

Introduction into Crystallography of Thin Films; Relationships between physical and structural properties; Surface Analysis, Characterisation

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Abstract

Today, coatings are used in many applications for decorative or / and functional purposes. In functional coatings, the surface properties of the substrates such as adhesion, corrosion or wear resistance can be changed. In semiconductor device fabrication, the coating adds completely new properties such as electrical conductivity, magnetic or optical responses. Understanding the structure of thin films will improve their fabrication. This course uses mainly X-ray Diffraction (XRD) techniques to investigate the structural properties of coatings obtained by different deposition methods. After introducing basic thin film and HR-XRD characterization methods, fundamental theory and limitations will be discussed including real world examples.

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