

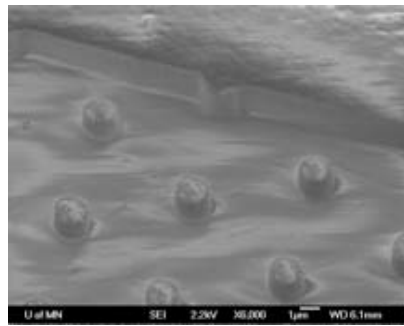
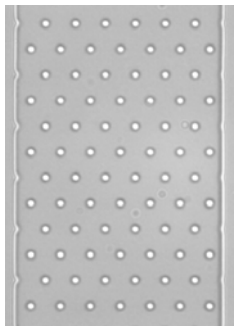
DNA Electrophoresis in Microfabricated Arrays

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NNIN Facilities utilized: Characterization Facility & Nanofabrication Center

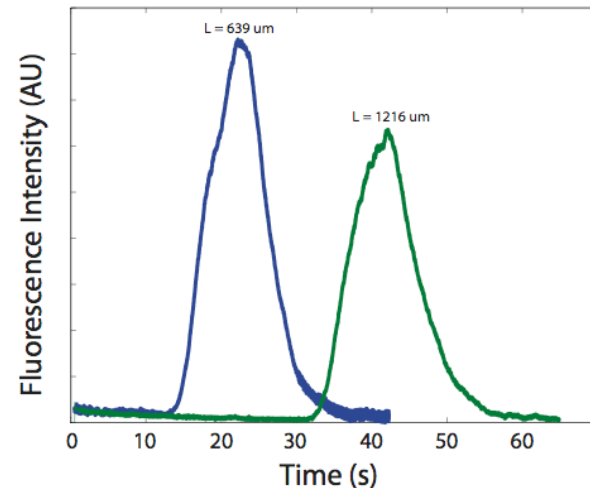
- The goal of this work is to study DNA electrophoresis in micropillar arrays.
 - ◆ Negative molds are fabricated in silicon by reactive ion etching
 - ◆ The positive image is made in PDMS by soft lithography



Images of the PDMS micropillar arrays inside a microchannel. (Left) Brightfield image at 63x magnification of an array of 1 µm posts with a 7 µm pitch. The size of the microchannel is 50 µm. (Right) SEM image of the pillars in the column. The anisotropy of the reactive ion etch makes the pillars slightly conical.

MAJOR OBSERVATIONS

- ◆ We have fabricated perfectly periodic micropillar arrays in PDMS. The release of the PDMS is aided by the slight anisotropy of the reactive ion etching.
- ◆ We are presently studying DNA electrophoresis in the arrays and comparing them to theories on DNA mobility and dispersivity.



Electropherogram of lambda phage DNA (48.5 kbp) resulting from electrophoresis in an array of 1 µm posts in a hexagonal array of 5 µm pillars. The lengths indicate the detection position downstream from the DNA injection point.