Physic Department

Summer Training

Dr Ibrahim Elsayed

Thin films deposition techniques

- Why thin films?
- 2D Physics
- Applications
- Semiconductors industries
- Coating industeries

Deposition

- Chemical deposition
- Physical deposition
- Wet deposition

Vacuum system

- Why vacuum?
- To move a particle for long distance
- To provide a clean surface
- For thermal isolation

Chemical Deposition

- Reaction at the surface
- Seeds or catalyst at the surface
- Material sources
- SWCNT
- MWCNT

Chemical vapor deposition

- Graphine
- SWCNT
- MWCMT
- ZnO2 nano rod

Physical deposition

- Source materials
- Substrate
- From Source to substrate

Physical deposition

- Thermal evaporation
- Electron beam evaporation
- Sputtering techniques
- Pulsed laser deposition

Physical deposition

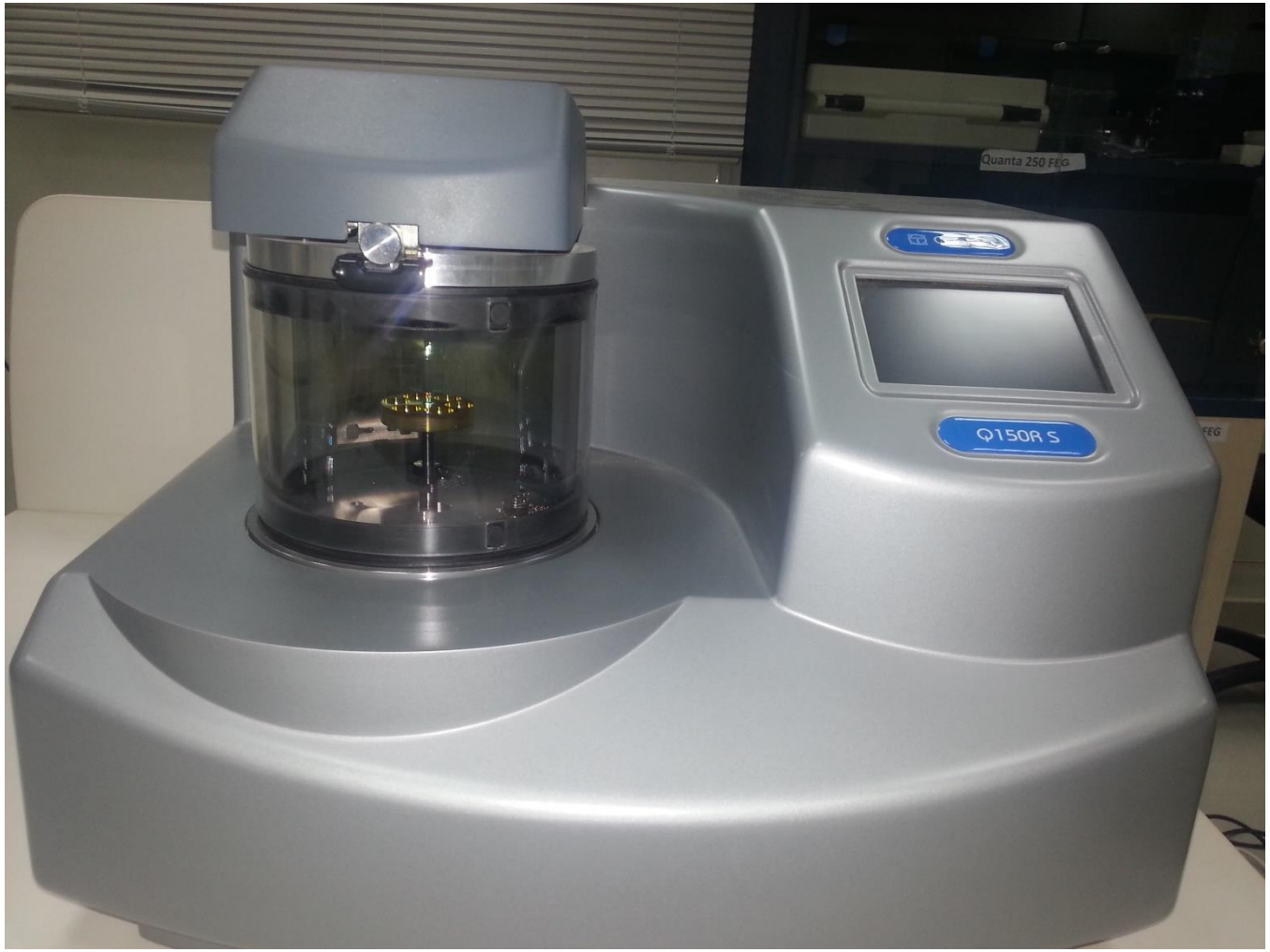
- Finest
- cleanest
- Most controllable
- Coasting

