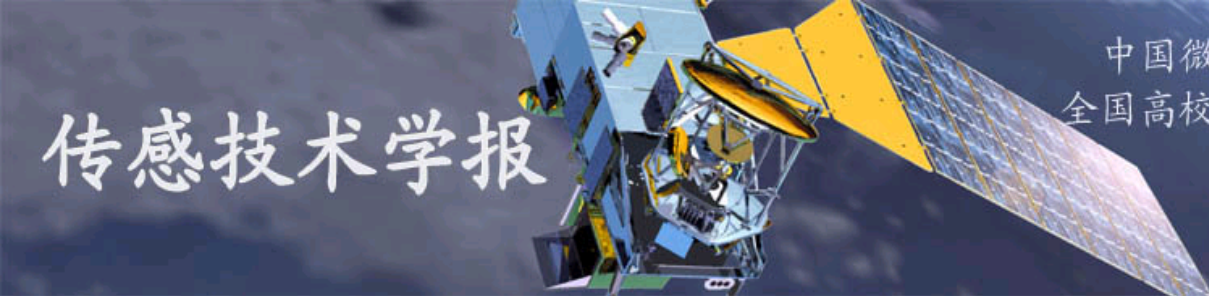

一种新的纸基微流开关及其活跃方法

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摘　要：

提出了一种新的、基于声表面波的纸基微流开关。通过软光刻技术制作内含两个微孔的聚二甲基硅氧烷（PDMS）微架，其
MS微架贴附于压电基片之上，并在待连接的两微通道之下方，折叠纸通道最低端离压电基片间距为2mm。压电基片上采用微
栅。当足够强度的电信号加到叉指换能器对时，激发两相向声表面波，使得压电基片上微流体输运到折叠纸通道，改变其长
完成开关功能。本文工作对可编程微流器件提供了一种新的编程和开关控制方法，具有一定的学术意义和潜在的应用价值。

关键词：声表面波；微流开关；微架；可编程器件；微通道

A new paper-based microfluidic switch and its activating method

Author's Name:

Institution:

Abstract:

A new paper-based microfluidic switch based on surface acoustic wave has been presented. A poly(dimethylsilicoxane) (PDMS) mi
fabricated at first using soft photoetching technology. A folded paper channel with variable length was then fixed on the PDMS mic
substrate ensuring 2mm space to the lowest end of the folded paper channel. Two microchannels to be connected were above the fo
transducers (IDTs) together with two reflectors was fabricated on the (XY)/1280 LiNbO3 piezoelectric substrate using micro-electric
appropriate power was applied to the IDTs, two surface acoustic waves (SAWs) were generated. A microfluid on the piezoelectric s
paper channel due to acoustic streaming. The length of folded paper channel was then enlarged so that it could connect two paper-l
connection. Thus, the function of the switch was implemented. The presented microfluidic switch and its activating method are helpf
devices.

Keywords: Surface acoustic wave; Microfluidic switch; Micro-shelf; Programmable microfluidic device; Microchannel.

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