

Abstract Submitted
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Curling paper ETIENNE REYSSAT, PMMH-ESPCI, L. MAHADEVAN, Harvard University — As many soft materials, paper is mechanically sensitive to humidity. Owing to its hygroscopic cellulose-based structure, it is known to wrinkle when subject to humidity fluctuations. Here, we present experimental results on the more extreme deformations observed when a sheet of tracing paper is put on a bath of water. After contact with the liquid surface, water diffuses into the hygroscopic material from below and induces differential swelling, resulting in the curling of the paper. Within seconds, a spectacular roll-up motion follows. We explain the observed shapes and curling dynamics.

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