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Incrustation of wet dirt on glass surfaces through convective drying

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## Abstract

The macroscopic and microscopic structural patterns formed during the convective drying of aqueous suspensions of dirt (mixture of dust, salt and water) on glass surfaces are investigated. The effects of dust size distribution, convective airflow temperature and velocity on the morphology of the deposited dust aggregates and salt crystals are studied. The critical removal forces necessary to leave behind a clean surface is experimentally determined. Drying at high temperature would cause a strong evaporation rate gradient leading to formation of salt rings and “cauliflower growths”, while drying at low temperature results in large individual crystals. The critical removal forces also correlate to these deposition patterns with the more raised structures requiring the lowest removal force. The strongest adhesive contacts are observed for samples with smoother morphology. The latter usually forms at high level of salt supersaturation (fast drying) in the presence of dust particles.

Keywords: Incrustation, Drying suspensions, Deposition patterns

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