CIBA Faculty of Science, Dept of Physic ,Centre of Ion Beam Applications	Procedure No:	CIBA/SOP/Exp/001
Title: **Poly-dimethylsiloxane (PDMS) casting**	Rev No: Issue Date:	0001 14 Nov 2008
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1 Objective:

This Standard Operation Procedure states the procedure of PDMS casting.

2 Responsibilities:

2.1 Director / HOD / PI

The Director/HOD/PI has overall responsibility for ensuring a system is established for the PDMS casting.

2.2 Designated Person

There shall be a designated person to oversee the correct operation of the PDMS casting.

a. He/she will report to the Director/HOD/PI unsafe practices by direct PDMS casting users.

2.3 Staff/ Research personnel

a. PDMS casting users shall attend appropriate training on the safe use of the machine.

b. Users shall report any injuries, defects or breakdowns to their supervisor.

3 Procedures:

1. PDMS Pouring

   1.1 Wear pair of gloves, face mask and lab coat.

   1.2 Take the master mold out of the container. Secure it on the base of the Petri dish by the double side tape. Using a gun blower to push the sample against the bottom of the Petri dish and clean the sample.

   1.3 Using the weighing scale, mix PDMS base and curing agent at a weight ratio of 10:1.

   1.4 Mix the procured PDMS with a mixing fork for about 1 minute till it is thoroughly mixed.

   1.5 Place the mixed pre-cured PDMS in the vacuum desiccator to degas. Evacuate the chamber till there is no bubble present in the mixture.

   1.6 Pure the mixed and degassed into the Petri dish containing SU-8 master mold.

   1.7 Degas the mixture for at least 30 min. Vent the chamber when there is no bubbles, or there is only a few bubbles.

1.8 Take the mixture out of the desiccator and place in an oven at 65 degree centigrade for at least 4 hr. At increased temperature (such as 95 degree centigrade), the duration may be shortened to 1-2 hr.

2. PDMS release

    2.1 Take the hardened PDMS chip out of the oven.

    2.2 Cut off the edge of the Petri dish.

    2.3 Use a tweezer to gently release the PDMS from the bottom of the Petri dish. Make sure the PDMS is away from the double-side tape and the mold is not damaged.

    2.4 After the edge of the PDMS chip is totally away from the bottom, gently lift up the PDMS chip and make PDMS casting structure away from the master structure. To keep the master structure undamaged, it is better for the PDMS chip to be peeled off in the direction parallel with long axis of the structure.

    2.5 Store the master. Store the PDMS chip in a new container with the copied feature facing up and keep it in a oven at 65 degree before use.