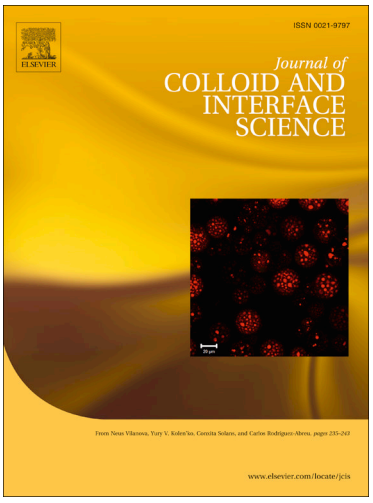

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Towards the Shortest Possible Contact Time: Droplet Impact on Cylindrical Superhydrophobic Surfaces Structured with Macro-Scale Features

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Abstract

Hypothesis- Recently, it has been shown that the contact time of impacting water droplets on a superhydrophobic cylindrical surface decreases when its radius becomes comparable to that of the droplet, yet the correlation of this reduction with the impact velocity is unclear. Moreover, on a flat surface, experiments involving the addition of a single macrotexture, along with covering the surface with macroscopic cylindrical ridges (ribbed pattern), have been reported to shorten the contact time. Hence, a ribbed-curved surface with an additional macrotexture may logically lead to a very short contact time.

Experiments - Such a surface was obtained by utilizing an extruder-type 3D printer and a copper wire was used as the additional macrotexture. The bouncing of water droplets of three different volumes on curved and ribbed-curved samples with two different diameters was investigated for varied impact velocities.