MM 15: HV Meyer

Time: Tuesday 9:30–10:00 Location: H 1058

Invited Talk MM 15.1 Tue 9:30 H 1058

Phase Transformations in Thin Films and Near-Surface Regions: Stimulation and Application — •Dirk Carl Meyer — Technische Universität Dresden, Institut für Strukturphysik

In thin films and near-surface regions of materials the variety of structural phases - due to the influence of surface energy or strain - can be extended significantly. Beyond, a lot of preparation methods is characterised by a processing far from thermodynamic equilibrium, allowing for stabilisation of crystalline metastable states. Additionally, regions near electrodes or in direct contact with atmosphere can exhibit a structural behaviour quite different from that of states which are characteristic for thermodynamic equilibrium of volume materials. Generally speaking, for this kind of materials only the tendency of reactions can be obtained from studies of thermodynamic equilibrium phase diagrams. The influence of external fields and any kind of energy support in turn can yield to other metastable states which represent an energetically more suitable situation. In certain cases this ripening can be reversed. The investigation of this variety of structures and transitions is of high interest due to the well-known fact that a new phase originates new properties what is outlined with respect to technical applications.