Review of **"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 Khvorostyanov and Curry, submitted to *Atmos. Chem. Phys*.

Major comments.

This manuscript addresses inconsistencies described by Kokkola et al. (2008) (Kok08) between their analytic solutions and those of Khvorostyanov and Curry (2007) (KC07) for critical radius and supersaturation of partially soluble CCN. Kok08 show large differences in the solutions, especially at large soluble fractions. They do not describe specific reasons for these differences. The current paper describes possible reasons for these large differences. It is well-written and the presentation is in general clear, with a few exceptions as noted below. Overall I recommend acceptance pending the revisions (mostly very minor) detailed below.

The authors systematically discuss possible reasons for the differences shown in Kok08. Differences in the assumption of ideality of the droplet solution are found to account for < ~ 18% of the difference. The authors focus on an error in Eq. (1) of Kok08, which incorrectly describes the supersaturation. They find that when this error is corrected, then differences do not exceed 16-18%. However, this does not definitively rule out other causes of the difference. In light of the interactive comment by Dr. Kokkola suggesting that the error was caused not by the wrong sign in Eq. (1) of Kok08 but rather the wrong equation from KC07 used in the comparison of Kok08, the authors need to modify their discussion and conclusions accordingly.

Additional minor comments are enumerated below.

Minor comments.

1. p. 9539, line 12-13. It might be helpful to state here that the differences shown in Kok08 up to 100% applied to large soluble fraction.

2. p. 9539, line 15. "The possible reasons of this difference…" should be "The possible reasons for this difference…"

3. p. 9540, eq (2). r is not explicitly defined here. I assume it is the drop radius.

4. p. 9540, line 19. "…this allows to consider…", suggest "…this allows one to consider…"

5. p. 9541, eq (4). Dp is not explicitly defined. I assume this is drop diameter.

6. p. 9541, eq (6). The equivalency of A_F, B_F, and A,B indicated in eq (6) should be clarified here. Below this equation, the authors describe how eq (6) holds true only when dilute approximation is also assumed for A and B (it is assumed for A_F and B_F). I realize this is explained in the text below this equation, but I would suggest modifying line 8 to something like "It is easily shown that when the dilute approximation is applied to B,"

7. p. 9542, line 7. "…is obtained from the equation $ds(r_{cr})/dr_{cr}$ with…". It should be clarified that the solution is obtained from condition of the maximum, $ds(r_{cr})/dr_{cr} = 0$.

8. p. 9543, line 4. "One possible reason of the discrepancy…", should be "One possible reason for the discrepancy…"

9. p. 9544, eq (17) and following text. Should $\alpha 1$ appear somewhere in this equation? Otherwise, why is this parameter mentioned at all? I note that the authors have taken this directly from Kok08, so if it is a mistake, it seems to have originated in that paper.

10. p. 9546, line 9. "dor" should be "for".

11. Figure 2. I know what the authors are describing here, but they do not explicitly define Φ_{s1} and Φ_{s2}. This should be clarified in the figure caption.