

***Interactive comment on* “Technical Note:
Analytical formulae for the critical
supersaturations and droplet diameters of CCN
containing insoluble material” by H. Kokkola et al.**

Anonymous Referee #2

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General Comments:

In this work the authors derived analytical expressions for critical supersaturation and diameter, based on Köhler theory, for particles including an insoluble core. The paper is well written and is within the scope of ACP. Although the effect of the insoluble core on activation properties is usually small, it is good to have an easy way to verify this in cases where it may be important, as for example at low soluble fractions. Therefore I find the authors' results useful and recommend publication in ACP.

Minor Comments:

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Page 17970, line 8. A general reference (i.e. Seinfeld and Pandis, 1998) is needed here.

Page 17970, line 14. There is typo in "Köhler"

Page 17970, line 15. I think the way this statement is written suggests that Abdul-Razzak and Ghan (2004) parameterization is the only one that uses the critical diameter and supersaturation to calculate activated droplets. The statement may be written in a more general form including appropriate references (i.e., Twomey, 1959. Nenes and Seinfeld, 2003,...).

Page 17971, line 1. Although it has become "customary" to account for soluble fraction in this manner, it would be appropriate to include a pertinent reference here.

Page 17971, Line 26. I think a more appropriate term here is "suggest" as the authors did not consider the effect of surface tension on S^* calculations.

Since the symbol S^* was introduced earlier I think using it consistently long the paper (instead of repeating "critical supersaturation") may improve reading.

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 17967, 2007.

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