

Abstract Submitted
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Lateral Migration and Three-dimensional Focusing of Particles in Microchannel Electrophoresis¹ LITAO LIANG, Department of Mechanical Engineering, Clemson University, Clemson, SC 29634-0921, SHIZHI QIAN, Department of Aerospace Engineering, Old Dominion University, Norfolk, VA 23529, USA, XIANGCHUN XUAN, Department of Mechanical Engineering, Clemson University, Clemson, SC 29634-0921 — The fundamental study of particle electrophoresis in microchannels is relevant to many applications. It has long been accepted that particles move parallel to the applied electric field in a straight uniform microchannel. In this talk we present the first experimental demonstration of lateral particle migration in electrophoresis through a rectangular microchannel. This phenomenon is due to the electrical force induced by the asymmetric electric field around the particle near a channel wall. We demonstrate that such cross-stream particle motion in electrophoresis can focus neutrally buoyant particles to the centerline of a rectangular microchannel. This three-dimensional electrokinetic particle focusing may potentially be used in micro flow cytometers.

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