

Abstract Submitted
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Recognition Tunneling towards Next Generation Single Molecule DNA Sequencing SHUO HUANG, Arizona State University — A novel approach has been developed to trap and sequence DNA within a molecular junction formed by a pair of functionalized Au electrodes so individual DNA nucleotides could be recognized on small pieces of DNA with single base resolution. The cost of labeling reagents is totally eliminated since different nucleotides are recognized through their intrinsic physical properties. Unexpectedly long residence time of DNA (on the order of a second) in the molecular gap is observed which indicates that a pN force is required to achieve the sequencing speed as fast as 10 bases/Sec. Providing such ionic driving force, a nanopore device incorporated with recognition tunneling reader will provide a revolutionary way for fast, accurate and economic next generation DNA sequencing.

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