

UNH Materials Science Seminar

11:10-12:00, Thursday, January 29, 2009

DeMeritt Hall 240

University of New Hampshire

The Role of Materials Science in Executing Moore's Law

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The so-called Moore's Law, vintage 1965, predicts that the density of transistors on state-of-the-art integrated circuits (ICs) doubles every two years. Through to the present, this idea has remained remarkably accurate for digital products like microprocessors and memory. Continuous feature miniaturization, that leads to this increased transistor density, is mostly dependent on improving resolution of the lithography system that prints circuit features/patterns on the IC surface. However, this two-dimensional decrease in feature size alone is not enough to produce denser ICs that function effectively. Many changes in the materials and fabrication processes are also necessary. This seminar will give an overview of how the understanding of Materials Science concepts such as nucleation and growth, diffusion, and alloy formation have resulted in an evolution of optimized materials and processes. In turn, this evolution has made possible the validity of Moore's Law, and indeed the revolution in communications and computing power we have all experienced.

Dr. Schutz is currently consulting on intellectual property issues for Qimonda Technologies. Prior to this, he spent more than 25 years with Siemens/Infineon (1996-2002) and AT&T/Lucent Technologies (1968-1996), managing thin film/chemical mechanical polishing development, semiconductor development, integrated circuit research and process development, among other activities. Dr. Schutz received a BA from Gettysburg College, an MS from Stevens Institute of Technology, both in Physics, and a PhD in Materials Science from Rutgers University in 1980.

Host: Professor Olof Echt x3548