VACUUM SPUTTERING THIN FILM FORMATION BASED ON INORGANIC TARGETS

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Relevance: Vacuum sputtering is a widely used technique for depositing thin films onto various substrates. Among its many applications, vacuum sputtering offers precise control over film thickness, excellent uniformity, and compatibility with a wide range of materials.

Goal of the work: to explores the process of vacuum sputtering thin film formation based on inorganic targets, highlighting its advantages, applications, and future prospects.

Result analysis – Vacuum sputtering is a physical vapor deposition technique that involves bombarding a solid target material with high-energy ions. The collision of ions with the target surface causes atoms or molecules to be ejected, forming a vapor or plasma. This vapor then condenses onto a substrate, resulting in a thin film deposition. In the case of inorganic targets, materials such as metals, oxides, nitrides, and semiconductors are commonly used, Vacuum sputtering offers several advantages for thin film formation based on inorganic targets [1]:

1. **Precise Film Thickness Control**: Vacuum sputtering enables precise control over the thickness of deposited films, ranging from a few nanometers to micrometers. This control is vital for many applications, such as electronics, optics, and surface coatings.
2. **Excellent Film Uniformity**: The sputtering process ensures high uniformity across the deposited film, resulting in consistent properties and performance. Uniformity is critical for applications requiring homogeneous coatings or functional layers.

The versatility of vacuum sputtering thin film formation based on inorganic targets has led to its widespread adoption in numerous industries and applications (Nanoscale Thin Films, Multilayer and Composite Films and et. el.

Conclusion. Vacuum sputtering thin film formation based on inorganic targets is a versatile and effective technique with broad applications in various industries. Its ability to provide precise film thickness control, excellent uniformity, and compatibility with a wide range of materials makes it a valuable tool for the production of functional coatings, electronics, optics, and more.

Литература

1. Формирование композиционных покрытий ионно-лучевым распылением мишеней на основе микропорошков пирогенного кремнезёма, содержащих соединения меди / М. Ф. С. Х. Аль-Камали [и др.] // Вестник Гродненского государственного университета имени Янки Купалы. – 2022. – Т. 12, № 2. – С. 14–23.