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Denis Garoli

IIT, CCT@Morego

Genova

Plasmonic Nanopores for Single-Molecule Detection and Manipulation: Toward Sequencing Applications

ABSTRACT: Solid-state nanopore-based sensors are promising platforms for next-generation sequencing technologies, featuring label-free single-molecule sensitivity, rapid detection, and low-cost manufacturing. In recent years, solid state nanopores have been explored due to their miscellaneous fabrication methods and their use in a wide range of sensing applications. Here, we highlight a novel family of solid-state nanopores which have recently appeared, namely plasmonic nanopores. The use of plasmonic nanopores to engineer electromagnetic fields around a nanopore sensor allows for enhanced optical spectroscopies, local control over temperature, thermophoresis of molecules and ions to/from the sensor, and trapping of entities



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