

Abstract Submitted  
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**Yield-stress fluid drop impact on heated surfaces** BRENDAN BLACKWELL, ALEX WU, RANDY EWOLDT, Univ of Illinois - Urbana — Yield-stress fluids, including gels and pastes, are effectively fluid at high stress and solid at low stress. In liquid-solid impacts, these fluids can stick and accumulate where they impact, motivating several applications of these rheologically-complex materials. Here we use high-speed imaging to experimentally study liquid-solid impact of yield-stress fluids on heated surfaces. At low temperatures yield-stress fluids tend to stick to surfaces and leave a coating layer. At sufficiently high temperatures the Leidenfrost effect can be observed, wherein a layer of vapor is created between the material and the surface due to rapid boiling, which can prevent a droplet of yield-stress fluid from sticking to the surface. In this study rheological material properties, drop size, drop velocity, and surface temperature are varied to characterize behavioral regimes. Material sticking to and releasing from the surface is observed as a function of the input parameters.

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