

Fabrication of Dual Focusing Microfluidic Film Device embedded with Electrode for Electroporation Application

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Hydrodynamic flow focusing is a common method to controlling particle positions at high speeds in microfluidic channels. The sequential use of 3D hydrodynamic flow focusing and inertial focusing must be highly desirable general means for centralizing the particle or the solution, by reducing the focusing volume and enhancing the vertical mixing, compared to single focusing technique by taking either of them.

As application, electroporation (EP) widely used in biological and medical fields is a typical tool of gene transformation of cells via DNA delivery. However, the cell contact to electrodes caused contamination issue and decreased cell viability and device durability. Furthermore, it is plausible that this developed dual focusing microfluidic system would be useful for wider applicability in sheathless alignment, separation of concentration of targets such as particles, fluids.