Parameter study on the deposition of aluminum oxide for the development of thin insulation layers

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Work content

IMPT has a unique modular coating and structuring system for the cleanroom-independent production of application-specific sensors on large components. The system's coating module sputters insulation, sensor, and cover layers directly to the component surface. There is always a trade-off between the thinnest possible insulation layers for productive and resource-efficient production and thicker insulation layers to ensure the insulation effect.

Aluminum oxide is one of the most commonly used materials as an insulation layer. Due to its high coefficient of thermal expansion for ceramics, it is well suited for deposition on metallic substrates such as stainless steel.

Within the scope of this work, a parameter study is carried out with the coating module of the system to achieve thin aluminum oxide layers in the range of a few 100 nm, depending on the substrate roughness, with a high insulation effect (specific resistance, breakdown field strength).

Type of work

Bachelor Thesis

3 months

Requirements

- Independent, structured, self-reliant work
- Interest in thin film technology
- Enjoy practical work

Starting date

01.02.2025

12.12.2024

Field of work: Thin film deposition

Leibniz Universität Hannover

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