

The manuscript “External and Internal Cloud Condensation Nuclei (CCN) Mixtures: Controlled Laboratory Studies of Varying Mixing States” presents the results of testing and validating the CCN activation with multicomponent and varying mixing state under controlled laboratory conditions. Mixing state is important for CCN concentrations and it is interesting to test the relationship the CCN activation with mixing state in laboratory studies.

I did not read the manuscript of previous version. For this version, I have a few specific comments.

1. The manuscript claims that “the aerosol mixing state can be observed in CCN activation data and can thus be revisited in complex aerosol data sets to understand the extent of mixing” (L392-394, and something similar in the abstract (L39-40)). In this study, two-components mixture were used and a plateau was found for the external mixing case. I am curious how well the plateau can be resolved when aerosol contains more than two components, say three or five components. It might look like a continuous activation curve. Therefore, it would be helpful to discuss the limit of this approach.  
Also L286-288, “Results utilizing CCN activation data for aerosols <50nm may be a good substitute for estimating aerosol chemical fractions when other instruments with lower size resolution are not readily available.” This may be difficult if aerosol contains more than two components.
2. Fig. 3, in the caption, it is mentioned that “Dashed lines indicate 20% uncertainty.” What does this uncertainty exactly mean? The lines are of 0.8:1 and 1.2:1 lines? It seems to be not the case according the values in the figure. I have similar questions for Fig. 5 and Fig. 6.
3. L261-264, it is very interesting to attribute the change of mixing state to minute water content. Have the authors also considered the possibility of effect of heating on the size of SA particles? If the size distribution changes, the coagulation efficiency of SA and AS may change, which will also affect the mixing state.
4. L332-334, it would be helpful for readers to understand if the  $D_{50}$  values of NaCl and AS were provided.
5. Legends of Fig. 9 are missing.
6. L380-382, “...which have attributed increases in plateau height to ***the extent of internal mixing of hygroscopic materials on externally mixed inactivated aerosols.***” This phrasing seems to be confusing for me.