: L165-167: This sentence is not clear. “Details of distinguish the BC-containing...”? “Refer to section ...” which section, suppl or 3.4? Please, clarify.

Reply: Thanks for the comment. We have rewritten this paragraph.

Comment: L399: Do you mean transformation or transforming? Please clarify the sentence.

Reply: Thanks for the comment. We mean transformation here and the sentences were corrected correspondingly.