

STANDARD OPERATING PROCEDURE (SOP)

February 9, 2004

Process: PDMS Bonding.

Required Eqmt: Plasma Etcher and Hot Plate

INTRODUCTION

1. Make a reservation prior to bonding. Plasma Etcher and Hot Plate equipment must be reserved on the "Cleanroom Reservation Sheet"
2. SOP's for the Plasma Etcher and Hot plates are available.
3. This procedure is intended to serve as an introduction or a refresher to reinforce training on the equipment, but does not qualify the individual to use the machine.
4. 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.
5. A Plasma "run" consist of an average of 6 devices however device size determines the quantity of devices that can be accommodated in the plasma etcher's shelf.

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

Place clean glass slides and PDMS samples on Plasma Etcher's Aluminum shelf. PDMS samples must be placed on the shelf with pattern facing up.

Insert Aluminum shelf inside vacuum chamber. Plug shelf to positive electrode in vacuum chamber and close vacuum chamber.

For PDMS bonding choose program #7 and press the "START" button. Program #7 will automatically run the plasma treatment process from beginning to end.

At the end of the plasma treatment process, press "STOP" button, open vacuum chamber door and remove Aluminum shelf. Place shelf on the stainless cleanroom table and proceed to set the PDMS samples on top of the glass slide. Smooth out any trapped air bubble at the bonding interface and place glass slide-PDMS assembly on a hot plate at 70oC for 10 min.

At the end of the hot plate cycle test bond by inward pushing the edges of the PDMS with a pair of tweezers. NOTE: Do not stack storage bonded devices since devices will continue bonding together at room temperature.