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Anisotropic wicking SOHYUN JUNG, Seoul National University, WONJUNG KIM, Sogang University, HO-YOUNG KIM, Seoul National University — Capillarity-driven wicking of liquids into porous substrates follows Washburn's rule, in general. Here we show that the wicking dynamics are substantially altered when the substrates are structurally anisotropic or soluble in the liquids. First, when the polymer fibers are aligned in one direction, the non-reactive liquid wicks fast along the direction of the fibers following Washburn's rule while the wicking still occurs across the fibers exhibiting a power law different from Washburn's rule. Second, when the polymer is soluble in the liquid, the wicking occurs dominantly across the fibers rather than along them, contrary to our intuition. We show that the rate of soluble wicking is determined by viscosity but independent of surface tension of the solution.

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