DNA Electrophoresis in Microfabricated Devices
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NNIN Facility utilized: Nanofabrication Center

- New microscale methods for separating long DNA
  - Design and fabricate devices
  - Observe single-DNA dynamics
  - Study separation resolution

- MAJOR OBSERVATIONS
  - Elucidated the role of the curved field lines on DNA dynamics and demonstrated the ability to separate DNA in sparse, ordered post arrays.
  - Developed a method to fabricate sparse arrays of nanoposts without the need for conventional nanopatterning steps (e.g., e-beam lithography).
  - Developed a method to selectively grow ZnO nanowires into a separation microchannel.
  - Studied the collision of a single DNA molecule with an isolated small post, confirming theoretical predictions.

- Publications

Silicon dioxide nanopost array created by an oxygen plasma thinning method.