

Supplementary Material

Exploring the Role of Droplet Initial Position in Coalescence-Induced Droplet Jumping: Lattice Boltzmann Simulations

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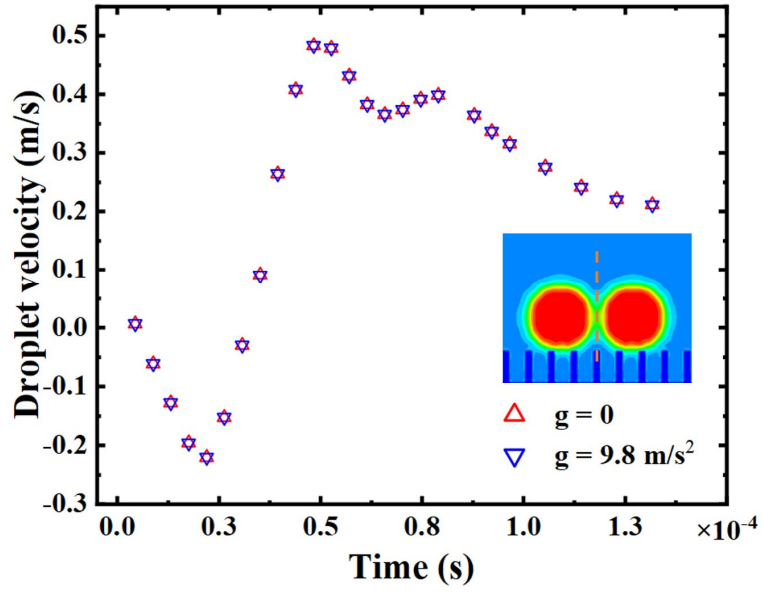


Figure S1. Simulation results of velocity-time evolution with and without gravity. The initial state of two droplets are shown in the picture with surface apparent contact angle $\sim 150^\circ$. Therefore, it is reasonable to ignore the effect of gravity.

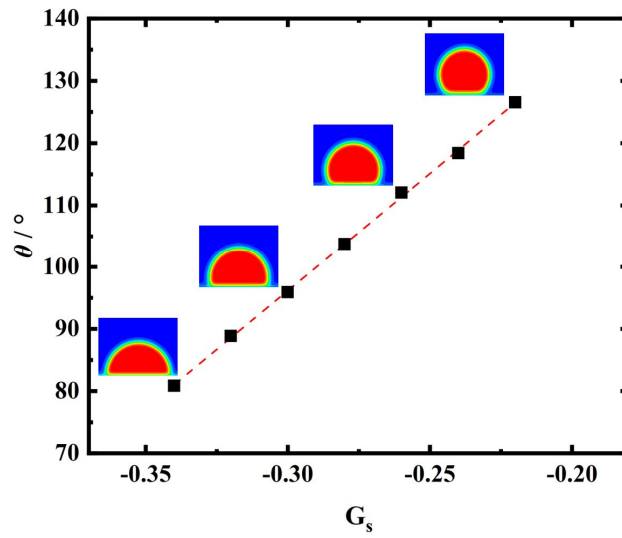


Figure S2. Simulation results of contact angles with different G_s , where G_s is the interaction strength between solid and fluid for controlling the wetting conditions (contact angles).

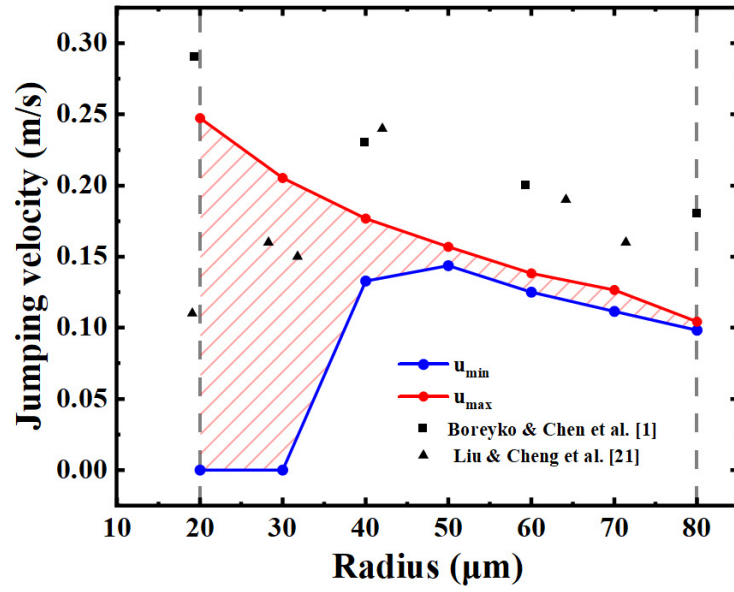


Figure S3. The comparison of simulated jumping velocities after droplet coalescence with experimental results.

