

Abstract Submitted  
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**Nanoscale Electrospray Ion Sources and a New DNA Sequencing Technique** WILLIAM MAULBETSCH, Brown University, JOSEPH BUSH, Bronx Community College, DEREK STEIN, Brown University, STEIN LAB TEAM — Electrospray ion sources are used to transfer biochemical samples from solution into a charged gas phase for analysis, especially by mass spectrometry. Traditional ion sources require a background gas and high voltages, and waste most of the sample passed through the source's micrometer-scale tip. However, by scaling down the ion source to the nanoscale, we greatly reduce voltage and sample volume requirements, while eliminating the need for a background gas to desolvate droplets. We report experiments investigating the onset and characteristics of electrospray from glass capillaries whose tips were pulled down to an inner diameter on the order of 100 nanometers. Nanoscale ion sources serve as an integral part of a DNA sequencing technique we will describe, whereby DNA bases are identified by the molecular masses of the nucleotides. This work was supported by NIH grant NHGRI 1R21HG005100-01 and by Oxford Nanopore Technologies, Ltd.

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