

Abstract Submitted
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Modification of solid state nanopore characteristics through chemical etching EDWARD GRAEF, Microelectronics-Photonics Program, University of Arkansas, Fayetteville, AR 72701, CHANGBAE HYUN, Department of Physics, University of Arkansas, Fayetteville, AR 72701, MOURAD BENAMARA, Institute for Nanoscale Materials Science and Engineering, Fayetteville, AR 72701, JIALI LI, Department of Physics, University of Arkansas, Fayetteville, AR 72701 — Solid state nanopores have been shown to detect the passage of single biomolecule translocations by monitoring the changes in current passing through the nanopore under an applied voltage. One of the key issues is the resolution limitations due to the thickness of the nanopore. This research is centered on the monitoring and modification of the thickness and diameter of the nanopore itself for increased resolution of detecting biomolecules. Through the use of wet etching with phosphoric acid, the thickness as well as the diameter of the nanopore can be modified to change the resolution for single biomolecule detection. Using HRTEM and STEM EELS techniques we have shown that chemical modification has been successful in changing both the diameter and thickness of solid state nanopores.

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