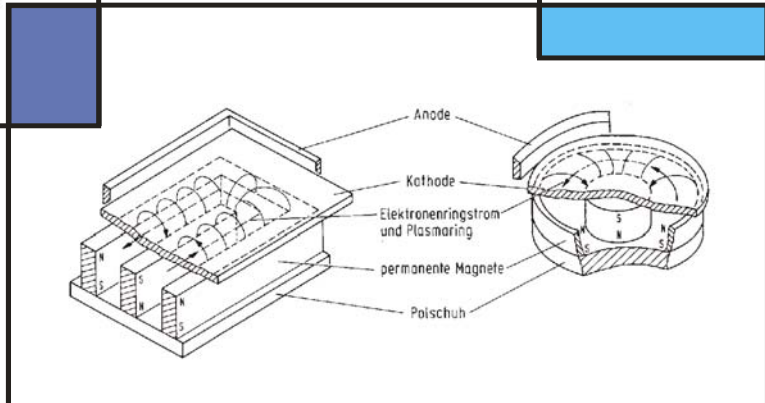
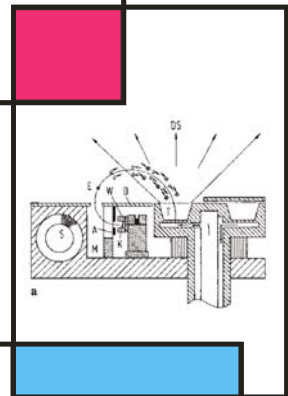
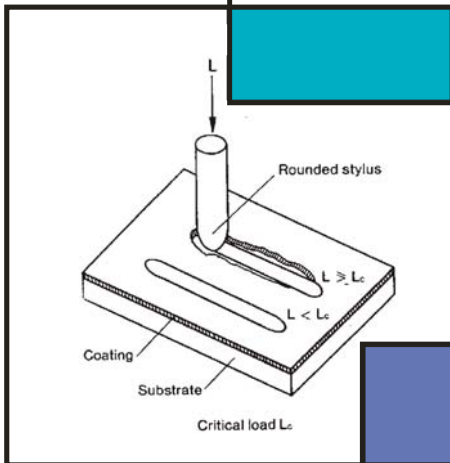
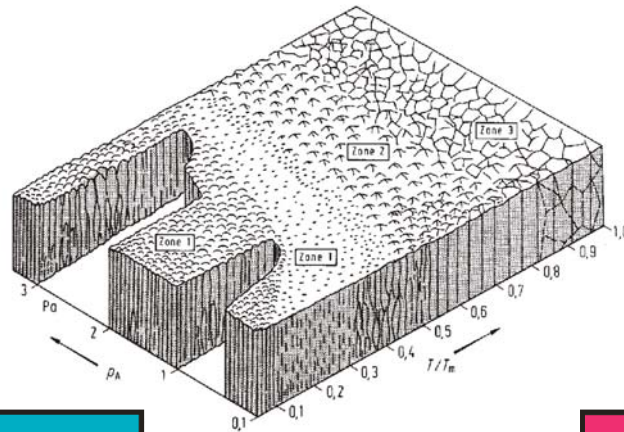
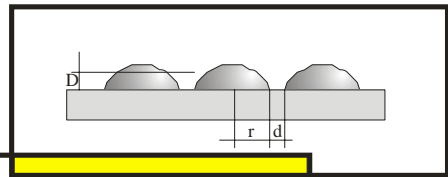
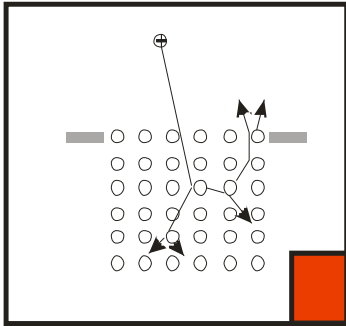


# "Technologie Dünner Schichten" "Physik Dünner Schichten"

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LVANr.: 138.030, 138.032



# ***"Thin Film Technology"***

# ***"Physics of Thin Films"***

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## **Preface:**

The present Volume of Lecture notes is based on the Lecture "Physics and Technology of Thin Films". The basic version was authored by Dr. Anton Bergauer in 1993. Starting 2000 the lecture notes were regularly updated by Dr. Christoph Eisenmenger-Sittner. In 2006 the four hour lecture "Physics and Technology of Thin Films" was divided into two two hour lectures, "Thin Film Technology", LVA 138 030 and "Physics of Thin Films", LVA 130 032. Together, both lectures comprise the topics of the present script. Within the script the contents of the two lectures can be distinguished by different fonts.

Contents which concern LVA 138 030, "Thin Film Technology" are written in "Areal" font. The lecture deals with the most important technologies of thin film deposition from the vapor and the liquid phase as well as the most common methods of thin film characterization in respect to e. g. thickness, mechanical, electrical and optical properties. Also the most important applications of thin films are discussed. The lecture specifically aims at bachelor students and does not comprise a deeper analysis of the methods discussed.

*Contents which concern LVA 138 032, "Physics of Thin Films" betreffen, are written in "Areal italic" font. The topics of this lecture are the basic physical principles of thin film deposition and thin film formation. The physical principles of vacuum technology, the emission of atoms from the solid phase by thermal or mechanical processes and the elementary steps of film condensation from the vapor phase are discussed. Additionally, the reasons why the mechanical, electrical and optical properties of thin films differ from the three dimensional bulk are elucidated. The lecture aims at master students and therefore requires knowledge about certain advanced mathematical and physical methods and concepts as e. g. distribution functions, transport theory and thermodynamics.*

Contents which are treated in both lectures (of course this part was reduced to the maximum, but could not completely be avoided) finally are written in the "Times New Roman" font.

The lecture notes were refined in 2017. References from basic Thin Film textbooks were included to provide the reader easy access to information for further studies. The number of secondary literature was kept to a minimum. Therefore, for original quotes, the references in within the textbooks provided, should be used.

Vienna, August 2017  
C. Eisenmenger-Sittner