Design and Fabrication of Micro Electromagnetic Actuator Array

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ABSTRACT

This paper presents a novel technique for the fabrication of electromagnetic micro actuator. Make use of micro-coils of way manufacturing actuator. This technology combining Optical Lithography、Electron Beam Evaporator、Electroplating produce micro actuator. The structure of the actuating device uses the polymaterial (polyimide) to regard as the insulating barrier . Use technology electroplating the copper coil. After the coil enters the e current produce magnetic force. Attract or repel Magnet on the PDMS film. Producing can control displacement. Base on this technique to design and fabricate the array microcoils.Use this microcoils and PDMS as the vibrating diaphragm to produce waves displacement.It will probably used to transport micro-parts. In this study, three types of micro coils are presented as the micro actuator 150 μm line width with 150 μm spacing,125 μm line width with 150 μm spacing and 100 μm line width with 125 μm spacing, respectively. The proposed micro actuator has a maximum displacement of 36.6 μm.

Keywords : microactuator、microactuator、microcoil array、microelectroplating

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