DESIGN AND FABRICATION OF MICROFLUIDIC DEVICES: MOSFET & CAPACITOR

Abstract

Microfluidic devices, based on silicon, are fabricated by photolithography, wet chemical etching with focus on an liquid conduction channel n-channel depletion MOSFET and a silica-liquid dielectric capacitor. Masks for both devices were designed with AutoCAD and printed on transparencies. Fabrication on p-〈100〉 4" Si wafers were executed and the devices were marginally characterized due to complications. The gate channel for the Liquid FET (LFET) were set to four sizes, which are 250,um, 500im, 750µm and 1000µm. The Liquid Capacitor (LCap) size was limited to only two, for lack of space on the wafer. A variety of processes were used to fabricate these devices. Tests show feasibility of the idea but proves process and process parameter control is extremely important and critical.