Design and Fabrication of Innovative Piezoelectric Valveless Micropump

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ABSTRACT

The main function of micropump system is to control minute flow rate exactly . The present paper uses the stainless steel etching the way, the success manufacture its micropump overall construction, and tests its current capacity . The discussion expands diffuser the angle differently, the bulge size difference, the PZT diameter size is different with expands diffuser size differently to the current capacity whether has the difference and aims at this overall piezoelectricity actuating unit mold train each kind of size design using the ANSYS limited ultimate analysis software to carry on the analysis . Micropump system becomes which by this way manufacture, not only may reduce the cost largely, enhances good rate, may achieve the fast raid of quantity produces goal . Tests key lies in under each kind of dissimilar condition, slaving voltage, driving frequency to influence micropump rate of discharge, discovers its maximum current capacity, the experimental result demonstration pump voltage in 240Vpp, under the frequency 325Hz sine wave actuation, the maximum attainable flow rate is 1.95 ml/min .

Keywords : Etching ; Micropump ; Diffuser ; ANSYS

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