Abstract Submitted
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Long DNA Molecules at Liquid-Solid Interfaces VLADIMIR SAMUILOV, B. LI, J. SOKOLOV, M. RAFAILOVICH, Dept. of Materials Science, SUNYSB, Stony Brook, B. CHU, Dept. of Materials Science, Dept. of Chemistry, SUNY at Stony Brook — The electrophoresis of long DNA molecules was studied using a newly developed method of electrophoresis on flat surfaces [1] in the regime of strong electrostatic interaction. The mobility of lambda- DNA molecules on this surface was found to scale as the square root of the persistent length with the ionic strength at high buffer. This experimental result indicates that at high buffer concentration the separation mechanism of solid-liquid interface electrophoresis is expected to be due to surface friction rather than biased reptation [2-4]. At low buffer concentrations the DNA chains are stretched .The electric double layer is responsible for a velocity profile of the electroosmotic flow. The net electrophoretic mobility of longer DNA, being trapped closer to the surface as found to be higher then for the shorter ones in the electric field.

[1]. N. Pernodet, V. Samuilov, K. Shin, et al. Physical Review Letters, 85 (2000) 5651-5654.
[2] Y.-S. Seo, V.A. Samuilov, J. Sokolov, et al. Electrophoresis, 23 (2002) 2618-2625.
[3] Y.-S. Seo, H.. Luo, V. A. Samuilov, et al. DNA Electrophoresis on nanopatterned surfaces, Nano Letters, 4, 2004, 659-664.

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