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【摘要】

本研究開發微機械結構系統之速度感測器應用於微量移液器偵測取樣容積定量，微結構速度感測器中心位置利用多知器，感測速度利用微發熱器在微結構中產生熱氣泡，由移液器活塞移動驅使微熱氣泡變形，四周的溫度感知器偵液滴管內溶液體積，其微結構速度感測器製造過程由標準金屬氧化半導體製程做材料的沉積，再利用蝕刻技術完成形構造，其中包含了微結構系統及訊號電路，校正結果此速度感測器的特性靈敏度為1V/m/s、速度測試範圍在0.0:高解析度、高靈敏度及具線性等特性，將微結構速度感測器應用於微量移液器可顯示出取樣體積，實驗驗證在20μ者使用在正當模式下操作，從DNA增生實驗結果中可以看出利用此微量移液器所進行之實驗可以更穩定的增生DN

【英文摘要】

The study developed an integrated MEMS flow sensor applied in detecting the volume of samples in Pipet. The r micro heater and a thermopiles array. The centered micro heater bar encircled by temperature sensors generate flow, the thermal plume will be pushed towards to the temperature sensors array and the temperature difference volume flow rate through the tip. This sensor includes micro structures and mixed signal processor in 2 mm square process. A square heater source is located at the center of square polysilicon thin film with a cavity underneath. power is supplied to the heater. The sensitivity of the flow sensor can be indicated as 1 V/ (m/s). The air flow spe than 5.3%. The flow sensor has a high sensitivity and linear in low speed air flow field. The experiment proves th sample experiment of 20μL. The operator can reject improper pipetting according the readings of the pipetting er out in this study. The results show that accurate DNA quantification and high reproducibility of experiments can b

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