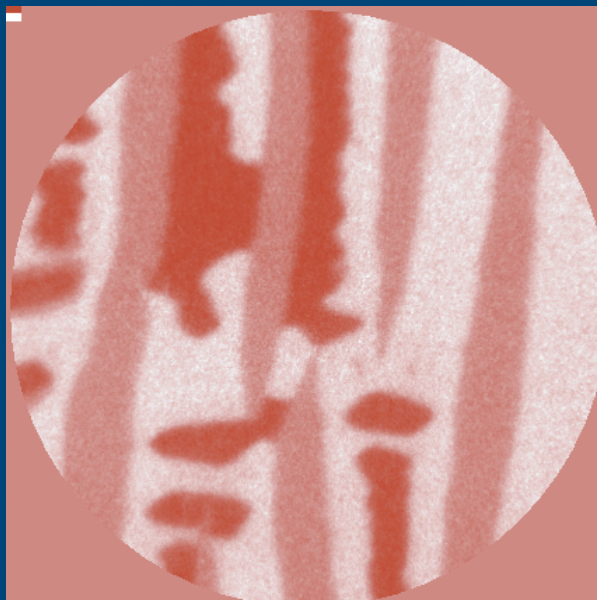


# Ernst Bauer

## “Microscopy with slow electrons: From LEEM to XPEEM”

Ernst Bauer is currently Distinguished Research Professor in physics at Arizona State University. He earned his Ph.D. in physics at the University Munich. He then spent 11 years at the Michelson Laboratory, China Lake, CA, where he conceived low-energy electron microscopy. In 1969 he became professor and director of the physics institute of the Technische Universität Clausthal, where he built up the first broadly based surface physics institute in Germany. In 1996 he returned to the U.S. His efforts in recent years have concentrated on the development of multimethod surface electron microscopy with slow electrons.

The short penetration and escape depth of electrons with energies below 1 keV make them ideally suited for the study of surfaces and ultrathin films. The combination of the low-energy electrons and the high lateral resolution of a microscope produces a powerful method for the characterization of nanostructures on bulk samples, in particular if the microscope is equipped with an imaging energy filter and connected to a synchrotron radiation source. Comprehensive characterization by imaging, diffraction, and spectroscopy of the structural, chemical, and magnetic properties is then possible. The talk will describe the various imaging techniques using reflected and emitted electrons in low-energy electron microscopy (LEEM) and x-ray photoemission electron microscopy (XPEEM), with an emphasis on magnetic materials with spin-polarized LEEM and x-ray magnetic circular dichroism PEEM. The talk will end with an outlook on future possibilities.



3:00 p.m. • Wednesday, September 8, 2004  
The APS Auditorium, Building 402  
Argonne National Laboratory

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