

# Microchannel DNA Electrophoresis in Thermosensitive Polymers

Kevin D. Dorfman (PI) and Kevin Yocca

Chemical Engineering & Materials Science, University of Minnesota

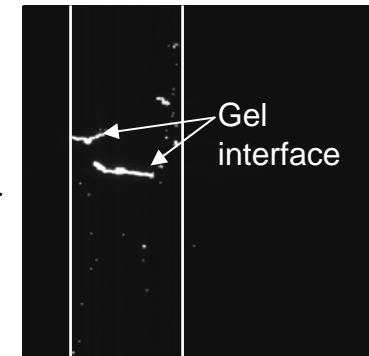
## DESCRIPTION OF WORK

- ◆ We are developing a new separation method for separating DNA with secondary structure (e.g. supercoiled DNA) using microfluidic electrophoresis in thermosensitive polymers.
- ◆ This project takes advantage of the NFC to fabricate photoresist negative masters for molding PDMS microchips
- ◆ We have also used the NFC for patterning electrodes to design a microchannel heater for controlling the gelation in situ

## MAJOR OBSERVATIONS

- ◆ We have constructed a chip for electrokinetic injection into the separation channel
- ◆ We are able to load thermosensitive polymers into the channels and observe the gel/buffer interface by bead tracking

The gel interface is imaged by driving fluorescent beads in the buffer with an electric field.



### Electrokinetic injection in a shifted T:

- The DNA are driven from the left to right through the shifted-T.
- The voltage is switched to draw back the DNA in the left and right arms.
- The DNA in the cross channel is injected upwards into the separation channel

