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Atmospheric Chemistry and Physics Discussions

Interactive comment on "The Cloud Condensation Nuclei (CCN) properties of 2-methyltetrols and C3–C6 polyols from osmolality and surface tension measurements" *by* S. Ekström et al.

Anonymous Referee #1

Received and published: 29 October 2008

This paper presents experimental data and analysis the CCN abilities of highly soluble organic materials such as sugars and sugar alcohols. Measured results of surface tension and osmolality from bulk solutions were used to predict CCN behavior. This is a good paper overall however it is lacking supporting data/figures for the claims that are made. The important final conclusion - that the CCN activities of highly soluble compounds like sugar are not more CCN active as organic acids - is not as surprising of a conclusion as the authors claim. It is currently suitable for publication after necessary revision. Some general and specific comments by page and line number are given below:

There are no tables or figures comparing the results from this work to other published data. These must be included and variability discussed. It is not sufficient to simply list the papers and state that they are in "excellent agreement". I consider this a minimum requirement before publication.

It would be very simple to have some experimentalists run some of these sugar compounds on a real CCNC and compare that data to theory. With the commercial availability of the DMT CCNC, I would suggest the authors collaborate with someone willing to run the experiment. This would likely only take 1-2 days for someone to run and analyze the data and it would help enormously to confirm the applicability of the method used (not original to this work) and to support the conclusions of the sugars (the key point of this paper).

Could this method of osmolality and surface tension be used to calculate the real van't Hoff factor for compounds? It seems this would be a simple calculation which would add a valuable piece of data to the paper - data useful to other researchers in this area.

P17238 L10: "Contrary to what WAS expected." However, I'm not sure why this was expected to begin with. Perhaps what was hypothesized...

P17238 L17: Similarly, who has suggested this?

P17239 L8-11: The reads poorly and needs re-written.

P17241 L22: Why 60 nm?

P17242 L23-24: These curves that prove excellent agreement must be shown or compared in a data table. Information on how the current work deviates from other studies should also be shown.

P17243 L10: ...in contrast to what WAS expected,...

P17245 L18-21: I would argue that the Kohler curve was NOT determined experimentally but was calculated from experimental data. This part should be re-worded to be

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Interactive Comment

more accurate. Again, the claim of "excellent" agreement must be verified before publication.

Table 2: Include details about the 20 wt% salts in the table or in the description of the table.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 17237, 2008.