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Shielding Surfaces with Texture HENRI-LOUIS GIRARD, DAN SOTO, THOMAS BINDER, KRIPA VARANASI, Massachusetts Inst of Tech-MIT — We show an order of magnitude reduction in the interaction of an impacting droplet on a substrate, as defined by the integral of the wetted area over time. This interaction parameter describes the chemical, thermal of mass transport than occurs as the liquid is in contact with the underlying solid. The reduction is achieved through a macrotexture imprinted on the hydrophobic solid. We establish design guidelines to optimize the texture parameters as a function of drop diameter and Weber number. Finally, we show how this texture can be replicated and shield a surface from transferring heat to impinging droplets.

Henri-Louis Girard
Massachusetts Inst of Tech-MIT

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