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Crystal deposition patterns from evaporating sessile drops on superhydrophobic and liquid impregnated surfaces SAMANTHA MCBRIDE, SUSMITA DASH, KRIPA VARANASI, Massachusetts Institute of Technology, VARANASI GROUP TEAM — Accelerated corrosion and scale buildup near oceans is partially due to deposition of salty sea mist onto ships, cars, and building structures. Many corrosion preventative measures are expensive, time intensive, and/or have negative impacts on the environment. One solution is the use of specific surfaces that are engineered for scale resistance. In this work, we show that we can delay crystallization and reduce scale adhesion on specifically engineered liquid impregnated surfaces (LIS). The low contact angle hysteresis of the LIS results in a sliding contact line of the saline droplet during evaporation, and the elevated energy barrier of the smooth liquid interface delays crystallization. Experiments conducted on surfaces with different wettability also demonstrate the corresponding influence in controlling salt crystal polymorphism.

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