**Atmospheric
Chemistry
and Physics
Discussions**

Interactive comment on "Comment on Kokkola et al. (2008) –
Comparisons with analytical solutions from Khvorostyanov and Curry (2007) on the critical droplet radii and supersaturations of CCN with insoluble fractions" *by* V. I. Khvorostyanov and J. A. Curry

Anonymous Referee #1

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This paper comments a manuscript by Kokkola et al. (2008) in which an analytical expression is derived for the critical supersaturation for cloud droplets that have an insoluble core. The solution is compared against corresponding solution given by Khvorostyanov and Curry (2007). This paper shows that the conclusions in Kokkola et al. (2008) when comparing the results between Kokkola et al. (2008) and

Khvorostyanov and Curry (2007) are wrong and are based on an error in calculation. The paper is well written and presented in a clear and logical manner.

I suggest publishing the manuscript with a minor change of changing the conclusion that the differences between Kokkola et al. (2008) and Khvorostyanov and Curry (2007) come from an erroneous use of a plus/minus sign between the Kelvin and Raoult terms, to state that the differences result from an error in calculation by Kokkola et al. (2008). Nevertheless, the error in plus/minus by Kokkola et al. (2008) sign must be mentioned in this manuscript.

References

Khvorostyanov, V. I. and Curry, J. A.: Refinements to the Kohler's theory of aerosol equilibrium radii, size spectra, and droplet activation, J. Geophys. Res., 112, 10.1029/2006JD007672, 2007.

Kokkola, H., Vesterinen, M., Anttila, T., Laaksonen, A., and Lehtinen, K. E. J.: Technical note: Analytical formulae for the critical supersaturations and droplet diameters of CCN containing insoluble material, Atmospheric Chemistry and Physics, 8, 1985–1988, 2008.

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 9537, 2009.