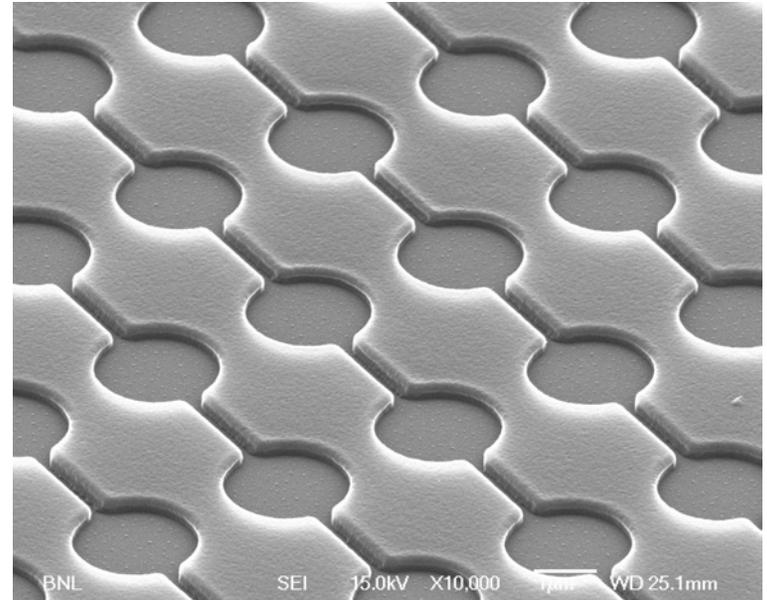


DNA Separation and Analysis in Cavity Arrays

Motivation: Development of a DNA separation device for rapid DNA separation and analysis on a chip patterned by lithographic fabrication techniques.

Results and Significance: Employing nanoscale cavity arrays we will study the thermodynamics (free energy and dynamics) of polymer confinement. The results of this research will be used to optimize cavity arrays for efficient DNA separation and gene analysis on-a-chip. Electron beam lithography was used to create the array at right with 200 nm channels and plasma etching will be used to replicate the pattern in silicon. After anodic bonding the silicon chip to a Pyrex coverslip, optical microscopy will be used for diffusion studies.



Micrograph of linked cavity array pattern exposed in ZEP 520 e-beam resist using the JEOL 6500-NPGS e-beam lithography system at BNL

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