

Interactive comment on “Measurements of cloud condensation nuclei activity and droplet activation kinetics of fresh unprocessed regional dust samples and minerals” by P. Kumar et al.

Anonymous Referee #2

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In this manuscript Kumar et al. present measurements on the CCN activation of different types of insoluble dust particles and find that the FHH adsorption theory of CCN activation appears to agree better with the experimental data than traditional Köhler theory. This is a significant result and very appropriate for publication in ACP. In general, I find this paper is well written and that the argumentation is clear. There is only one relatively minor aspect that I would like to see discussed that is currently missing. That is, with nonspherical particles, what is the diameter used in the Kelvin term? I believe that a correct description is given in the book of Defay et al. (see also Romakkaniemi et al., 2001), however, the actual shape of the particles should then be known. Obviously, the particle will remain nonspherical still after adsorption of several

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water layers but tend to get more and more spherical with addition of each layer. What in general is the number of monolayers at activation? Does the adsorbed water affect the particle shape and in what way? How much are the FHH parameters' values affected by the nonsphericity?

Defay R. et al., Surface Tension and Adsorption, Longmans, London (1966) pp. 292-301

Romakkaniemi S. et al., J. Chem. Phys. A 105, 8183 (2001)

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