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基于两相向声表面波快速富集悬液中微粒

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摘　要：

为提高生化分析灵敏度，提出了一种快速富集悬液中微粒的新方法。它在127.68° 旋转Y切割X传播方向的LiNbO3基片上采用微电子工艺制作了2×2叉指换能器阵列，在该叉指换能器阵列的一对对角叉指换能器上同时加经功率放大器放大后的RF信号，以激发两相向声表面波，采用微量进样器将待富集的微流体（微液滴）进样到两相向传播的声路径上，微液滴中的微粒在该两相向的声表面波作用下快速向心富集。淀粉溶液微液滴富集实验结果表明，两相向声表面波作用下，10秒内实现微液滴中淀粉微粒的快速富集。

关键词：压电基片；声表面波；快速富集；微流体

Rapid Concentration of Particle Suspensions Based on Two Surface Acoustic Waves in Opposite Directions

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Abstract:

A new method to concentrate particles suspended in a liquid droplet has been presented, which can improve biochemical analysis sensitivity. 2×2 interdigital transducers (IDT) arrays used to concentrate particles are fabricated on 127.68° YX-LiNbO3 substrate by micro-electric technology. A RF signal amplified by a power amplifier is fed to two diagonal IDTs, which generate two surface acoustic waves in opposite directions and act on particles suspended in a liquid droplet simultaneously. Then the particles are rapidly convected and hence aggregate at the center of the droplet. Experimental results have demonstrated that two surface acoustic waves in opposite directions can concentrate starch particles suspended in a droplet less than 10 s, which is faster than having been reported.

Keywords: Piezo-electric substrate; Surface acoustic wave; Rapid concentration; Microfluid

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