



IEEE Electron Devices Society (EDS)
Presentation

Manipulation of Single Atoms and Molecules and its Application to Nanoscience and Nanotechnology

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Abstract

Nanotechnology is the assembly, manipulation and control of materials at the atomic and molecular scale to fabricate structures, devices and systems that have novel properties and functionality. Dubbed as the next big thing, nanotechnology has already triggered revolutions in the areas of engineering, sciences, medicine, and environment." This is a definition of nanotechnology as one can find it on the UW's Nanotechnology Engineering website. Although the ultimate goal of nanotechnology is certainly the development of mass production compatible processes and devices, the fundamental questions about the physical properties of atoms and molecules have to be addressed first. This talk will review the tools with which one can actually manipulate single atoms and molecules, assemble artificial atomic-scale structures and probe their electronic properties. Movies of atom-by-atom manipulation and local spectroscopy will make quantum mechanics become alive.

Thorsten Hesjedal received the B.Sc. in physics from the University of Stuttgart and the M.Sc. in physics from the Eberhard-Karls University, Tuebingen, Germany. In 1997, he graduated from the Humboldt University, Berlin, Germany and he received several awards for his pioneering work on scanning acoustic probe microscopy performed at the Paul Drude Institute for Solid State Electronics. From 1998-2001, he was a research scientist in the Solid State and Photonics Laboratory and Applied Physics Department at Stanford University. He is currently a Senior Research Scientist at the Paul-Drude Institute for Solid State Electronics, Berlin, Germany. His research interests include scanning probe microscopy, nanofabrication, MEMS, and magnetoelectronics.

Invited by S. Sivoththaman