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Thin-films flows over microtextured surfaces: Polygonal water sheets ADRIAN P. DELANCY, EMILIE DRESSAIRE, LAURENT COURBIN, HOWARD A. STONE, SEAS, Harvard University — We study water sheets and bells resulting from the impact of a water jet onto circular targets of comparable diameter. Depending on the physical properties of the target surface, which may or may not be covered with a roughness at the micron-scale, i.e. arrays of cylindrical micron-size posts arranged on regular lattices, we obtain a variety of stable shapes including circles and polygons such as hexagons, eight corner stars. We vary the topographic features (height of the posts, lattice distance and geometry) and the jet properties (size of the nozzle, flow rate) and we measure the size and shape of the liquid sheet. We rationalize our results by taking into account the additional friction induced by the lattice providing a fluid velocity that depends on the orientation of the lattice.

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