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Tunable Transport of Drops on a Vibrating Fiber ALISON BICK, ALBAN SAURET, FRANCOIS BOULOGNE, HOWARD STONE, Princeton Univ — Transport of liquid drops on a fibrous medium is common in engineering systems such as fog harvesting and textile cleaning. The control of the drop movement on fibrous media can make these engineering systems more efficient. We investigated how to move drops along a single inclined fiber by controlling fiber vibration. Drop motion: static, sliding or falling, depends on the fiber inclination angle, drop volume, and the distance of the drop from the vibrating source. Specifically, by vibrating the fiber the transition between the three drop motion states can be controlled. By defining the response of drop movement to vibration frequency, we can model the drop movement transition. This knowledge is directly useful for controlling drop movement on the fiber. In particular, we experimentally demonstrated that vibration frequency can be used to transport a drop along a fiber.

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