

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Statics and Dynamics of Single DNA Molecules Confined in Nanoslits PO-KENG LIN, Department of Physics, National Taiwan University, Taipei, Taiwan, CHI-CHENG FU, Institute of Atomic and Molecular Science, Academia Sinica, Taipei, Taiwan, Y.R. CHEN, Graduate Institute of Electronics Engineering and Department of Electrical Engineering, National Taiwan University, Taipei, Taiwan, WUNSHAIN FANN, Institute of Atomic and Molecular Science, Academia Sinica, Taipei, Taiwan, C.H. KUAN, Graduate Institute of Electronics Engineering and Department of Electrical Engineering, National Taiwan University, Taipei, Taiwan — de Gennes provided the scaling predictions for the linear polymer chain trapped in slit with dimension close to the Kuhn length decades ago; however, it has yet to be compared with experiments. We have fabricated nano-slits with vertical dimension similar to the Kuhn length of ds-DNA, $\sim 100\text{nm}$, using standard photolithography. Single DNA molecules with length range from 2 to 75 micrometers were successfully injected into the slits and the Brownian motions were imaged by fluorescence microscopy. The distributions of the radius of gyration and the two-dimensional asphericity were measured and it is found that the DNA exhibit highly anisotropic shape distribution. The scaling exponents for the chain extension and the center-of-mass diffusion coefficient will also be discussed.

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Date submitted: 03 Dec 2005

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