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Interactive comment on "Heterogeneous freezing of water droplets containing kaolinite and montmorillonite particles" *by* B. J. Murray et al.

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Recent work on the immersion freezing behavior of droplets containing single Arizona Test Dust (ATD) particles (Niedermeier et al. 2010), shows results (fraction of droplets frozen versus temperature) that are similar (within error bars) to the 0.005 wt% Kaolinite solution described in the current paper. The measurements were made with the Leipzig Cloud Aerosol Simulator (LACIS), where cloud droplets were activated and grown by vapor diffusion on monodisperse (size selected) ATD particles. In our opinion, differences in results obtained for ATD in different studies are at least partly due to the use of polydisperse dust versus size segregated dust particles. As already stated by Marcolli et al. (2007): "For a stricter validation, freezing experiments of size-selected ATD samples are needed.".

We also note that a two-parameter parameterization of nucleation rates for immersion freezing based on classical nucleation theory (CNT) was introduced by Niedermeier et al. (2010), which is similar to the formulation given in your work.

We suggest that these points should be discussed in your work in order to place the results in context with prior work.

Literature:

Marcolli, C., S. Gedamke, T. Peter, and B. Zobrist (2007), Efficiency of immersion mode ice nucleation on surrogates of mineral dust, Atmos. Chem. Phys., 7, 5081-5091.

Niedermeier, D., S. Hartmann, R. A. Shaw, D. Covert, T. F. Mentel, J. Schneider, L. Poulain, P. Reitz, C. Spindler, T. Clauss, A. Kiselev, E. Hallbauer, H. Wex, K. Mildenberger, and F. Stratmann (2010), Heterogeneous freezing of droplets with immersed mineral dust particles – measurements and parameterization, Atmos. Chem. Phys., 10, 3601–3614.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 9695, 2010.