PDMS DEVICE FABRICATION PROTOCOL
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1. Clean your silicon mold using air or N2.
2. Take a sheet of aluminum foil and wrap it around the mold.
   Take care not to put too much pressure on the mold. Also
   ensure enough space is left between the aluminum foil and
   the features on the mold.
3. Take a cup and a spoon out of the drawer in the lab. Put it
   atop the weighing machine and tare it to zero.
4. Calculate the weight of PDMS you want to make (55 grams
   for one whole wafer).
5. Pour requisite amount of the monomer and curing agent into
   the cup (the ratio between the two weights should be 1:10)
6. Mix the two thoroughly using the spoon.
7. Put the cup in the desiccator and start the vacuum. You
   would see the bubbles in the mixture rising up. Keep the cup
   inside the desiccator chamber till all the bubbles are
   removed.
8. Take out the cup and pour the PDMS on top of the mold
   wrapped in aluminum foil. Put the mold in the desiccator to
   remove bubbles.
9. Leave it overnight at room temperature and/or cure it in the
   oven to solidify.
10. When the PDMS is solidified, start cutting the aluminum
    using a blade. Then carefully peel the PDMS of the mold.
    Immediately, wrap it up in food wrap (Saran Wrap).
11. Cut the devices out.
12. Punch holes in the devices. Clean devices with IPA and then water (DI Water). Keep device in a petri dish with feature side up and keep the dish closed.

13. Clean glass slides using acetone, IPA and DI water (in this order). Keep surface clean inside a petri dish.

14. Place the glass slide and the PDMS device onto the tray of the plasmod. Perform this step quickly to prevent surfaces from getting dirty. Also place the feature side of the PDMS and the glass surface to be bonded, facing up on the stage.

15. Start the pump kept below, switch on the plasmod, open the vacuum valve in the back and switch on the vacuum knob.

16. Wait till the pressure gauge drops below 250 mTorr.

17. Open the last valve on the oxygen tank (do not touch any of the other valves on the tank) and then open the oxygen valve on the plasmod. You should see an increase in pressure inside the plasmod.

18. Once the pressure goes beyond 350 mTorr turn on the plasma knob.

19. You should see a faint purple haze in the plasma chamber. If you do not see it, try adjusting the ‘Tuning’ knob a bit (Not a lot!). (Note: If you do not close the plasmod door, then the plasma will not generate.) Set the power to 20 W (black mark on the power dial) using the ‘Level’ knob, if not set already.

20. After 30 sec, switch off the plasma, turn off the oxygen valve on the plasmod and switch off the vacuum. Wait for the plasma chamber pressure to equilibrate and then take the PDMS and the glass slide out. Bond it by placing the PDMS gently on top the glass slide. DO THIS STEP QUICK ENOUGH as bonding strength goes down with time. Also
exposed surfaces attract dust and other contaminants if left non-bonded for long. If you are done, switch all valves off (two on plasmod one on oxygen tank), switch off plasmod and vacuum pump.

21. There should be a good bond. If not, place the device at 100 ºC for some time.