

Abstract Submitted
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Delayed Singularity Formation in Fiber-Reinforced Dripping Liquids by Hindering Extensional Flow LUDOVIC KEISER, TRISTAN AURGAN, MATHIAS BECHERT, FRANOIS GALLAIRE, EPFL, Lausanne, Switzerland — We study the dripping dynamics of highly viscous liquid cylinders suspended from their upper base. The flow is extensional, gradually accelerates and exhibits a singularity at a finite time. For pure liquids, the necking follows a self-similar dynamics controlled by the balance of gravity and viscous dissipation. Adding dilute rigid fibers in the liquid dramatically modifies the dynamics. Initially, the presence of the fibers hinders the extensional flow and a slow shear-dominated flow gradually separates the fibers. After a delay controlled by the initial configuration of the fibers, the self-similar regime is recovered, as the extensional flow is restored. We present experimental and numerical results supported by scaling analysis.

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