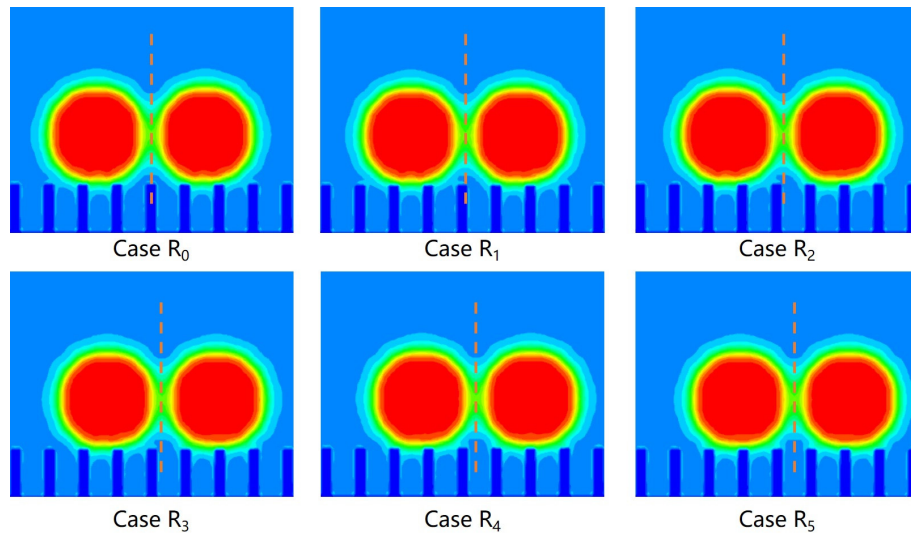


Figure S4. Different initial positions of Case R_j ($j = 0 \sim 5$). The initial position of the droplet pair is indicated by the mutual tangent of two droplets (the dotted line).

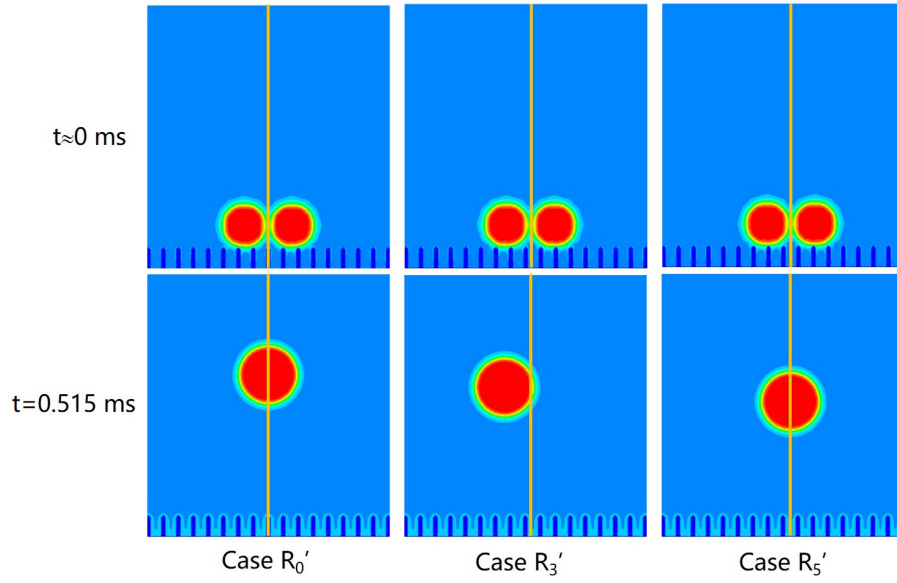


Figure S5. Simulation results of droplet coalescence on the refined surface where the initial position of Case R'_j ($j=0, 1, 2, 3, 4, 5$) corresponds to Case R_j . The coalesced droplet of Case R'_5 successfully jumps up from the new surface compared with Case R_5 .

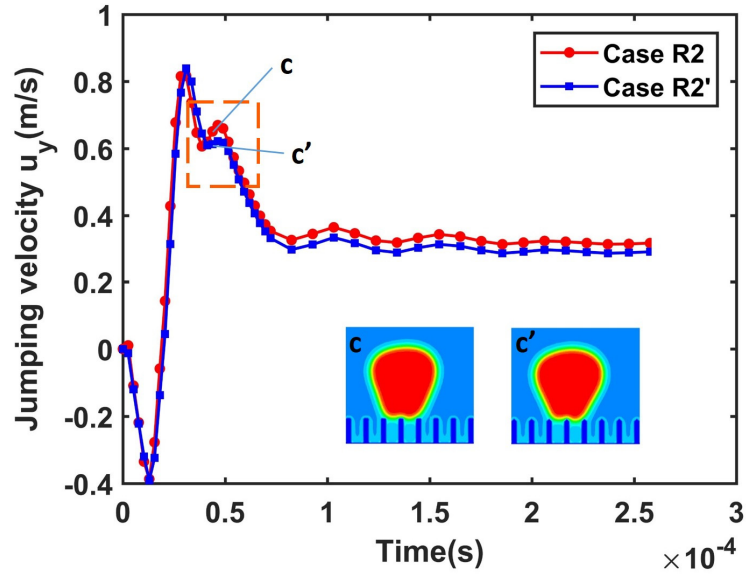


Figure S6. Comparison of droplet velocity-time evolution in Case R2 and Case R2'. The vertical velocity mainly varies during droplet deformation without detaching micropillars when only under the counteractive force from the pillars.