A year of progress for NINE … and more to come!

2007 was a year of progress for the National Institute for Nano-Engineering (NINE), beginning with the kick-off of 15 Sandia-sponsored NINE projects totaling $7.5 million per year. By summer over 50 students and faculty from 14 U.S. universities were involved in these projects as part of our NINE Summer Program and 16 NINE industry and university partners were working together with Sandia to stand up NINE as a prototype Discovery Science and Engineering Innovation Institute. During the next few months we will complete the formation of NINE as a non-profit organization including membership agreements and formally engaged industry and university partners.

Through workshops in January, May, and June we achieved general partner agreement on the goals and elements of NINE. Our focus is to develop the next generation of innovation leaders and their innovations for the U.S. by involving students in large scale multi-disciplinary research projects focused on creating nano-engineered solutions to important national problems. We are doing this by combining innovative, multidisciplinary engineering and science education, access to state-of-the art research capabilities, and the inspiration and broad knowledge needed to translate ideas to reality.

We also selected three theme areas for NINE that support DOE/NNSA program interests and effectively leverage the strengths of the NINE partners: (1) Nanoelectronics and Quantum Information Processing, (2) Nanomaterials Synthesis and Manufacturing, and (3) Nanotechnologies for Energy. Future NINE proposal calls will be tailored to focus on these theme areas as well as to follow industry partner guidance on specific high value concepts within these areas.

The 2007 NINE Summer Program was an outstanding success, involving work by seven Sandia centers to enable 33 students from 14 universities to have the opportunity to do hands-on work with Sandia mentors on nano-engineering projects of direct interest to DOE and the nation. Students worked on projects that included the National Lighting Initiative, manufacturing nanoparticles, nanowires and quantum dots, and nano-casting. In addition, students learned to use leading edge equipment, attended technical seminars on a range of on-going nano-engineering projects at Sandia, and attended presentations intended to provide students a broader perspective on innovation, technology maturation, business, entrepreneurship, and social issues related to nanotechnology. These seminars prepare students to become the nano-engineering leaders and innovators needed to enable the U.S. to maintain its global leadership position in technology and economic competitiveness in the next generation.

In November we held the Industry Needs Workshop attended by representatives from INTEL, Lockheed Martin, Exxon-Mobil, Goodyear, Corning, Hewlett Packard, Monsanto, and Shell in addition to most of the NINE university partners and a representative from the National Science Foundation. At this meeting we heard each industry participant talk about their nanotechnology interests and from these talks identified a spectrum of pre-competitive nano-engineering needs together with three cross-cutting capabilities required to meet these needs: nanoscale modeling and simulation to guide research, nanosensors for process monitoring, and the ability to produce quantities of nanomaterials with tailored properties. The members at this meeting strongly urged Sandia to help NINE quickly form a Governing

Board and stand up a non-profit NINE corporation capable of executing Governing Board direction, developing membership agreements including bylaws and intellectual property, and receiving and disbursing industry and government funding.

In response, we formed the NINE Governing Board in December. It consists of representatives from INTEL, Lockheed Martin, Corning, the University of Texas at Austin, the University of Wisconsin, the University of New Mexico, Rensselaer Polytechnic Institute, and Sandia National Laboratories. We also began the process of identifying and selecting an experienced organization to provide administrative support for NINE activities, including setting up bylaws, intellectual property agreements, and systems for handling financial contributions from industry partners. After a Federal Business Opportunity posting in January we followed up with responding organizations and based on the capability information they provided have selected the Semiconductor Research Corporation (SRC) to provide advice to the Governing Board and initial administrative support for NINE. The NINE Governing board, with SRC support, will meet in Dallas on February 21st to discuss details of the formation of a NINE non-profit corporation, an IP agreement and the NINE bylaws.

The NSF representative at our Industry Needs Workshop also expressed interest in developing a relationship with NINE and suggested ways to begin partnering. We are following up on this interest.

We are presently planning Technical Workshops to be held this spring. At these workshops we will update NINE partners on technical progress in all NINE Theme Areas, showcase NINE students and their contributions, and work with NINE partners to identify high value opportunities for new, industry co-funded projects to begin in FY09.

We are also planning the 2008 NINE Summer Program. Activities will include bringing NINE students to Sandia to work with their mentors, initiating a NINE Industry Intern Program, and hosting a Nano Expo event for undergraduates. NINE will also be partnering with Sandia Community Relations, UNM, and the Albuquerque Academy to provide opportunities for high school teachers to get hands-on experience with nanotechnology and expert support in creating “nano” learning modules for their students.

Finally, we are now working with ORNL and other organizations to highlight the benefits to DOE and the nation of the concepts embodied in the America COMPETES Act and suggest effective ways in which DOE labs can contribute. During the next six months we expect to complete the formation of the NINE non-profit corporation with implemented membership and Intellectual property agreements and commitments for substantial industry contributions to co-fund future NINE technical projects.