EBL Kickoff Celebration

Dept. of Electrical and Computer Engineering

The State-of-the-Art in Electron Beam Lithography, and Future Challenges

Dr. Timothy Groves
Director of Technology
Leica Microsystems Lithography

Monday, April 3rd, 4:45pm, 260 Dreese Lab

A focused electron beam forms the finest practical writing pencil known, with printed feature sizes down to a few nanometers in size. In addition to this inherently high resolution, electron beam lithography (EBL) has the capability of directly generating patterns, without the need for a mask. These capabilities have established EBL as the method of choice for creating fine patterns at low volume. Historically, EBL grew naturally out of electron microscopy. It has been used extensively to manufacture Application Specific Integrated Circuits (ASICs), as well as photomasks for high volume optical lithography. It is also used for a large diversity of devices and applications in research, development, and manufacturing. Interestingly, these applications do not yet test the ultimate resolution already available with EBL. As such, great promise exists for novel and unexplored devices. The greatest challenge to EBL is to overcome the throughput limitation. The nature of this limitation is described, along with current research to overcome it using multiple beams operating in parallel.

Dr. Groves is Director of Technology at Leica Microsystems Lithography. He earned a B.S. in physics from Stanford University in 1968, and a Ph.D. in physics from the University of Chicago in 1975. His research interests include electron optics, the physical processes limiting throughput in electron beam lithography, development of improved EBL systems, and the application of EBL to novel structures and devices. He has been a Consulting Professor of Electrical Engineering at Stanford University since 1997.

A reception, window tour of the lab, and ribbon cutting will immediately follow the seminar.

Part of the Kickoff Celebration for
the new OSU Nanoscale Patterning Lab