DESIGN AND FABRICATION OF A MICRO GAS CHROMATOGRAPHY SYSTEM

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ABSTRACT

This paper exploits the realization of wet-etched micro gas chromatography columns for portable gas analysis system. A platinum layer is deposited on the Pyrex 7740 glass wafer to form a heater. MEMS technologies are used to deposit a silicon nitride layer on a silicon wafer to form a etch mask in the wet-etching process. The channel patterns are fabricated using RIE to etch the silicon nitride layer and then wet-etching. After the channels are etched, a glass wafer was bonded as the top plate to form the columns. The micro gas chromatography chip (GC-on-a-chip) is then formed by trapezoid cross section columns which separate gas mixtures with the same performance as commercial fused silica capillary columns.

Keywords : Gas Chromatography (GC) ; Microfluidic Chips ; Bulk Micromaching ; Thermal Bonding

Table of Contents

第一章 緒論 1.1前言……1 1.2微機電系統發展……2 1.3化學氣相層析系統之概述……4 1.4文獻回顧……6 1.5研究動機與目的……6 第二章 原理與設計 2.1研究目的……8 2.2化學氣相層析分離原理……8 2.3微流道光罩補償設計……11 2.4接合原理與設計……15 2.5微流道尺寸設計與原理……16 第三章 化學氣相層析系統製程與設計 3.1製程處理……21 3.2Gc_on_a_Chip流道製程步驟……35 3.3Gc_on_a_Chip接合製程步驟……43 3.4Gc_on_a_Chip管壁塗佈製程步驟……51 3.5Gc_on_a_Chip實體外觀……57 第四章 結果與討論 4.1分析儀器介紹……61 4.2微型氣相層析系統……62 4.3分析模組建構……63 4.4單一氣體濃縮化學氣相層析……65 4.5多種氣體化學氣相層析……70 4.6微型白金恆溫系統……82 第五章 結論 5.1結論……86 5.2未來展望……87 參考文獻 ……89

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