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Breakup Behavior of a Capillary Bridge on a Hydrophobic Stripe Separating Two Hydrophilic Stripes[1] MAXIMILIAN HARTMANN, STEFFEN HARDT, TU Darmstadt — The breakup dynamics of a capillary bridge on a hydrophobic area between two liquid filaments occupying two parallel hydrophilic stripes is studied experimentally. In addition calculations with the finite-element software *Surface Evolver* are performed to obtain the corresponding stable minimal surfaces. Droplets of de-ionized water are placed on substrates with alternating hydrophilic and hydrophobic stripes of different width. Their volume decreases by evaporation. This results in a droplet shaped as the letter "H" covering two hydrophilic stripes separated by one hydrophobic stripe. The width of the capillary bridge $d(t)$ on the hydrophobic stripe during the breakup process is observed using a high-speed camera mounted on a bright-field microscope. The results of the experiments and the numerical studies show that the critical width d_{crit}, indicating the point where the capillary bridge becomes unstable, mainly depends on the width ratio of the hydrophilic and hydrophobic stripes. It is found that the time derivative of $d(t)$ first decreases after d_{crit} has been reached. The final breakup dynamics then follows a $t^{2/3}$ scaling.

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