

## ***Interactive comment on “Size-resolved and bulk activation properties of aerosols in the North China plain: the importance of aerosol size distribution in the prediction of CCN number concentration” by Z. Z. Deng et al.***

### **Anonymous Referee #3**

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In the full review and interactive discussion the referees and other interested members of the scientific community are asked to take into account all of the following aspects:

1. Does the paper address relevant scientific questions within the scope of ACP? Yes.
2. Does the paper present novel concepts, ideas, tools, or data? Yes.
3. Are substantial conclusions reached? A good conclusion is suggested.
4. Are the scientific methods and assumptions valid and clearly outlined?

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(1) Please explain measurement places (roof of high building?) and methods.

(2) The explanation of the data analytical procedure is insufficient. Please describe the data analytical procedure in more detail.

(3) The relationships between observation data and analytical results such as Table 2 and Figures 4, 5, 6 and 8 are not clear. Did the authors use average values of all data obtained from the observation sites?

5. Are the results sufficient to support the interpretations and conclusions?

(1) The authors assume that the aerosol is chemically and morphologically externally mixed in some parts such as pages of 10 and 14. But Fig. 4 strongly suggests that the aerosol is considerably uniformly mixture with insoluble and hygroscopic materials because distribution of inferred critical dry diameters is comparatively narrow (Fig. 4).

6. Is the description of experiments and calculations sufficiently complete and precise to allow their reproduction by fellow scientists (traceability of results)?

(1) It is not easy to understand the deriving method of (average) size-resolved activation ratio, calculated CCN concentration and some physical values and/or parameters.

(2) Please write Fig. 7 precisely and carefully.

7. Do the authors give proper credit to related work and clearly indicate their own new/original contribution?

(1) The importance of aerosol size distribution in the prediction of CCN number concentration may not be a result to be able to say generally.

8. Does the title clearly reflect the contents of the paper?

(1) The title does not sufficiently reflect the contents of the paper.

9. Does the abstract provide a concise and complete summary? OK

10. Is the overall presentation well structured and clear? The overall presentation is a

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little not well structured and clear. ?

11. Is the language fluent and precise? Polish of English in sentences is better.

12. Are mathematical formulae, symbols, abbreviations, and units correctly defined and used?

(1) It is better to explain the some parameters of Kelvin equation, Kohler equation and other equations in more detail.

13. Should any parts of the paper (text, formulae, figures, tables) be clarified, reduced, combined, or eliminated?

(1) It is better to explain the some parameters of Kelvin equation, Kohler equation and other equations in more detail.

14. Are the number and quality of references appropriate?

(1) Please refer some papers for Kelvin equation, Kohler equation and other equations.

15. Is the amount and quality of supplementary material appropriate? ?

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Interactive comment on Atmos. Chem. Phys. Discuss., 11, 1333, 2011.