



CYCLE DE CONFÉRENCES DE CHIMIE

*Avec le concours de : Université Clermont Auvergne
INP Clermont Auvergne*

Mardi 26 mars à 16 h (hors cycle)

Amphi Rémi (site des Cézeaux)

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Plasma-based magnetron sputtering for materials science and surface engineering

Magnetron Sputtering (MS) is a low-pressure plasma-based process. It is a mature, industry-relevant, technique for depositing functional thin films, even on large substrates such as architectural glasses. During MS, plasma ions are accelerated towards the cathode surface by applying an electrical potential. The ion bombardment provokes the sputtering, i.e., the ejection of surface atoms. Sputtered atoms are then transported through the plasma and condense on neighboring surfaces and form a film whose thickness can be controlled with nanometer precision.

In this presentation, we will explain what are the available “knobs” for controlling the plasma characteristics and the physico-chemical properties of the deposited thin films.

MS offers the possibility to design thin film with chemical compositions ranging from pure metals to alloys, as well as oxides, nitrides or carbide compounds. Depending on the working parameters, the thin films can be amorphous or (poly)crystalline, porous or dense.

Furthermore, we will present advanced MS processes such as Glancing Angle Deposition (GLAD), which allows controlling the nanostructure of the films with a high-level of precision, and sputtering onto liquids enabling the production of colloidal suspensions of small nanoparticles.

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