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Licensing Opportunity

TTO – Technology Transfer Office

Stalactite nanopore

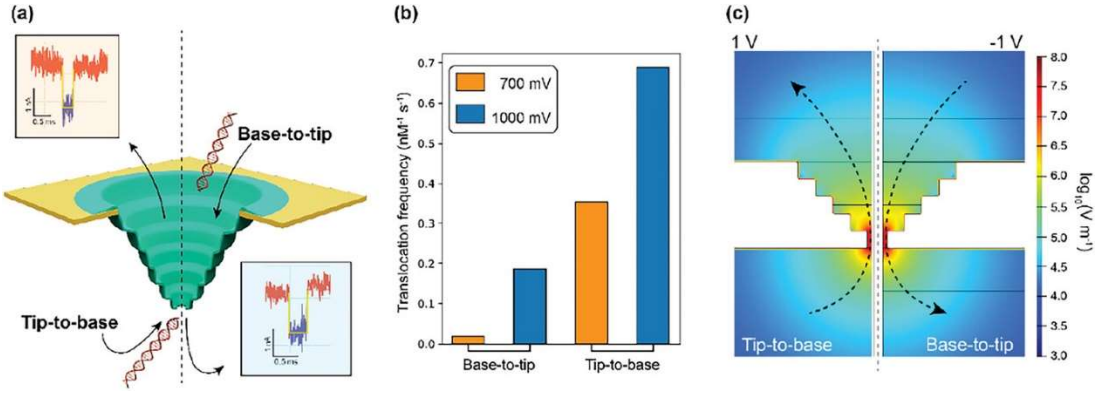

Figure showing an embodiment of the single stalactite nanopore used as a biosensor. a) Experimental layout for tip-to-base and base-to-tip directions for DNA translocation. Insets show current traces of translocation events. b) Concentration-normalized DNA translocation frequency in two directions as a function of applied voltage. c) Nonuniform electric field intensity distribution inside the pore (log scale). Arrows show the direction of DNA translocation in two principal directions.

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Keywords

Biosensor, bio-molecule sequencing, energy, filtration, nanofluidic

Intellectual Property

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Description

Artificial nanopores hold great promises for a wide range of applications such as bio-sensing, bio-sequencing and energy harvesting. However, most of the nanopores are limited by their instability, reproducibility, low ion and molecular selectivity, and scalability.

The technology is an asymmetric conical nanopores ("stalactite pores"), with unique structures and properties that address the limitations of existing solid-state nanopores.

Advantages

The stalactite nanopore technology allows the manufacturing process of the nanopores to easily tune the aperture of the pore in a scalable fashion.

The stalactite nanopore demonstrates superior DNA capture and osmotic energy conversion.

Applications

- single-molecule biomolecules sequencing
- energy harvesting and generation (osmotic energy)
- bio-inspired iontronics,
- biosensing,
- chemical separation
- nanofluidics