

Abstract Submitted
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Ultra-sensitive flow measurement in nanopores through pressure-driven particle translocation ALESSANDRO SIRIA, CNRS-Univ Lyon1, ALESSANDRO GADALETA, University Lyon 1, ANNE-LAURE BIANCE, CNRS-Univ Lyon1, LYDERIC BOCQUET, University Lyon 1, INSTITUT LUMIERE ET MATIERE TEAM — The field of nanofluidics is of growing interest, both for applications and fundamental research. Nevertheless, this discipline still lacks a fundamental tool, i.e. the ability of measure the extremely small liquid flows in nanometric systems. This is especially aggravating, considering that one of the most interesting open problems in the field is the deviation of hydraulic permeability, in some systems from the values predicted by classical fluid mechanics. We propose a novel method for the measurement of pressure-driven flows in nanometric systems to characterize the translocation rate and dwell time of nanoparticles contained in a colloidal suspension. We are able to detect the passage of each nanoparticle across a nanopore by observing the sudden change in ionic current, and by analyzing the statistics of translocation events we can measure the permeability of the pore with high sensitivity and good accuracy.

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