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An Ultrasensitive Resistive-Pulse-Sensing Scheme for Fluidic Devices¹

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We report on a resistive-pulse-sensing scheme to detect translocation of small particles through fluidic channels, which integrates the fluidic circuit and a metal-oxide-semiconductor field effect transistor (FET) and uses the FET's drain current modulation as an indication of the presence of particles inside the fluidic channel. We show the amplification effects from both the fluidic circuit and the MOSFET by measuring the translocation of polystyrene beads through the fluidic channel.

¹In collaboration with Dongyan Xu, Manoj Sridhar, Yuejun Kang, Anthony Hmelo, Dongqing Li, and Leonard Feldman, Vanderbilt University.