Physical deposition

- Thermal deposition

Physical deposition

- Sputtering

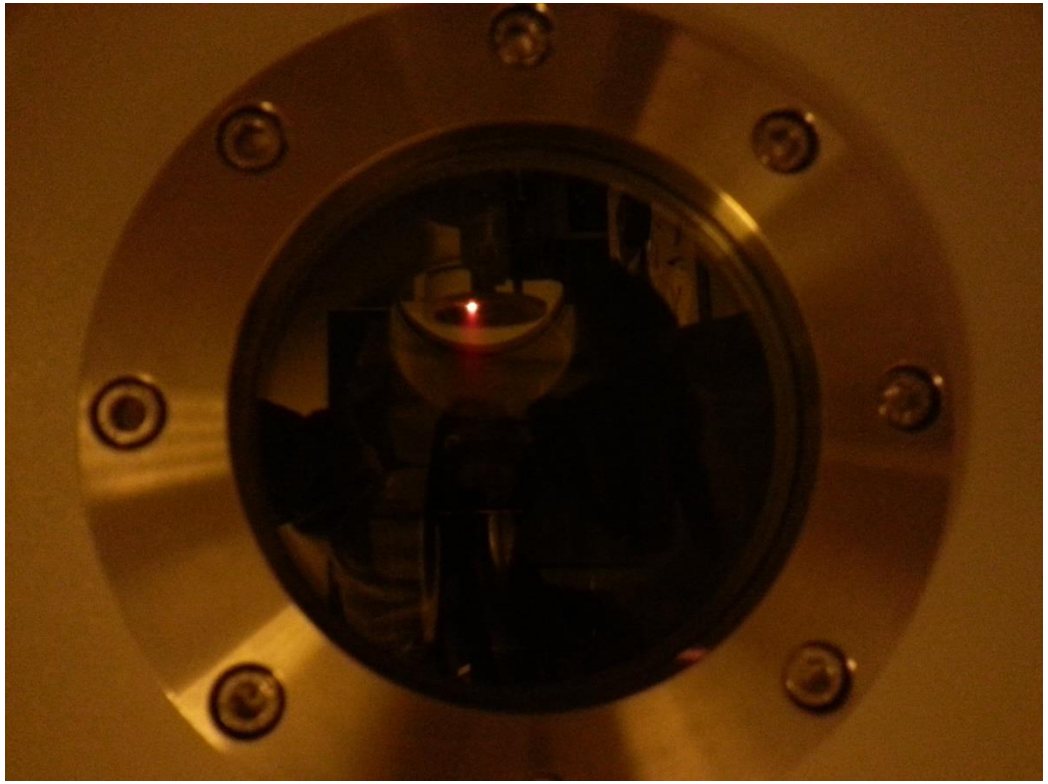


Physical deposition

- Electrons beam evaporation

Physical deposition

- Pulsed laser deposition



Wet techniques

- Spin coating
- Deep coating
- Ink jet printing
- Spraying
- Doctor blade
- Other techniques

Our department

- Thermal evaporation
- Spin coating