Institut für Festkörperelektronik

TECHNISCHE UNIVERSITÄT WIEN

FKE-SEMINAR

Correlative microscopy / spectroscopy in multi-disciplinary material and device research

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Date and Time: **September 7th, 2016, 11:00**

Location: **Seminar Room Floragasse 7, 1040 Wien**

Host: E. Bertagnolli

Abstract: The innovation potential of correlative microscopy / spectroscopy (CORRMIC) will be demonstrated for energy materials and bio-medical tissue research. Even though both topics seem not to have much in common we will demonstrate that advances in both fields mutually support one another. At the beginning of the 'food-chain', laboratory-scale x-ray microscopy (XRM) will be used to obtain large volume overviews at smallest, lab-scale voxel sizes (~700nm3) for a precise localization of areas of interest. XRM tomography and correlative workflows in microscopy and spectroscopy will enable in-depth structural, compositional, and optical analyses but such approaches still have huge developmental needs. These include: (i) handling (evaluation, storage, correlation / overlay, deployment to users) of vast amounts of data, (ii) exploration of specifically designed sample preparation protocols especially when the workflow foresees correlation of XRM with dual beam focused ion- and electron beam microscopies (FIB/SEM), Raman spectroscopy, and secondary ion mass spectrometry techniques and so on, (iii) exploration of sample pipelines through various microscopy / spectroscopy machines determining a variety of material properties at various length scales from several mm down to sub-nm-resolution, (iv) exploitation of in-situ mechanical testing of samples leading to unprecedented correlated data sets.

Questions to be addressed with CORRMIC approaches in the center of energy materials research and bio-medical bone and kidney disease research will be presented.