



Strategic Academic Planning Committee 2007-2008

Proposal Title: **NDnano - The Notre Dame Nanoelectronics Research Initiative**

Principal Investigator: **Wolfgang Porod**

Proposal Participants:

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Abstract

Notre Dame aspires to be a preeminent research university with a distinctive Catholic character and an unsurpassed commitment to undergraduate and postgraduate education. This proposed initiative is strategically planned to advance Notre Dame’s academic reputation by two main mechanisms: (1) Accelerate research in an existing area of strength to make Notre Dame preeminent in nanoelectronics, and (2) enhance the research infrastructure, through investments in personnel and research instrumentation, which will benefit both current research efforts and pave the way to future high-impact hires.

Our main goal is to leverage this SAPC investment to bring prestigious and high-visibility research centers and multi-university consortia to Notre Dame, thus substantially advancing ND’s academic reputation. This investment in research and infrastructure also will enhance our visibility through increased publications in high-impact journals, talks at major international conferences, and intellectual property. This surge will help attract world-class scholars to ND, both junior and senior, even further advancing ND’s academic reputation.

The intellectual focus of this proposed SAPC initiative is in the area of nanoelectronics, which is an area of significant current strength, based on a distinguished track record. Moreover, nanoelectronics holds much promise for the future, with applications in many fields, and investment in this area will have benefit for numerous other areas of science and engineering. Research in this initiative will focus on fundamental limits of electronics, energy harvesting, new materials and nanostructures, and nano-bio electronics. This research will enhance existing and create new educational opportunities, including an emphasis on entrepreneurship.

An important aspect of this initiative is the coupling to Notre Dame’s strength in the humanities through the Reilly Center for Science, Technology and Values with its mission to not only inform our students of the moral necessity to apply science and technology for the good of humanity, but to influence the national decision makers to lead the country in a way that is consistent with the Good News of the gospels. To this end, we have plans to contribute to the Reilly Center Reports, which are aimed at those who shape public perception of science and technology, on societal questions related to nanotechnology in general and nanoelectronics in particular

The timing of this initiative almost perfectly coincides with three major developments:

- (1) Current efforts are underway to bring a high-visibility, multi-university research center to Notre Dame, funded by a semiconductor-industry consortium; SAPC investment would leverage such an industry investment, as well as state and local matching funds.

- (2) The new Stinson-Remick Engineering Building is scheduled to open in late 2009, and SAPC investment in research infrastructure and instrumentation will allow us to create world-class laboratories and to make the best use of this new facility.
- (3) The Innovation Park @ Notre Dame is under construction, and programs aimed at entrepreneurship and business ventures will help transition intellectual property generated as a result of this initiative into Michiana area economic development.