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Size-controllable flow passage in a microchannel R.-J. YANG, S.-J. YANG, C.-H. HUANG, National Cheng Kung University — Particle handling method in microchannels is an important process in the bioanalysis and biochemical array analysis. Existing methods utilize converging and diverging channel to accelerate and separate particles. This study adopts a straight channel and judiciously combines pressure-driven and elctrokinetically-driven flow to form a size-controllable flow passage. The combined flow results in the generation of recirculation flow, which changes the effective flow passage. Particles can be accelerated when passing through the passage along the straight microchannel. Analytical and experimental methods are used to investigate the flow. Particles passing through the recirculation flow region are detected and visualized. The effect of electrical field, particle trajectory, particle motions and particle separation distance in microchannel are examined.

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