Fabrication Process

ME141B/292 (ECE 141B)

Outline

1. Etching Channels
    1. Solvent clean
    2. Spin photoresist
    3. Expose with opposite of the fluidic pattern
    4. Develop photoresist
    5. Deposit hard mask (Cr-Au)
    6. Lift off
    7. Wet etch (Buffered HF)
    8. Metal etch

2. Depositing Electrodes
    1. Solvent clean
    2. Spin photoresist
    3. Expose with metal pattern (aligned to fluidic features)
    4. Develop photoresist
    5. Descum
    6. Evaporate Ti-Au
    7. Lift off

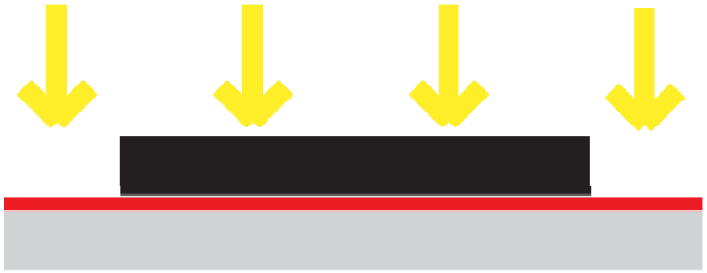
3. Sealing the Channels
    1. Prepare Flat PDMS (3-5mm Thick)
    2. Punch holes (biopsy punch)
    3. Clean
    4. O_2 Plasma Treatment
    5. Align and Bond
    6. Run experiments

Etching Channels

Solvent Clean Sample

Spin Photoresist (PR)

Expose Sample



Orange: Exposed, Red: Unexposed

Develop PR

Evaporate Hard Mask (Cr-Au)

Lift Off

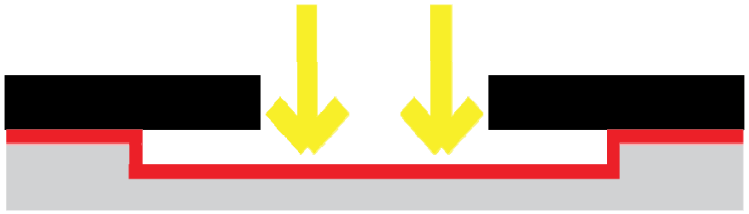
Etch Channel
Then Remove Metal

Depositing Electrodes

Solvent Clean Sample

Spin Photoresist (PR)

Expose Sample



Orange: Exposed PR
Red: Unexposed PR

Develop PR

Evaporate Metal (Ti-Au)

Lift Off

Sealing the Channels