Studies on The Characteristic of Two－Dimentional Array Piezoelectric Inkjet Head

葉學偉、鄭江河

E-mail: 9708833@mail.dyu.edu.tw

ABSTRACT

Science and technology in the ever-changing modern society, ink-jet printing technology (Inkjet printing technology) in recent years become more diverse, its level would be more widely applied, such as new fuel systems, liquid crystal displays, optical communication devices and micro - Production of electrical and mechanical components, and you can use this technology to reduce costs and improve process efficiency. In many types of jet printing technology, on piezoelectric-driven approach for a major drive one way. In this paper, the drive will be used to shear deformation of the circular pattern of moving radial polarization piezoelectric actuators, Sincerely actuator for two-dimensional array of piezoelectric inkjet head, to achieve this pressure to ensure that EFI Motou simultaneously in all the droplets emitted from the nozzle mouth, this actuator at the same time if we can control with continuous inkjet, will design a drive waveform, to control the inkjet head so that it can achieve is a single drive to reach inkjet Actuators, and the entire film can emit 5 * 5 array of 25 single droplet.

Keywords : Piezoelectric ; Array ; Inkjet head ; Waveform

Table of Contents

REFERENCES

[1] R. G. Sweet,“ High frequency recording with electrostatically deflected ink-jets, ” Rev. Sci. Instrum. Vol. 36, pp. 131, 1965.

[2] R. G. Sweet,“ Signal apparatus with fluid drop recorder, ” U.S. Patent 3596275, 1971.

[3] W. L. Buehner, J. D. Hill, T. H. Williams, and J. W. Woods,“ Application of ink-jet technology to a word processing output printer, ” IBM J. Res. Dev. Vol. 21, 1968-1977.

[4] Utkan Demirci, Goksen Goksenin Yaralioglu, Edward Haggstrom, and B. T. Khuri-Yakub,“ Femtoliter to Picoliter Droplet Generation for Organic Polymer Deposition Using Single Reservoir Ejector Arrays, ” IEEE Transactions On Semiconductor Manufacturing, Vol. 18, No. 4, pp.709-715, 2005.

[5] U. Demirci,“ Picoliter droplets for spinless photoresist deposition, ” Rev.Sci. Instrum., vol. 76, no. 6, 2005.

[6] U. D. and A. O. ,“ Picoliter acoustic droplet ejection by femtosecond laser micromachined multiple-orificemembrane-based 2D ejector arrays, ” IEE Electron. Lett., vol. 41, no. 22, 2005.

[7] Gokhan Pergin and Butrus T. Khuri-Yakub,“ Micromachined 2-D [8] Array Piezoelectricallly Actuated Flextensional Transducers, ” IEEE, Vol. 2, pp.959-962,2001.

[9] Gokhan Percin,“ Micromachined Piezoelectrically ActuatedFlext-ensional Transducers For High Resolution Printing And Imaging, ” IEEE, Vol. 2, pp.921-924,2001.

[10] Gokhan Percin,“ Piezoelectrically Actuated Flextensional Micro -machined Ultrasound Droplet Ejectors, ” IEEE, Vol. 49, NO. 6, pp.756 -766,2002.

[11] Gokhan Pergin and Butrus T. Khuri-Yakub,“ Piezoelectrically Actuated Flextensional Micromachined Ultrasound Transducers-I: Theory, ” IEEE, Vol. 49, pp.573-584,2002.

[12] Gokhan Pergin and Butrus T. Khuri-Yakub,“ Piezoelectrically actuated flextensional micromachined ultrasound transducers. II. Fabrication and experiments, ” IEEE, Vol. 49, pp.585-595,2002.

[13] C. P. Steinert, I. Goutier, O. Gutmann, H. Sandmaier, M. Daub, B. de Heij, R. Zengerle，“ A Highly Parallel Picoliter Dispenser with an Integrated, Novel Capillary Channel Structure, ”Sensors and Actuators A， Physical, Vol. 116/1, 171-177，2004.
[14] Peter Koltay, Reinhard Steger, Benjamin Bohl, Roland Zengerle，“ A Novel Nanodispenser for the Multi Parallel Delivery of Liquids (DWP Part I) , ”Sensors & Actuators A , 116; pp 483-491，2004.
[15] 方昱仁,“ 單體單噴孔壓電致動式噴液裝置之設計與製造, ”國立台灣大學機械工程研究所碩士論文,2002.
[16] 鄭江河,胡榮章,葉東昇與林烜鵬,“ 壓電式噴墨頭及其製作方法, ”中華民國,專利194947, 2004.
[17] 王仲偉,“ 黑色反應性噴墨印花染料之合成與應用以及噴印PLED墨水之研究, ”國立台北科技大學，碩士論文，2004.
[18] 林智堅、賴建彰、鄭兆凱、邱琬雯,“ 噴墨列印技術用於製造液晶顯示器之彩色濾光片, ”工業材料雜誌, Vol.199, pp.165-170, 2003.
[19] 陳錦泰、楊慈雅、邱顯澧、賴建彰、袁宏彥、陳以哲、陳耿銘、黃友澤、張惠珍,“ 寬尺寸噴墨列印技術開發, ”光學工程, Vol.75, pp.5-10, 2001.
[20] 呂志平、周柏甫、胡紀平,“ 應用熱氣泡式噴墨法開發PLED全彩顯示器之製程技術, ”工業材料雜誌, Vol.194, pp.140-146, 2003.
[21] 周復初 、任天熹、黃國鑫、張皓翔、林建宏,“ 彩色濾光片噴塗研究, ”中國機械工程學會第二十二屆全國學術研討會論文集 國立中央大學 臺灣、中壢 2005.
[22] 張琮勛,“ 壓電驅動多孔微噴頭之設計製作與測試, ”大葉大學機械系,碩士論文,2005.
[23] 徐同勳,“ 二維陣列壓電噴墨頭之研究, ”大葉大學機械自動化系,碩士論文,2007.