

# PDMS-Glass Bonding Report – Anatech

Updated on 11/09/2015

## Critical Factors

- Set Power to 30W, Time to 15s, and O2 Flow Rate (MFC) to 50sccm for bonding PDMS to glass
- Ensure the cleanliness of the glass slide before bonding

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## Materials

- PDMS/PDMS Curing Agent
- Glass Microscope Slides

## Equipment

- Anatech Barrel Etcher

## Process Parameters

- Power: 30 W
- Time: 15 seconds
- O<sub>2</sub> Flow Rate (MFC): 50 sccm

## Protocol

1. Load samples atop the stand with surface to be etched facing upwards.
2. Close the plasma chamber.
3. Start the vacuum to start the process.
4. Once the recipe has run and the chamber has vented, remove the samples.
5. Place the PDMS in conformal contact with the glass slide.
6. Apply gentle but uniform pressure to PDMS for 10s
7. Incubate PDMS on glass at RT for 20 min
  - a. Note: If more than one device was bonded, do not leave them in contact with one another at least for a few hours as partial plasma activation could have occurred on the other surfaces of the PDMS or glass.

### Tested Parameter Results

| Power (W) | Duration (s) | O <sub>2</sub> Flow Rate –MFC (sccm) | Pressure (mTorr) | Depth   | Peel Test |
|-----------|--------------|--------------------------------------|------------------|---------|-----------|
| 30        | 5            | 50                                   | 660 to 700       | Deep    | Pass      |
| 30        | 10           | 50                                   | 640 to 700       | Deep    | Pass      |
| 30        | 15           | 50                                   | 610 to 690       | Deep    | Pass      |
| 30        | 30           | 50                                   | 600 to 700       | Deep    | Pass      |
| 30        | 45           | 50                                   | 610 to 700       | Deep    | Pass      |
| 40        | 5            | 50                                   | 630 to 690       | Deep    | Pass      |
| 40        | 10           | 50                                   | 640 to 700       | Deep    | Pass      |
| 40        | 15           | 50                                   | 610 to 700       | Deep    | Pass      |
| 40        | 15           | 50                                   | 620 to 690       | Shallow | Pass      |
| 60        | 15           | 50                                   | 630 to 710       | Deep    | Pass      |
| 120       | 15           | 50                                   | 710 to 915       | Deep    | Pass      |