

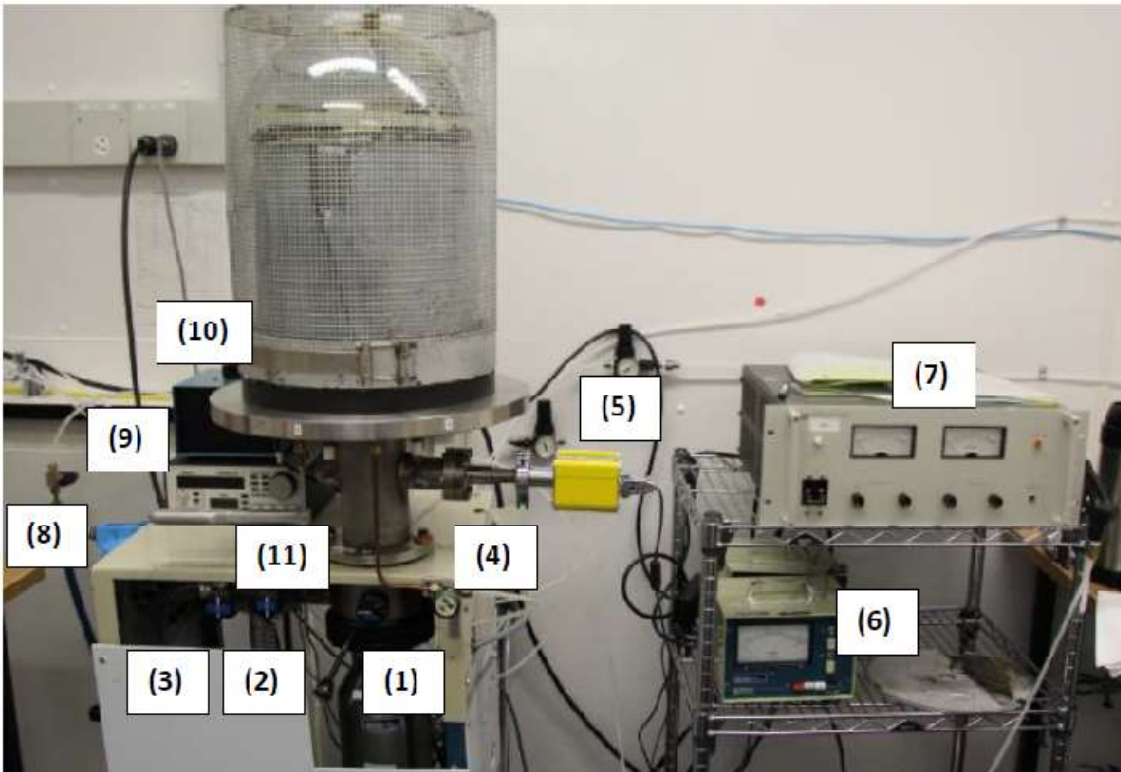
NanoQAM

Centre de Recherche sur les Nanomatériaux et l'Énergie

QUICK START

Physial Vapor Deposition System

Step by Step Procedure



1- Valve (I), 2- Valve (II), 3- Valve (III), 4- Nitrogen valve, 5- High vacuum Gauge monitor, 6- Thermocouple Gauge, 7-Current Source, 8- Cooling water valve (light blue), 9- Thickness monitor, 10-Source selection knob, 11- Shutter

**NEVER EVER OPEN VALVE (II) and (III) AT THE SAME TIME.
THIS WOULD DESTROY THE SYSTEM AND REPARATION
TAKES WEEKS!!!**

Pre-vacuum and loading

- 1- Push START to activate the mechanical pump,
- 2- Switch on the thermocouple gauge (6),
- 3- Wait 5 mins for the pressure to reach 10^{-2} Torr,
- 4- Open valve (III) and wait until pressure reaches 10^{-2} Torr,
- 5- Open cooling water valve (8),
- 6- Push START to activate the diffusion pump. Wait 20 mins,
- 7- Open nitrogen (4) to vent the chamber,
- 8- Remove glass bell jar, load samples and put back the glass bell jar,
- 9- Wait until pressure reaches 10^{-2} Torr,
- 10- Repeat this step as many time as necessary :
 - a) Close (III) Open (II),
 - b) Wait until pressure reaches 10^{-2} Torr. **If it takes longer than 5min, it can damage the system so you must ;**
 - c) Close (II), Open (III),
 - d) Wait until pressure reaches 10^{-2} Torr (as long as necessary),
 - e) Repeat from a).

Purge

- 1- Close (II), Open (III),
- 2- Open nitrogen (4) gently for 3 sec,
- 3- Repeat step 9,
- 4- Now (III) should be open and (II) closed. Open gently (I). If the pressure drops to fast :
 - a) Close (I), wait until pressure reaches 10^{-2} Torr,
 - b) Open(I), Repeat from a),
- 5- Switch on the high vacuum gauge monitor (5) and wait until pressure reaches 10^{-6} Torr.

Evaporation

- 1- Switch ON thickness monitor,
- 2- Push program (9) to enter the selection menu,
- 3- Select the film,
- 4- Push the knob to modify / verify parameters (see Material parameters),
- 5 Push program to exit,
- 6- Select the source (10),
- 7- Turn voltage and current to zero on the current source before switching on the DC power supply,
- 8- Increase slowly the current and voltage (/) until deposition rate starts to increase (or until the desired values are reached),
- 9- Open the shutter (11) and set the timer and thickness measurements to zero (9),

10- Once the desired thickness is reached, close the shutter, turn the current and voltage to zero, switch off the DC power supply.

Unload samples and shut down

- 11- When finished, wait 15 min,
- 12- Close (I),
- 13- Open nitrogen (4) until pressure reaches room pressure, Close nitrogen,
- 14- Unload samples,
- 15- Close (III), Open (II) to pump out the chamber,
- 16- Close (II), Open (III),
- 17- Stop the diffusion pump,
- 18- Wait 15 min,
- 19- Stop the mechanical pump,
- 20- Wait 15 min,
- 21- Stop cooling water.

Material parameters

Matériau	Densité	Facteur Z	Tooling	Source
Al	2.73		85 (110%)	1.2 (Prog2)
Au	19.3		59	4
LiF	2.64		85	Prog1
TPD	1.00		100	
Cr	7.20		100	4
Cu	8.93			4.2 Prog 2
Alq3	1.00		50	Prog 6
Pd	12.04		100	4
NPB			50	3
BCP			50	3
DPVBi			50	3
C60				3
Pentacene				3
Ag	10.49	0.529	59	

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