

Interactive comment on “Heterogeneous nucleation of water vapor on different types of black carbon particles” by Ari Laaksonen et al.

J. C. Corbin

joel.corbin@nrc-cnrc.gc.ca

Received and published: 27 April 2020

To this very interesting work, I would like to suggest that the authors briefly address the role of contact region between soot spherules (also known as monomers) in their discussion.

Since real soot particles typically contain at least a few spherules, menisci between these spherules may alter the curvature of any condensed phase water. While this well-known phenomenon (Butt and Kappl, 2009) is probably outside of the scope of the present work, it may be worthwhile to note at what point and by approximately what degree it might alter the authors' conclusions. For example, since capillary menisci form below saturation, how would the authors conclusions change for a particle in

C1

which capillary condensation is normally imagined?

I do realize that the macroscopic phenomenon of capillary condensation is not treated by a nucleation theory. I also realize that experimental data have already been presented. Hence, I expect that only a brief comment would be necessary to clarify this question. I apologize if such a comment was already made, and I missed it.

One might also hypothesize that the junctions between soot spherules may be important in the sense of being either more or less heterogeneous than the spherules. However, I am not aware of experimental evidence in support of this hypothesis.

Reference:

Butt, Hans Jürgen, and Michael Kappl. 2009. “Normal Capillary Forces.” *Advances in Colloid and Interface Science* 146 (1–2): 48–60. <https://doi.org/10.1016/j.cis.2008.10.002>.

Interactive comment on *Atmos. Chem. Phys. Discuss.*, <https://doi.org/10.5194/acp-2020-202>, 2020.

C2