

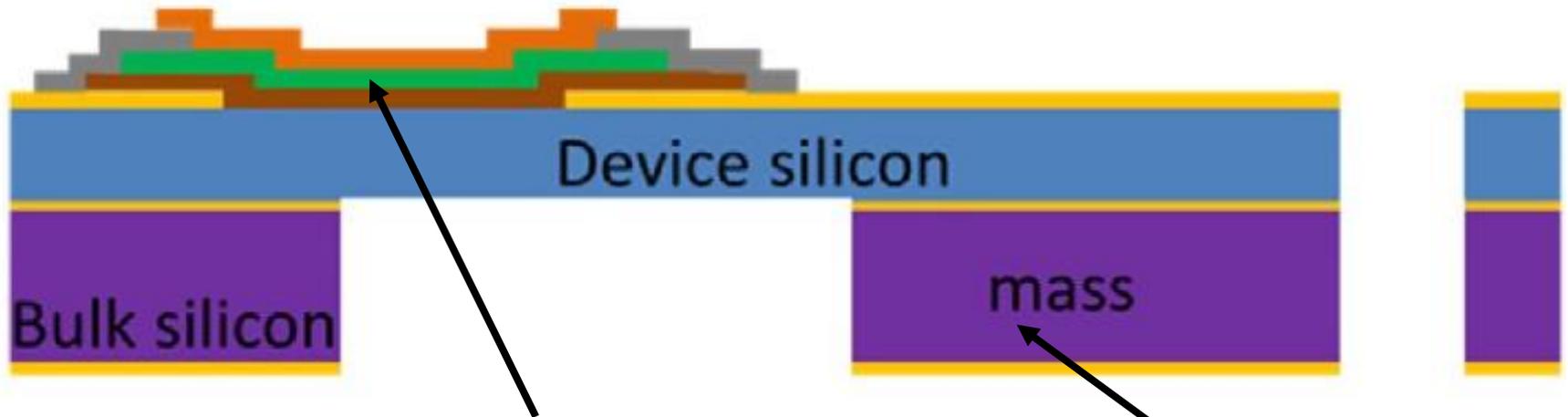
Microfabrication

Homework 7

Return by May 6th, 10 pm

1. SOI resonator

Give commentary to the fabrication steps of this resonator. Deposition methods & temperatures, film thicknesses, critical alignments, back/front protection, etch selectivities needed...



AIN piezoelectric layer
= green layer

Large seismic
mass

Deposit SiO₂ on SOI



(a)

Deposit Ti/AlN



(b)

Deposit SiO₂ barrier



(c)

Deposit Al



(d)

DRIE etch of device Si



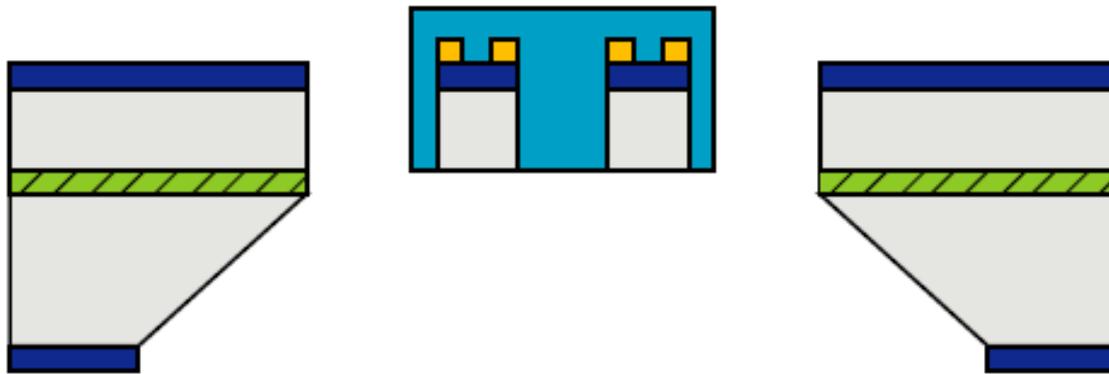
(e)

DRIE etch of Handle Si and BOX



(f)

2. Microgripper: step-by-step



Silicon



Aluminium



Silicon oxide



SU-8

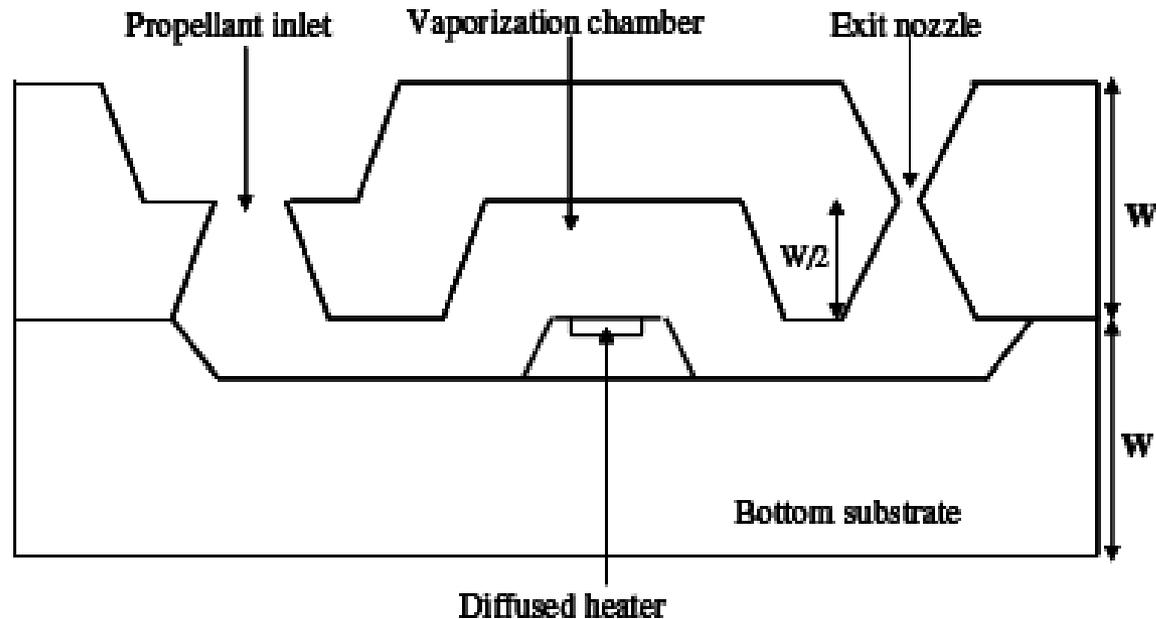


Silicon nitride

SU-8: negative photoresist, spin coated,
thermally and mechanically stable



3. Microthruster



Explain the fabrication steps.

Some things to give special attention to:

- two wafers bonded, how ? This device ejects hot boiling water.
- top wafer requires double side processing
- clearly KOH/TMAH wet etching is used, but what is the mask material ?

4. Pressure sensor

Explain the fabrication of this pressure sensor step-by-step.

Also analyse which process steps affect gap control.

