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Velocity Dependent Selectivity of Deterministic Lateral Displacement Arrays[1] JASON PUCHALLA, KEITH MORTON, ROBERT AUSTIN, Princeton University — Deterministic lateral displacement (DLD) has been demonstrated as a promising microfluidic method to circumvent diffusive dispersion while separating small particles based on size. At low average flow velocity, steric repulsion and diffusion seem sufficient to describe particle behavior and array separation characteristics. However, at higher but still laminar flow velocities, particle behavior changes drastically. We have investigated this regime using a silicon DLD array. We present how the local disruption of fluid flow about a moving particle and the effects inertial forces can alter DLD behavior and can be exploited for selective sorting.

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