



EINLADUNG zum IFP-SEMINAR

Coating Granular Materials by Physical Vapor Deposition

Andreas Eder

Institut für Festkörperphysik, TU Wien

Host: Christoph Eisenmenger-Sittner
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Ort: Institut für Festkörperphysik, TU Wien
Wiedner Hauptstraße 8-10, 1040 Wien
Seminarraum DC rot 07 (roter Bereich, 7. OG)

Abstract:

Granular materials attract increased attention in the field of material science and catalysis especially if coated with functional surface layers. To achieve homogeneous layers with Physical Vapor Deposition (PVD), in special sputter coating, each particle surface has to be exposed equally to the vapor beam and therefore continuous intermixing is necessary.

In this talk a coating device will be presented, based on a mechanism developed on the Vienna University of Technology [1,2,3]. It is capable to coat up to one liter of granular material of arbitrary shaped particles with diameters ranging from 10 μm to 500 μm .

A theoretical film thickness prediction model will be presented and verified on granulates of different size and shape. Special focus will be laid on assessing the film thickness and uniformity with different methods such as gravimetric measurements, optical and electron microscopy to verify the model. In addition a method to measure electrical conductivity on granular materials and coated granulates will be shown, and different influences e.g. of film thickness and particle diameter will be discussed.

[1] G. H. S. Schmid, C. Eisenmenger-Sittner, J. Hell, M. Horkel, M. Keding, H. Mahr, Surface & Coatings Technology 205(7) (2010) 1929.

[2] G. H. S. Schmid, C. Eisenmenger-Sittner, Surface & Coatings Technology 236 (2013) 353.

[3] G. Schmid, C. Eisenmenger-Sittner, J. Hell und M. Quirchmair, „Vorrichtung zum Beschichten eines Substrates“. Österreich Patent AT 513 037 B1 2014-01-15, 15 01 2014.