

Mechanical Micromachining of LOC micro- fluidic devices

Metals can be used for tooling

Mass and batch production of thermoplastic LOC devices

Replica on PDMS is possible

Features with different height, aspect ratio and curvatures can be made

Channels with slope can be made

3D free form shapes can be fabricated

Optical quality surface finish can be obtained

Repeatability and accuracy in fabrication is high and predictable

Direct prototyping on thermoplastic is possible for design verification

Feature size is limited by cutting force and tool diameter

Contact:

Mo. Tauhiduzzaman, PhD

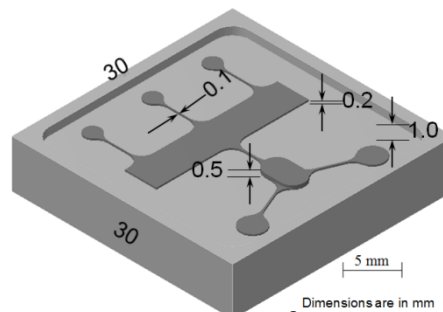
Email: zamanmt@mcmaster.ca

Tel: 1-905-525-9140. Ex: 26450



OUR CAPABILITIES

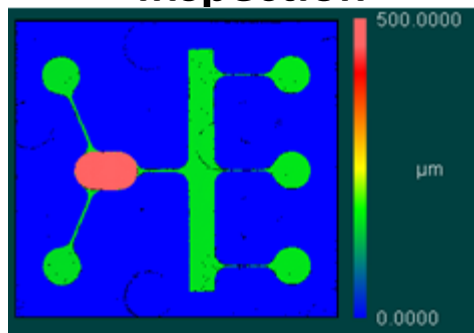
CAD/CAM



Mechanical Micromachining



Inspection



Replica

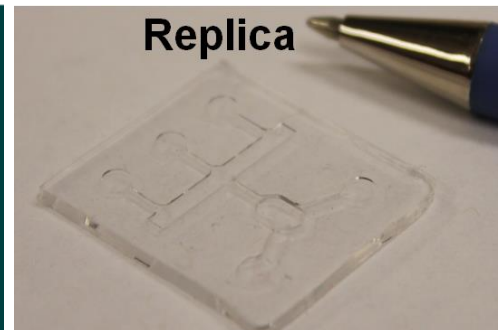


Fig: Features with different height and channel width on aluminum.

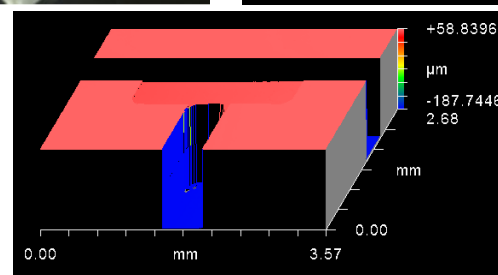
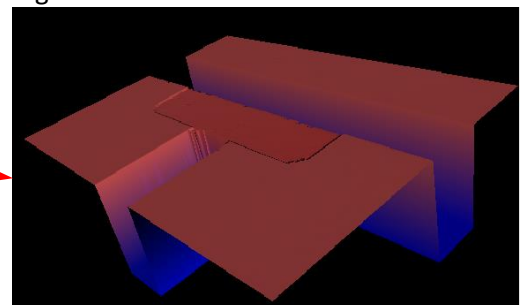
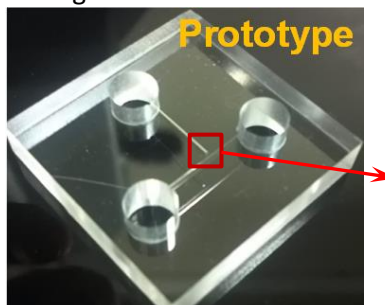


Fig: Prototype (direct machining) on PMMA with optical quality. Minimum Feature depth 5µm.

