Integration of Pizeo Droplet Ejector with Precision Positioning Stage

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ABSTRACT

In the article, adopt the piezoelectric Inkjet head designed by oneself, the focal point designed is steady, accurate, easy to control, the high using is the principle. The first aims at the design of Piezoelectric Droplet Generator using the ANSYS finite element to analysis. To explore the feasibility of proposed micro-ejectors in practical applications such as the P-LED printing process, it is important to realize the droplet deformation characteristics such as droplet topology, breakup time and length, and flight velocity. In this paper, flow visualization systems for droplet ejection and contact with a plate is developed to realize the movement of droplet away from the ejector and the characteristics of droplet contact with a plate. A visualization system is developed to demonstrate the ejector ’ s operation and to characterize the droplet ejection sequence. A LED is placed under the droplet ejector to side-illuminate the droplet stream. The PZT droplet ejector is arranged to eject droplets vertically under influence of gravity. Two signals, synchronized with adjustable time delay, are sent to the ejector and the LED, respectively. Finally, the other visualization system is also designed to observe the characteristics of a droplet impact with a substrate. he experiment spurts the system to divide into two kinds (1) continuous(2) drop-on-demand. Doing different nature liquid discusses, cooperate with Precision Positioning Stage to move, make the pattern needed. Keywords：Piezoelectric Actuator, Micro-Droplet Generator, Stage, droplet formation, droplet impact , drop-on-demand

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