

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Deformation of DNA and Polymer Labels during End-Labelled Free-Solution Electrophoresis. GARY W. SLATER, LAURETTE C. MCCORMICK, University of Ottawa — Recent advancements to DNA sequencing by End Labelled Free Solution Electrophoresis (ELFSE) show the promise of this novel technique which overcomes the need for a gel by using a label (or *drag-tag*) to render the free solution mobility of the DNA size-dependent. It is the attachment of an uncharged drag-tag molecule of a set size to all the various lengths of DNA in the sample that selectively slows down smaller DNA chains which have less force to pull the drag-tag than larger DNA. Taking advantage of the modified hydrodynamic properties of tagged DNA, ELFSE has been used to successfully sequence up to about 100 bases of DNA in the absence of a gel or other sieving. So far, only globally random coil conformations have been associated with ELFSE, i.e. the DNA and the label together form a single, undeformed hydrodynamic unit. However, next generation labels combined with high field strengths may allow for deformation of the DNA and/or a polymer label. We present here the necessary conditions for stretching, and some of the subsequent effects on separation, highlighting possible improvements to ELFSE performance via stretching of DNA and/or the polymer label.

Gary W. Slater
University of Ottawa

Date submitted: 30 Nov 2005

Electronic form version 1.4