

Abstract Submitted
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Shaping drops with textured surfaces QUENTIN EHLINGER,
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When a drop impacts a substrate, it can behave differently depending on the nature
of the surface and of the liquid (spreading, bouncing, resting, splashing). Under-
standing these behaviors is crucial to predict the drop morphology during and after
impact. Whereas surface wettability has extensively been studied, the effect of sur-
face roughness remains hardly explored. In this work, we consider the impact of
a drop in a pure non-wetting situation by using superheated substrates i.e. in the
Leidenfrost regime. The surface texture consists of a well-controlled microscopic
defect shaped with photolithography on a smooth silicon wafer. Different regimes
are observed, depending on the distance between the defect and the impact point
and the defect size. Comparing the lamella thickness versus the defect height proves
relevant as the transition criteria between regimes. Others characteristics of the
drop behavior (direction of satellite droplet ejection, lamella rupture) are also well
captured by inertial/capillary models. Drop impacts on multiple defects are also
investigated and drop shape well predicted considering the interactions between the
local flow and the defects.

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