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# Does deposition freezing really exist? At least different as we thought

Ahmed Abdelmonem

Karlsruhe Institute of Technology (KIT) - Institute of Meteorology and Climate Research, Atmospheric Aerosol Research, Karlsruhe, Germany (ahmed.abdelmonem@kit.edu)

The structural and chemical properties of the surface of an IN-particle (INP) play a major role in its IN ability. This role is not well explored in terms of water/INP-surface molecular-level interactions. Recent MD simulations on deposition freezing showed that water first deposits as liquid clusters and then crystallize isothermally from there [1]. We probe freezing of water on INPs of different structural and chemical properties under varying supersaturation conditions using non-linear optical spectroscopy, mainly second harmonic generation (SHG) and sum frequency generation (SFG) [2, 3]. This presentation will show very recent preliminary experimental results comparing deposition, condensation and immersion freezing (DF, CF and IF respectively) on an atmospheric relevant metal oxide surface (mica) using supercooled SHG measurements. It is found that the signal drops upon the formation of a thin film regardless of 1) the freezing path (DF or CF), 2) the formed phase (ice or liquid), indicating a similar molecular structuring. The observed structuring similarity between DF, CF and LC films is a kick-off experimental confirmation of those computational results.

References

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