Polyhedral spreading by imbibition of liquids on micro-decorated surfaces LAURENT COURBIN, ETIENNE DENIEUL, EMILIE DRESSAIRE, MARCUS ROPER, ARMAND AJDARI, HOWARD A. STONE, DEAS, Harvard University — We report on the dynamics of imbibition of liquid droplets on topographically patterned surfaces, i.e. assemblies of cylindrical posts arranged on square lattices. In the case of partially wetting fluids, spreading proceeds by imbibition of the textured part of the surface without spreading of the macroscopic drop. By varying the liquid/substrate equilibrium contact angle and the topography features (height of the posts), we obtain various final shapes of the spreading droplets (octagons, squares, circles) and rationalize these observations using simple physical arguments.

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