TECHNISCHE UNIVERSITÄT WIEN

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EINLADUNG zum IFP-SEMINAR

Mössbauer Spectroscopic Camera for Operando Observation of Diffusion and Segregation in Materials

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Host: Michael Reissner

Termin: Dienstag, 14. Mai 2019, 16:15 Uhr

Ort: Institut für Festkörperphysik, TU Wien
Wiedner Hauptstraße 8-10, 1040 Wien
Seminarraum DC rot 07 (roter Bereich, 7. OG)

Abstract:

Since the discovery of the Mössbauer effect in 1958, all the experimental works have been performed measuring the Mössbauer spectra of wide varieties of materials under different conditions, although many systems contain inhomogeneous microstructures. As far as the future applications of the Mössbauer effect to materials science [1] are concerned, highly desirable must be a "Mössbauer spectroscopic camera" which will facilitate to take "photographs" every minute separately for different spectral components with a spatial resolution of several micro-meters or even sub-micrometres. In this way, we could achieve "Operando measurements", following the dynamical atomic motions and the chemical reactions in the key industrial materials such as iron steel, energy, chemical, and electronics functional materials. In this talk we are going to explain two variants of this camera – one based on a mapping technique, the other on full-field imaging - which have been applied for diffusion studies on Fe in multi-crystalline silicon wafers for silicon solar cells as well as on carbon impurities in Fe steel.

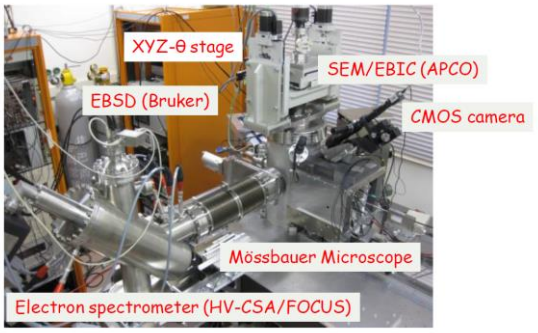

Fig. 1 Mössbauer Spectroscopic Microscope

[1] Modern Mössbauer Spectroscopy - New Challenges Based on Cutting-Edge Techniques-, Eds. Y. Yoshida & G. Langouche, SPRINGER NATURE, to be published in 2019.