Abstract Submitted
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Translocation dynamics of hybridized DNA oligomers studied by solid-state nanopores[1] VENKAT BALAGURUSAMY, PAUL WEINGER, XINSHENG LING, Brown University — We have earlier detected 12-base hybridizations in trimer DNA complexes formed by three single-stranded DNA oligomers hybridized at their ends sequentially, using nanopores of ∼10 nm diameter. These complexes are connected to a polystyrene bead at one end to slow down their translocation [1]. These experiments tested the feasibility of HANS (Hybridization-assisted nanopore sequencing) approach for DNA sequencing. HANS uses oligomers of DNA bound to a long single-stranded DNA in order to obtain the positional information of the bases that make up the long target DNA molecule. Subsequently, we have carried out translocation experiments at different voltages with nanopores ∼5 nm diameter. The measured time lapses between the passage of consecutive double-strand DNA segments in a trimer complex allow us to study the translocation dynamics. The measured mean-first-passage time between two consecutive hybridization segments is found to be consistent with theoretical estimates.

[1] V.S.K.Balagurusamy, P.Weinger and X.S.Ling, *Nanotechnology* **21**, 335102 (2010).

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