



CEITEC
BRNO UNIVERSITY
OF TECHNOLOGY

ADVANCED MATERIALS AND NANOTECHNOLOGY

SEMINAR SERIES 2018

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State of the art investigations of passive films; from material libraries over photoelectrochemistry to trace analysis

FEBRUARY, 6
Tuesday, 10:00

Seminar room S2.02
CEITEC BUT, Purkynova 123

Most of the important metallic materials can be used only because of the formation of a protecting passive oxide film. To name only a few examples, stainless steel is covered by a chromium oxide film, aluminium in window frames and lining profiles is protected by a porous oxide film, and titanium as an important implant material rules due to its highly biocompatible oxide. This is the perfect starting point to consider tailored oxides as a design rule for advanced materials. The CALMAR system is introduced which is a state of the art research cluster combining a number of preparation and characterisation techniques namely sputtering, thermal coevaporation and electron beam deposition followed by scanning EDX, scanning kelvin probe microscopy, scanning XRD and various types of SDCM (scanning droplet cell microscopes). The latter ones are scanning microelectrochemical cells that may be equipped with illumination systems and can be connected to trace analysis systems such as ICP-MS and ICP-OES to couple electrochemistry directly with the downstream analytics of electrochemical experiments. Both, scientific and technical applications will be presented, in which oxides on metals show the state of the art in passive films.