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Atmospheric Measurement Techniques Discussions

Interactive comment on "Probing ice-nucleation processes on the molecular level using second harmonic generation spectroscopy" *by* A. Abdelmonem et al.

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Thank you very much for clarifying the nature of the ice nucleation in your experiment and I am happy that we agree on this matter. Thank you also for providing the volume of the sample cell, but for the sake of completeness it might be useful to know the area of the water substrate (mica or sapphire) interface as well. I am not sure that complete wetting (an advancing contact angle of zero) can necessarily be inferred from the fact that a droplet deposited on the surface spreads immediately. How far it spreads is the important point. Complete wetting implies spreading without bounds. An instructive experiment is to compare the behaviour of a water droplet and a methanol droplet on

mica. Methanol shows complete wetting, and as the drop spreads the liquid film around the edges becomes thin enough to show interference colours, and the perimeter of the droplet becomes wavy due to instabilities of the three-phase line. I have never seen water on mica behave in this manner. To measure the contact angle of water on mica we use the fact that a sufficiently small droplet of low contact angle assumes the shape of a spherical cap as it is undistorted by gravity. If the perimeter is circular the contact angle may be calculated from the radius of the base of the droplet and its volume – typically a few microliters only. On freshly cleaved mica we obtain values in the range 3-4 degrees. I acknowledge that this is of little practical importance for your work, but from a theoretical perspective the difference between a contact angle of 0 and one of a few degrees can be very significant!

Interactive comment on Atmos. Meas. Tech. Discuss., 8, 5265, 2015.