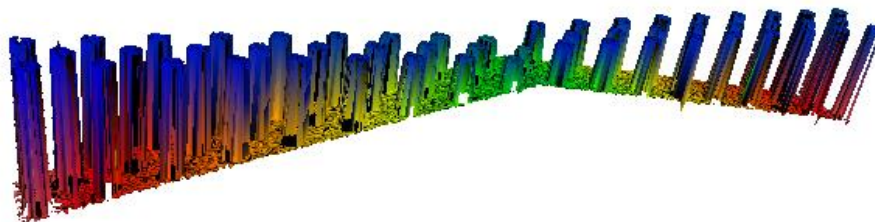
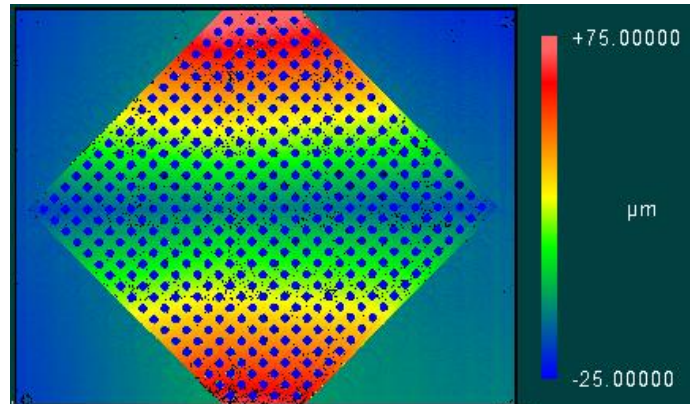
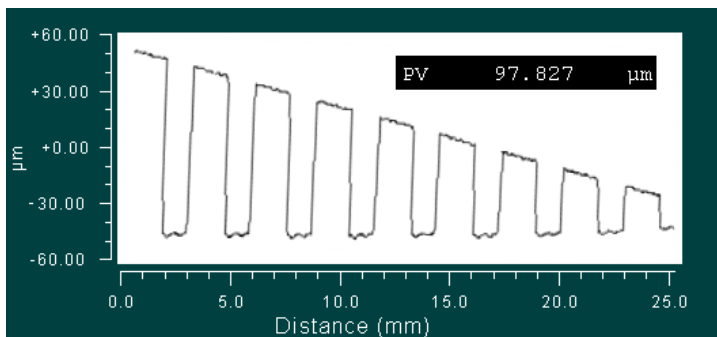
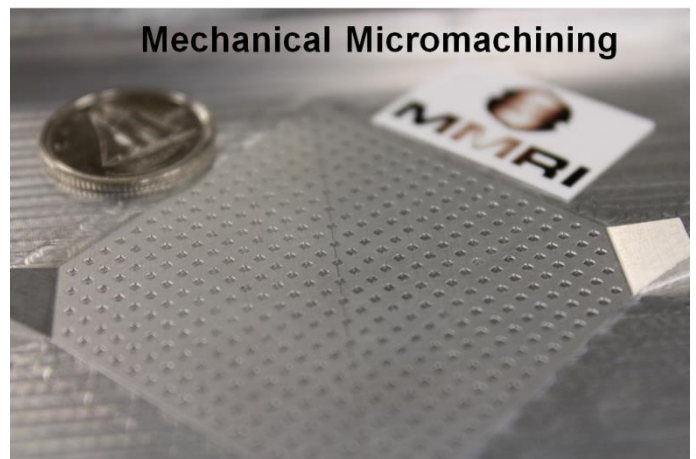
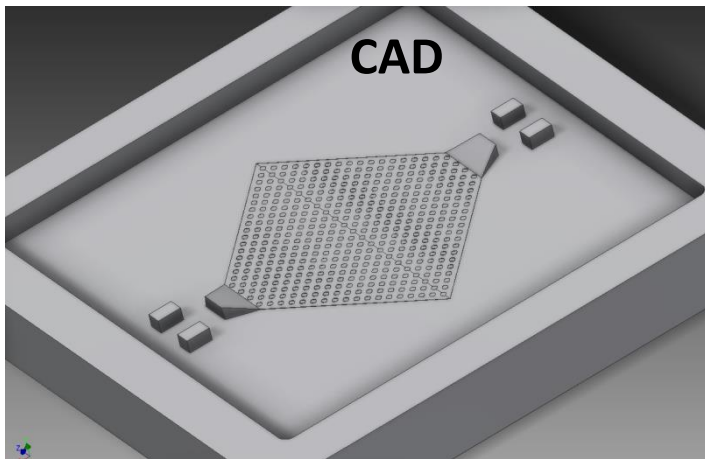


Fig: Example of blood oxygenator. Features include: sloping chamber with variable height ($100\mu\text{m}_{\text{inlet}}-25\mu\text{m}_{\text{center}}-100\mu\text{m}_{\text{outlet}}$), 1 mm^2 pocket with corner radius of $300\mu\text{m}$, horizontal inlet and outlet. Bottom figure represents expected features in a replica. Average surface roughness is below 500 nanometer.

We can make:

- *Straight channel chips*
- *Multiple channel networks*
- *Intersecting channel networks*
- *Rhombic chamber chip*
- *Droplet generator chips*
- *Cell sorting chip*
- *High aspect ratio thin structures*

Think 3D

With variable heights, widths, pitches, reservoir and slopes in to your design.

Contact us to discuss your design.