

Abstract Submitted
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Spreading and Arrest of Molten Liquid on Solid Substrates FAR-YAR TAVAKOLI, PIROUZ KAVEHPOUR, UCLA — When a drop is placed on a solid surface with temperature below solidification temperature, it comes to arrest at a finite time after deposition. This problem has a wide range of applications in engineering such as coating, ink jets and 3D printers. In the last 10 years, there have been very few studies of this paramount phenomenon. The physical parameters of the liquid and the substrate as well as spreading speed affect the arrest radius, the contact angle at arrest point, and time of arrest. Here, we use several different fluids to study these properties on the outcome of the spreading dynamics. The fluid is deposited using a syringe pump system to provide a constant flow rate for deposition. The evolution of wetting contact angle and base diameter of spreading drops were measured by a high speed digital camera. A parametric study of the radius of arrest and the arrested contact angle is provided.

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