The study on the fabrications and clinical applications of capillary electrophoresis chips using MEMS technology

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ABSTRACT

In this research, the MEMS fabrication technologies and clinical applications of micro capillary electrophoresis (CE) chip were studied. Using three kinds of materials with high penetrability and high bio-compatibility such as Glass, Poly-carbonate (PC), and Polydimethyl-siloxane (PDMS), two different fabrication processes were developed: (1) Glass CE chip using micro-machining technology Lithography, micro-machining and binding technologies are main steps. (2) Polymer CE chip using replication technology Lithography, micro-machining and deposition technologies were used to fabricate the master of CE channel. Hot-embossing and soft-lithography were then utilized to manufacture the CE chip, followed by binding with soft-substrate of high-penetrability. The clinical experiments were also performed for the separation of HbA1C. This CE chip has many merits and potential for the clinical and medical applications.

Keywords : MEMS ; CE Chip ; PDMS

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