

Complex Drop Wetting and Impact Dynamics

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Droplet-surface interactions are paramount for a myriad of natural processes and industrial applications, such as wetting, drying, coating, spraying, cooling, combustion, and surface engineering. In this talk, I'll talk about drop wetting, evaporation, and impact on micro/nano-textures, primarily with experiments. Firstly, I'll discuss how surfactant concentration would affect complex drop wetting and evaporation on superhydrophobic surfaces. Secondly, I'll show the profound effects of surface roughness on drop impact outcomes when hitting on heated nanostructures. For instance, the heated nanotextures of high roughness can easily trigger splashing and central jetting events. The dynamic Leidenfrost temperature for low Weber number ($We = 10$) is decreased by the high-roughness nanotextures, compared with the flat surface. Our results show the profound influences of surfactant concentration and surface roughness on complex drop wetting and the impact on heated surfaces, respectively.



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