

MM 44: HV Hugenschmidt

Time: Thursday 9:30–10:00

Location: H 0107

Invited Talk

MM 44.1 Thu 9:30 H 0107

Positrons Probing Matter: Bulk and Thin Film Studies Using the Low-Energy Positron Beam at NEPOMUC — ●CHRISTOPH HUGENSCHMIDT — Technische Universität München

Experiments using positrons as microprobes allow the investigation not only of lattice defects but also of their chemical surrounding. Thin films as well as the bulk of samples can be studied using a low-energy mono-energetic positron beam. The defect sensitive Doppler broadening spectroscopy (DBS) of the annihilation line is well suited to perform spatially resolved defect maps. Moreover, due to the large background suppression the coincident mode (CDBS) enables the non-destructive

examination of the elements involved in the annihilation process.

As examples, studies on plastically deformed samples of Al alloys and on irradiated materials will be presented. In addition, recent depth dependent experiments on defect annealing in thin Cu-layers and on temperature dependent alloying of thin CuAu-films will be presented. It is demonstrated how the formed phase can be determined by comparison with theoretically calculated annihilation spectra.

Within this presentation, an overview of the beam facility at the neutron induced positron source NEPOMUC and the positron instrumentation is given as well. Future developments and applications of the high-intensity positron beam will be discussed.