

Denton Desk V Sputter Coater

Standard Operating Procedure

Faculty Supervisor: Prof. Robert White, Mechanical Engineering (x72210)

Safety Office: Peter Nowak x73246 (Just dial this directly on any campus phone.)

(617)627-3246 (From off-campus or from a cell phone)

Tufts Emergency Medical Services are at x66911.

Revised: October 4, 2017

Warnings:

High voltage and vacuum during deposition, do not open the chamber until the deposition is complete.

The instrument will deposit a thin metal film (Au typically) used in SEM sample preparation. It is not meant for thicker films such as those deposited by the other PVD tools – NSC3000 sputter, Angstrom, thermal evaporator, etc.

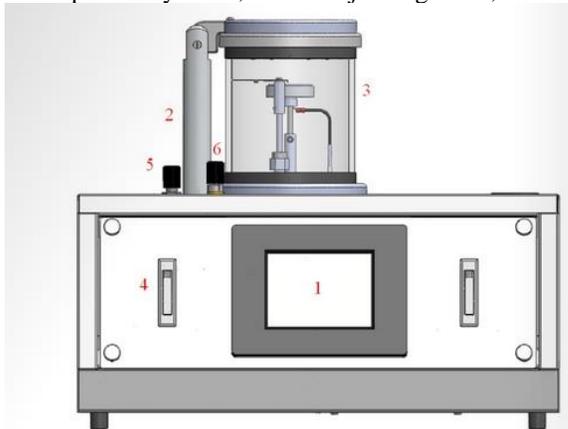
1.0 Material Requirements:

1.1 Equipment: specimen(s) mounted on a 12.5mm stub with carbon tape, stub tweezers.

1.2 Personal Protective Equipment: nitrile gloves, safety glasses

2.0 Procedure:

1. The chamber should not be under vacuum, open the lid and load specimen(s) onto the stage. Note the operation of the shutter, if you wish to use it inspect clearance and, if possible, close. You will have to open the shutter manually when deposition is about to begin. It is not necessary to use it, in that case make sure to rotate it out of the way. Close chamber lid making sure it seats properly. Open Ar cylinder, do not adjust regulator, it should remain ~60psi

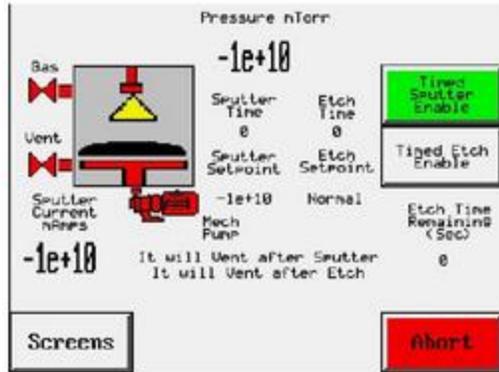


Front View of Unit

1. Touch Screen
2. Head Support
3. Vacuum Chamber
4. Front Panel Removal Latch
5. Gas Adjustment
6. Shutter Position Adjustment

Component location

2. Press the touch screen to begin, you should see the overview screen (see below). Select Timed Sputter Enable. Do not select the other options.



3. The expected process for timed sputter -
 - a. Mechanical pump will turn on and pump to 50mT or below (3-4 min)
 - b. Ar gas will flow and stabilize for 30s. Both the Ar cylinder and gas adjustment valve (#5 on the component location image) are set to target 50-60mT process pressure. They should not need adjustment
 - c. User must open shutter if necessary
 - d. Sputter power up (set to 35mA) after a two second delay
 - e. Deposition will continue for 45s
 - f. Once deposition finishes chamber will vent
 The Touchscreen will display process info – pressure, sputter power, timer
 Test depositions indicate resultant film is 15-20nm thick
 Entire process should take 10-12 minutes
4. Remove your specimens, close chamber lid
5. Close Ar cylinder

If at any time the instrument behaves oddly or there is an emergency please press the Emergency Off button (big red button on the front panel) and notify management. If the Au sputter target seems eroded please notify us so we may purchase another.

Report all accidents or tool issues to Prof. White at x72210, r.white@tufts.edu.