

**MM 8: HV Mücklich**

Time: Monday 14:00–14:30

Location: H 1058

**Invited Talk** MM 8.1 Mon 14:00 H 1058  
**Microstructure tomography - an essential tool to understand 3D microstructure and local degradation effects** — ●FRANK MUECKLICH — Universität des Saarlandes, Saarbruecken, Germany

Since the traditional 2D planar section sampling in cases of complex shaped microstructures often supplies insufficient information, the quantitative investigations of the essential correlations between processing, microstructure and properties in advanced materials call for an adequate imaging and quantification of the 3D microstructure. X-ray and electron tomography still suffer from a lack of resolution or field of view size respectively. Representative characterization can be done by the help of microstructure tomography [1]. This method

combines the excellent target preparation possibilities of a focused ion beam (FIB) with all types of SEM contrast. It enables extensive serial sectioning of representative sample volumes and the imaging of chemical and structural phenomena with a resolution of about 2-10nm. Once the 3D data set is available, their exploitation in 3D image analysis provide quantitative insights into the relation between processing, structure and properties. So far the complex formation of multiphase 3D microstructures, the related interface as well as seeding phenomena and also very local degradation effects were investigated. The talk will provide a general overview of the potential and the limits of this technique supported by examples of some technical relevance in different materials. [1] Lasagni, Marks, Holzapfel, Degischer and Muecklich: Acta Materialia 55(2007)3875-3882