

## Thin Films Synthesis Laboratory

The sputtering phenomenon occurs when a particle strikes a surface with enough energy to dislodge an atom from the struck surface. We can have sputtering with various incident particles (electrons, neutrons, atoms, etc.). In all practical cases, ion bombardment of inert gases such as Argon is used. The physical deposition technique is based on the transfer of kinetic momentum and kinetic energy between the incident particles and the surface.

In the laboratory we have the following equipment:

1. Installation for the deposition of thin layers by the magnetron sputtering method

The installation (Kurt Lesker, Varian, Advanced Energy and Maxtech INC), for the synthesis of thin films, works in the DC and AC magnetron sputtering modes, using 3 sources (magnetrons). The following parameters are controlled:

- temperature of the substrate
- sputtering power
- sputtering gas pressure
- deposition rate and film thickness.



## 2. Measuring System for electrical resistance as a function of temperature, in the range 10-300K

**3. Masuratori de transport : dezvoltari experimentale:**

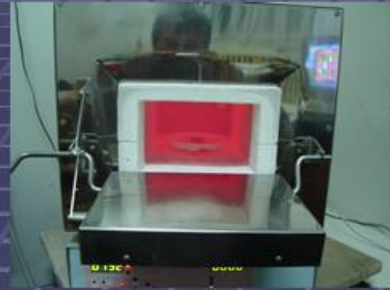



- Instalatie de masura a rezistentei electrice in functie de temperatura (fara consum de lichide criogenice)
- Tehnologie de modificare a concentratiei de purtatori mobili in SC




Specificatii	CCS-350
Interval de temperatura	10 K - 325 K
Timpul de racire initial	~1 hr. la 10 K
Timpul de racire dupa racirea initiala (300 K to 10 K)	30 min.
Putere de racire	~2 wati la 20 K
Greutatea sistemului intreg	100 Kg.
Greutatea terminalului rece si a criostatului	9 Kg
Ferestre de acces optic	2.5 cm diametru

## 3. Programmable atmosphere oven for obtaining the target and for thermal treatments

1) Sinteza de targeturi din compusi oxidici supraconductori si oxid de Zn ( ZnO dopat cu Al,Ga si metale rare),.

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**Working hours: Monday-Friday 8-20**

The access at this equipment is unrestricted for UBB researchers/teaching staff and with payment for external users, only under the supervision of the laboratory staff. An appointment must be made.

**For access to the lab, please contact us by e-mail: [claudiu.lung@ubbcluj.ro](mailto:claudiu.lung@ubbcluj.ro).**