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Liquid Drop Pinning on Micro-patterned Surfaces AHMED SOLIMAN, YEVGENIY KALININ, ROBIN BAUR, ROBERT THORNE, LASSP, Cornell University — Pinning of liquid drops on surfaces is important in many areas of biotechnology. Micro-patterned surfaces provide a way to control drop pinning, and to investigate the mechanisms of pinning on real (rough) surfaces. Continuous circular rings on silicon wafers produced by etching the interior and surrounding silicon are shown to dramatically increase contact line pinning. The critical apparent contact angles and liquid drop volumes are measured and correlated with parameters that describe the ring geometry, such as ring-wall height and width, as well as with ring surface energy (hydrophilicity / hydrophobicity). Micro-patterning of surfaces in this way can be used to improve drop pinning, shape reproducibility and imaging in high-throughput protein crystallization.

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