

**Symposium on Undergraduate Nano-Education:
"Addressing the Challenges of Nanoscale Science & Engineering Education"**

Presentation:

Nanotech Innovations Enterprise at Michigan Technological University

John A. Jaszczak

Michigan Technological University, Department of Physics, Houghton, MI 49931-1295

Presenter Biography:

Professor Jaszczak joined the faculty at Michigan Tech in 1991 after a postdoctoral appointment at Argonne National Laboratory. His research focuses on computer simulation of materials with interfaces, surfaced dynamics, and most recently, modeling of single-electron transport devices. He teaches a wide variety of physics courses, including large introductory classes where he has worked to incorporate new pedagogical tools into the classroom. With a team of colleagues, he has worked since 2003 to develop nanotechnology education programs, including new courses, a minor, a graduate degree certificate, outreach presentations, and a nanotechnology enterprise. Dr. Jaszczak is also an avid mineral collector, adjunct curator of Michigan Tech's A. E. Seaman Mineral Museum, and specializes in the study of the morphology of natural graphite.

Abstract:

A nanotechnology-related educational experience for undergraduates called *Nanotech Innovations Enterprise* (NIE) was launched in January 2008, with the help of a National Science Foundation Nanotechnology Undergraduate Education in Engineering grant (nano.mtu.edu/ni/). This goal-oriented entrepreneurial program has been established within the framework of the *Michigan Tech Enterprise Program* (www.enterprise.mtu.edu), which was initiated a decade ago in order to provide a vehicle for undergraduate engineering students to experience the development and operation of a commercial enterprise, and to actively address industry's needs for engineers with strong technical, communication, interpersonal, leadership, entrepreneurship and business skills. NIE's mission is to engage students in a comprehensive, hands-on entrepreneurial educational experience, including management, marketing, research, development, service, outreach, and education related to nanoscale science, engineering and technology (NST). Following a model developed at Michigan Tech in 2003, continuous consideration of associated societal implications is made alongside the scientific and technological aspects of the enterprise's work and the NST field in general. Current projects include research and design of a low-cost STM, accessory development for scanning probe microscope systems, sample kit development for scanning probe microscopy, high school education and outreach workshops, and natural graphite sales for graphene production and STM substrates. Starting a new High School Enterprise with a local high school partner is anticipated in fall 2009. In this talk, the structure, development, goals, projects, accomplishments, challenges and assessment of the enterprise will be presented.