



SECOND INTERNATIONAL NANOTECHNOLOGY CONFERENCE ON COMMUNICATIONS AND COOPERATION

Abstract

The Network for Computational Nanotechnology: A Cyber Community and Cyber Resource By Mark Lundstrom, *Purdue University*

The Network for Computational Nanotechnology (NCN) is a multi-university initiative with a mission to engage those who do theory, modeling, and simulation and to connect them with those who need simulations – experimentalists, designers, faculty, students, and professionals. In the process, we aim to create a major, new resource for the U.S. National Nanotechnology Initiative. We believe that the modeling and simulation community should play a significant role in defining, creating, and eventually supporting the new fields of nanotechnology and manufacturing. To do so, we must develop better software more quickly, lower barriers to the use of research-grade software, teach users to employ simulation effectively, and connect people across disciplines and distance. The nanoHUB cyberinfrastructure is a critical part of our strategy. It places a basic simulation capability for nanotechnology research and education at the fingertips of users, but it is more than an online user facility. The nanoHUB supports online simulation with online training and related educational resources and also provides collaborative tools for distributed teams. Our goal, however, is to be more than an online repository of resources and services. It is to create a true cyber-community that transforms the way people work, learn, and collaborate. This talk is an overview of the NCN emphasizing its work on nanoelectronics. We will discuss the science of molecular electronics, the exploration of new device and material concepts, the development of a new generation of CAD tools, the creation of a novel nanocurriculum, and the use of the nanohub.org cyberinfrastructure to connect this work to engineers, researchers, educators, and students worldwide.

MARK LUNDSTROM is the Don and Carol Scifres Distinguished Professor of Electrical and Computer Engineering at Purdue University where his teaching and research center on the physics, technology, and simulation of electronic devices. Lundstrom is the founding director of the NSF-funded Network for Computational Nanotechnology, which has a mission of research, education, leadership, and service to the nation's National Nanotechnology Initiative. He serves on the leadership councils of the NASA-funded Institute for Nanoelectronics and Computing and the MARCO Focus Center for Materials, Structures, and Devices. Lundstrom's work has been recognized by several awards, most recently the 2005 US Semiconductor Industry Association's University Research Award for his career contributions to the physics and modeling of semiconductor devices.