

Interactive comment on “Cloud chamber experiments on the origin of ice crystal complexity in cirrus clouds” by M. Schnaiter et al.

M. Schnaiter

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Dear Anatoli,

Thank you for these valuable comments on the formation of freeze-concentrated solution (FCS) compounds during the homogeneous ice nucleation in aqueous solution aerosol. We certainly will take your recent publications into account when revising the introduction and results sections. However, by reading your recent publications, I'm still not convinced that the FCS forms a (complete) coating of the ice particles. From the micrographs shown in your papers, you can hardly tell where the FCS is located and whether it forms a complete coating or not. The fact that ice particles sometimes are highly structured does not necessarily mean that this is induced by the phase separation during the freezing process. As we have shown in the discussion paper,

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the amount of condensable water vapor that is available during the subsequent growth of the ice particles is a driving factor for the formation of surface complexity. This was also observed in recent freezing and growth experiments with supercooled pure water droplets (1). As you have mentioned, the ice particles stay near-spherical during the freezing process, but they can exhibit a strong surface complexity according to the subsequent depositional growth.

1. Järvinen, E., et al.: Near-spherical ice in convective clouds. *Journal of the Atmospheric Sciences*, submitted, 2015

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