TECHNISCHE UNIVERSITÄT WIEN
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IAP-SEMINAR

EINLADUNG

Termin: **Dienstag, 23.3.2010 um 16:00 Uhr**
Ort: **Technische Universität Wien,**
Institut für Angewandte Physik,
Seminarraum 134A, Turm B (gelbe Leitfarbe), 5. OG
1040 Wien, Wiedner Hauptstraße 8-10

Vortragender: **Dr. Aimo Winkelmann**
Max-Planck-Institut für Mikrostrukturphysik, Halle (Saale)/D

Thema: **Diffraction of backscattered electrons at crystal surfaces**

Kurzfassung

Electron backscatter diffraction (EBSD) has developed into a valuable tool for the analysis of materials in the scanning electron microscope (SEM) [1]. Pronounced improvements in applications of the EBSD method can be expected if it is possible to gain access to a quantitative description of not only the total number of backscattered electrons, but also to the fine-scale angular variations observed as diffraction patterns of these electrons. A complete simulation of the observed intensities, however, is only possible by applying electron diffraction theories that can properly include the multiple (dynamical) scattering of keV electrons in crystals [2,3].

I will discuss the application of many-beam dynamical theory to the simulation of experimental diffraction patterns of backscattered electrons. By energy-resolved measurements, the correlation between the energy loss of the scattered electrons and their diffraction effects can be investigated. First experimental results of corresponding angle-resolved reflection electron energy loss measurements are presented [4]. It is shown that under certain conditions, inelastically backscattered electrons can show more pronounced diffraction effects than the elastic electrons.

1. A.J. Schwartz, M. Kumar, B.L. Adams, D. P. Field (Eds.), Electron Backscatter Diffraction in Materials Science, 2nd edition, Springer, Berlin, 2009
2. A. Winkelmann, C. Trager-Cowan, F. Sweeney, A. P. Day, P. Parbrook, *Ultramicroscopy* **107**, 414 (2007)
3. A. Winkelmann, *Ultramicroscopy* **108**, 1546 (2008)
4. M. R. Went, A. Winkelmann, M. Vos, *Ultramicroscopy* **109**, 1211 (2009)

Alle interessierten Kolleginnen und Kollegen sind zu diesem Seminar
(45 min mit anschließender gemeinsamer Diskussion) herzlich eingeladen.

W. Werner e.h.
(Seminar-Chairperson)

H. Störi e.h.
(LVA-Leiter)