Application of LIGA and MEDM Technology to the Manufacture of Micro Mold for Injection Molding of Ink Jet Printers' Nozzle Plates

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ABSTRACT

Common processes to manufacture nozzle plates of ink jet printer heads are electroplating or laser machining. In order to reduce the production cost and improve the performance of nozzle plates, a new approach-micro injection molding, is introduced to manufacture nozzle plates in this study. The micro mold was made by integration of the LIGA and M-EDM technology to improve the positioning and alignment accuracy. After assembling the micro mold, micro injection molding technique was applied to produce four nozzle plates in one shot. There are sixty micro through-holes on each plate. The diameters were measured by an optical microscopy and in the range of 102±1 micro meters. The manufacture procedures proposed in this study are believed to be more accurate and economical.

A super high injection speed and a vario-thermal mold temperature control system will be used in the molding of the nozzle plates. Their effects on the quality of molded plates will also be studied. The investigation here will help the molders better understand the complex phenomena during the hybrid micro injection molding process.