

STANDARD OPERATING PROCEDURE (SOP)

November 1, 2004

Process: Plasma etcher

Required Eqmt: Oxygen Plasma (March Instruments)

INTRODUCTION

1. Make a reservation prior to using plasma etcher
2. All work as well as the number of fabricated devices must be recorded in the “wk-week” file located in the “all users folder” or “desktop” in cleanroom computer.
3. The process can be used to etch organic materials or create broken bonds on surfaces and can be used to etch, clean substrates and for bonding of PDMS to any substrate.

SAFETY

1. Oxygen Plasma is colorless but upon removal of organic material produces a violet color, which is believed to be UV radiation. Do not look directly into the plasma light as it is considered to be a safety hazard.
2. If Plasma Etcher’s vacuum door remains locked at the process end, follow manual procedure for opening vacuum chamber.

PROCEDURE

Start up:

Turn on the gases (N₂, O₂ cylinders - in service area)

Turn on the mechanical pump (in clean room, power strip) * turn on pump 30 min prior to starting

Turn on the plasma chamber (green button on control panel)

Turn on RF generator switch (little red switch on left-front of RF generator)

Turn on the O₂ on the wall by turning the valve SLOWLY counterclockwise -approx 2 turns

Turn N₂ valve 90 deg counter clockwise to open the valve (directly behind the plasma gen)

Loading:

Place wafers (2 per shelf max - 4 in wafers) in the plasma ash, close door

Check/Choose program –



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Parameters	Cleaning Progm 1	Bonding: Progm 3	Bonding: Progm 7	Bonding: Progm 9
pressure (mT)	363-work pressure	100	200	70
power (watts)	200	20	50	50
End pt. (%)	100	100	100	100
Time (sec)	180	25	35	20
DC bias (watts)	0	0	0	0
bp/rp (mT)	100 *	100*	70*	70*
Oxygen (ccm)	50	1	2	2

*** Warning!!**

When Plasma running if bp/rp is above 10, shut the machine down immediately. A good bp/rp is ~05.

Processing:

Press START (auto) to run program. (Little black button on left front panel)

When the program has finished, consistent beeping sound, Press STOP (little black button on left front panel).

Note: As of 08/18/03 "Bleeding" valve has been repaired and there is no need to outgas chamber manually.

Open chamber. open latch to chamber

Remove wafers and close chamber BUT do not lock.

(If the plasma etcher is no longer needed), follow procedure in Startup in the REVERSE order and turn OFF and CLOSE valves, otherwise, place new wafers in the chamber and proceed by pressing START.

Close main N2 valve (black handle)



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