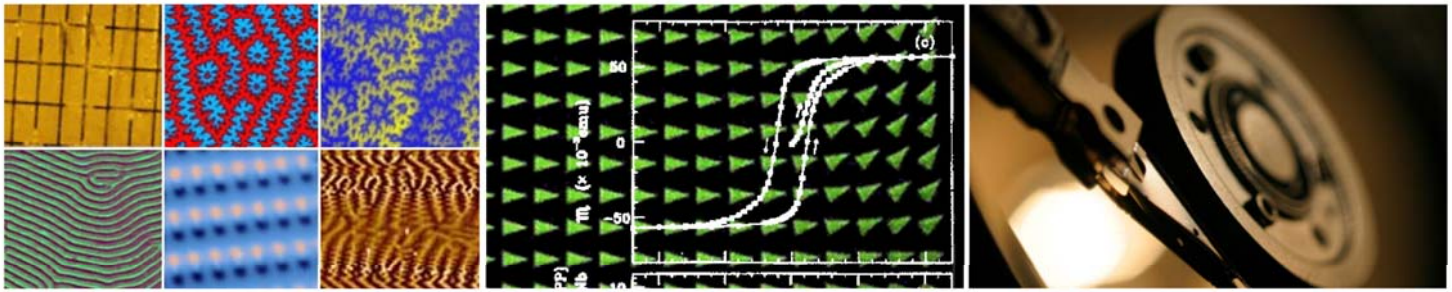
IEEE MAGNETICS



The IEEE Magnetics Society is proud to present .....

2007 Distinguished Lecture series

Imaging Magnetic Surfaces with Atomic Resolution

Dr. Matthias Bode | Argonne National Laboratory, USA

Date and Venue: October 30th,2007, Room 103, Dept. of Electrical and Communication Engineering (Aobayayama campus), Tohoku University, Sendai, Japan

Fueled by the ever increasing data density in magnetic storage and the need for a better understanding of the physical properties of magnetic nanostructures there exists a strong demand for high-resolution magnetically sensitive microscopy techniques. The technique with the highest available resolution is spin-polarized scanning tunneling microscopy (SP-STM) which combines the atomic-resolution capability of conventional STMs with spin-sensitivity. Beyond the investigation of ferromagnetic surfaces, thin films, and epitaxial nanostructures with unforeseen precision, it also allows the achievement of a long standing dream, i.e. the real space imaging of atomic spins in antiferromagnetic surfaces. The lecture addresses a wide variety of phenomena in surface magnetism which in most cases could not be imaged directly before the advent of SP-STM. After starting with a brief introduction to basics of the contrast mechanism, recent major achievements will be presented, like the direct obser-vation of the atomic spin structure of domain walls in antiferromagnets and the visualization of thermally driven switching events in superparamagnetic particles consisting of a few hundreds atoms only. To conclude the lecture, recently observed complex spin structures containing 15 or more atoms will be presented.