Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Tube-like motion of ds-DNA in a nanoslit post array PO-KENG LIN, Institute of physics, Academia Sinica, CHEN-HSIANG HUNG, National Taiwan University, CHIA-FU CHOU, YENG-LONG CHEN, Institute of physics, Academia Sinica — Polymer reptation motion has been observed in polymer trapped in a porous network with pore size smaller than the chain Kuhn length. In this study, we directly observe the tube-like motion of DNA confined in nano-height hexagonal micropost arrays, where the post spacing is much larger than the Kuhn length. The chain length Ndependence of DNA diffusivity D exhibits the two-dimensional reptation scaling D $\sim$ $N^{-1.5}$. The tube-like motion results from confinement-induced attraction between DNA and the microposts. We also systematically investigate the transition of DNA-wall interaction from repulsion to attraction.

Po-Keng Lin
Institute of physics, Academia Sinica

Date submitted: 20 Nov 2009 Electronic form version 1.4