



ISTITUTO ITALIANO
DI TECNOLOGIA

TITLE

Automatic passive liquid positioning in microfluidic chips

INVENTORS

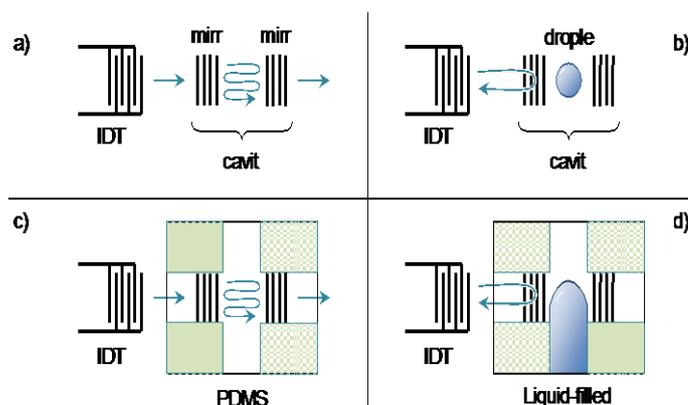
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DESCRIPTION

A complete Lab-On-Chip (LOC), based on a microfluidic piezoelectric chip able to steer surface acoustic waves (SAWs) passively and with minimal losses depending on the position of the fluid microdroplets on the chip.

LOCs are one of the most promising technologies in the biomedical field. Miniaturized, portable diagnostic and analysis system are expected to constitute the next-generation tool for medicine and other fields. The liquid handling system is at the base of every LOC. It must enable loading, actuation and precise positioning of very small liquid volumes.

LOC technologies are attracting the biomedical market thanks to the new capabilities introduced by the microfluidic chips and by optimized performances in terms of liquid consumption, waste production, scalability and high-throughput analysis.



APPLICATIONS

Miniaturized, portable diagnostic and analysis system are expected to constitute the next-generation tool for medicine and other fields (e.g. environment monitoring, food analysis). This piezoelectric chip enables the precise positioning of liquid microdroplets without the use of any active electronic micro-device or instrument, in particular it allows:

- complex, repetitive microfluidic tasks performed repeatedly without external supervision
- microfluidic tasks in which the single positioning element plays the role of a logic port (AND, OR, NOT...) allowing complex re-routing of the micro-droplets on the LOC

KEYWORDS

lab-on-chip (LOC), surface acoustic waves (SAW), microfluidic

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Controllo automatico passivo del posizionamento di liquidi in chip microfluidici

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Applicants

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