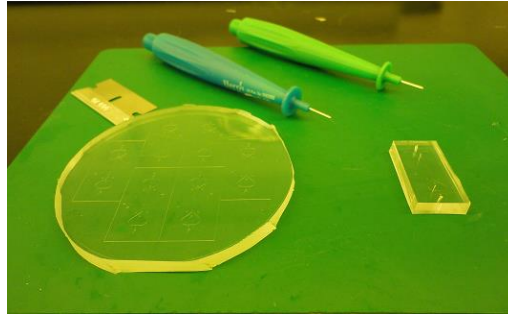


PROCEDURES FOR BONDING PDMS

Microfluidics Core Facility, Harvard Medical School

Sample cleaning

1. Punch the through-holes onto patterned PDMS slab for tubing connection.



2. Clean the PDMS surface with Isopropanol. Wipe the surface gently with foam-cotton swabs. Rinse in D.I. water and blow dry with compressed nitrogen.

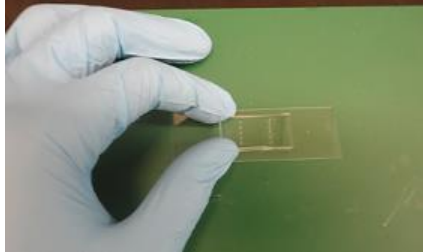
Dry-run to set the bonding parameters for plasma etcher

3. Check that the inlet valves of O₂ and Ni are open (on the wall).
4. Turn on the vacuum pump.
5. Turn the **main power** on (red bottom).
6. Switch to open **vacuum** toggle switch (labeled as **VAC** in front panel). And check the throttle pressure on the display and wait until the pressure stabilizes **0.100-0.350 torr (waiting time of ~15min)**.
7. Open **gas 2** toggle switch (oxygen) for 2-4 mins.
8. Adjust and stabilize the pressure at approximately **0.170-0.350 torr**.
9. Turn on the **RF power** switch and set the power at **100-150 Watts**.
10. Turn off the **RF power**.
11. Turn off **gas 2**.
12. Turn off **vacuum**.
13. Switch to open **vent** toggle switch.
14. Wait until the door can be opened and turn off the **vent**.

Bonding Process

15. Load your samples. The surfaces needing treatment have to be face-up.
16. Turn on the **vacuum** toggle switch.
17. Turn on the **gas 2** switch.
18. Turn on the **RF power** toggle switch.
19. Expose the samples to plasma treatment for 10sec.

20. Turn off the **RF power**.
21. Turn off the **gas 2**.
22. Turn off the **vacuum** toggle switch.
23. Switch to open **vent** switch.
24. Wait until the pressure reaches 1torr and the door can be opened.
25. Turn off the **vent** switch.
26. Take the samples out and bond them in within 5 mins.



27. Put the bonded samples in oven of 65-80 degrees for 20mins in order to enhance bonding.
28. Test the bonding strength, trying to peel the layer off.



Front panel plasma etcher