MM 42: HV Spiecker

Time: Wednesday 18:00–18:30 Location: H 0107

Invited Talk MM 42.1 Wed 18:00 H 0107

In-situ Transmission Electron Microscopy of Phase Transformations in Materials — •Erdmann Spiecker — Center for Nanoanalysis and Electron Microscopy (CENEM), Department Werkstoffwissenschaften, Universität Erlangen-Nürnberg, Cauerstr. 6, 91058 Erlangen

Over the past decades transmission electron microscopy (TEM) has established itself as a powerful tool for investigation of phase transformations in materials. The unique capability of combining electron diffraction with chemical analysis and structural imaging at high resolution makes TEM particularly suited for studying local material transport and the role of defects and interfaces in phase transformations. In this presentation examples of in-situ TEM studies of phase transformations will be discussed including metal-induced crystallization (MIC) of elemental semiconductors in thin film stacks and structural transformations associated with the metal-to-insulator transition (MIT) in VO2. In MIC grain boundaries and built-up of stress turn out to play a key role in crystallization and related material transport. In the case of MIT the importance of defects and geometric contraints for the occurence of hysteresis will be discussed.