

## ***Interactive comment on* “Technical note: A method for measuring size-resolved CCN in the atmosphere” by G. P. Frank et al.**

### **Anonymous Referee #2**

Received and published: 10 July 2006

Review of "Technical note: A method for measuring size-resolved CCN in the atmosphere" by G.P. Frank, U. Dusek, M.O. Andreae

This technical manuscript presents a method to scan CCN activity of aerosols as a function of particle size and supersaturation using two different CCN counters and a DMA. The results include activation curves, CCN spectra, and CCN size distributions which are important in assessing chemical effects and establishing appropriate boundary conditions for models. The authors then present results from a controlled laboratory experiment on biomass burning. However, they do not present adequate evidence to support their conclusions, limiting the evaluation and application of the method. I feel that the authors' interpretations should be reformulated before this paper is published in ACP and offer the following points for consideration.

– The manuscript makes an implicit assumption that the output from the classifying DMA to the CCN instruments follows theoretical transfer functions (section 2). The authors did not present results to support this claim, which is central to interpreting the results from their laboratory and field experiments. In section 3, the authors mention that SEM images indicated a large fraction of peat fires were hollow. As calculations of charge and electrical mobility assume spherical particles, the different shapes of particles will influence the output of the classified aerosol.

– The results from the fire experiments (figure 4b) show broadening of the activation curves, which the authors interpret as a change in mixing states. However, they do not support this claim with data on the aerosol chemistry. Also, based on the comment above, I contend that the broadening was caused by non-spherical particles that bias the transfer function.

– The activation curves and CCN spectra in figure 2 were based on 5 points, yet the CCN size distribution has 30 points. The resolution for the CCN size distribution is artificially high. Linear interpolation between the points is misleading because the sharpness of the activation curve depends on the sharpness of the output from the DMA.

– Figures 2 and 3 would be clearer if colored lines are used to distinguish activation curves and CCN spectra.

---

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 4879, 2006.

[Full Screen / Esc](#)[Printer-friendly Version](#)[Interactive Discussion](#)[Discussion Paper](#)