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Design Group

下世代特殊晶片 (ASIC) 設計於智慧醫療 DNA 基因噴液定序系統研究 A Special Chip (ASIC) Designed to Spray Liquid Medical Wisdom DNA Gene Sequencing System

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作品摘要

特殊晶片 (ASIC) 設計於智慧醫療 DNA 基因噴液定序系統技術定量轉移佈放到玻璃載玻片上，選用定址噴液晶片結構腔體，也就是利用噴墨式技術原理將 DNA 液體佈放到玻璃載玻片上，之後進行每一樣式 DNA 排序。特殊晶片設計熱氣泡液珠的產生方式，在短時間內產生推力極大的氣泡將液體推出，形成生物 DNA 基因微液滴。

檢體中的 DNA、cDNA、RNA 等經特殊晶片 (ASIC) 設計於智慧醫療 DNA 基因噴液定序系統技術上，由 CMOS 元件技術達成整合高壓驅動陣列及低壓 CMOS 邏輯技術，此技術完全掌控邏輯訊號處理準位，噴液晶片電路技術功能為精確達成定址 (Addressing)。

氣泡式噴墨技術是在噴墨頭的位置在管壁上設置加熱電極，藉由通過電子脈衝加熱所選定的加熱元件，使噴液頭產生液滴。當加熱電極到一定的溫度後，使墨滴成為微小氣泡並爆開，再經過加熱室通過噴墨頭噴出，附著到承印物表面。承印物上的液滴多寡取決於加熱器件的功率控制。整合邏輯時序 CMOS 控制電路，可同時達大電流大電壓之驅動元件，且能與噴液致動元件結合之晶圓製程。

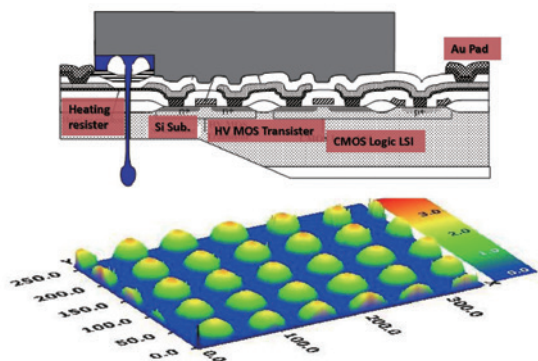


圖 1. DNA 液滴的佈放 Profile

Abstract

Special chip (ASIC) designed to spray liquid medical wisdom DNA gene sequence given in quantitative systems. It is transferred sprayed onto glass slides. Addressed liquid crystal sheet structure chosen spray chamber, which is the principle of the use of ink-jet technology to DNA liquid fabric placed on a glass slide, followed by DNA sequencing of each style. Special chip design thermal bubble droplet generation way is in a short time. It is a great thrust to launch the bubble liquid to form droplets of biological DNA gene.

Specimen of DNA, cDNA, RNA through a special chip design (ASIC) to spray liquid medical wisdom DNA gene sequencing system technology. It is reached by a CMOS device technology to integrate high-voltage and low-voltage CMOS logic drive array technology. This technology is completely in control logic signal processing standard level. Spray liquid crystal chip circuit technology to achieve precise function is addressing.

Bubble inkjet technology is an ink jet head in the position of heating element disposed within the liquid chamber. It is heated by electrical pulses through the selected heating element, so that the liquid jet head generated droplets. When the electrode is heated to a certain temperature, the ink droplets become microscopic bubbles and burst open, and then through the heating chamber is ejected by the inkjet head. DNA droplets are attached to the substrate surface. Droplets depend on the amount of substrate heating device power control. Integration of CMOS logic timing control circuit, which can drive up to a large voltage high-current element, and can liquid spray with actuation element binding of the wafer process.