

# **Integrated Nanosystems Development Institute**

**Leadership Team: Christoph Naumann<sup>2</sup>, Maher Rizkalla<sup>1</sup>, Ricardo Decca<sup>2</sup>,  
Hazim El-Mounayri<sup>1</sup>, Frank Witzmann<sup>3</sup>, and Mangilal Agarwal<sup>1</sup>**

**<sup>1</sup>School of Engineering and Technology, <sup>2</sup>School of Science, <sup>3</sup>School of Medicine  
Indiana University – Purdue University Indianapolis**

## **Abstract**

Integrated Nanosystems Development Institute (INDI) has been recognized and sponsored as a center under the IUPUI Signature Centers Initiative (SCI). INDI is a multidisciplinary institute dedicated to micro/nanoscale systems research, education, and commercialization while providing cluster of analytical equipment and labs serving over 30 faculty members from different departments and schools in support of their research. Specifically, the vision of the INDI is to be a world-class resource for the realization of nanotechnology-based systems that contribute to the economic growth and social advancement of Indiana and the nation and benefit humanity as a whole. The mission of the center is to: 1) Advance nanotechnology research at IUPUI by promoting innovative interdisciplinary research efforts that will lead to external funding; 2) Enhance IUPUI's research reputation in nanotechnology, nationally and internationally, by providing an identifiable entity that draws in a diverse group of researchers and promotes the combined strength of the group; and 3) Be a leader in translating bionanotechnology and nanoenergy research into innovations that will contribute to the social well being and economic growth of central Indiana and the nation.

INDI builds on an excellent research infrastructure at IUPUI. The core facilities of the institute include cleanroom, nano/microfabrication & characterization facilities, and high power simulation and computational resources. Currently, faculty from the Schools of Science, Engineering & Technology, Dentistry, and Medicine, are associated with INDI. The given faculty have expertise in a wide range of fields, including chemistry, physics, biology, material science, electrical and computer engineering, mechanical engineering, orthopaedics, and pathology & laboratory medicine. The research focus of the faculty ranges from nanostructured materials fabrication, study of properties, applications in sensors, energy, and biomedicine, and integration of the devices resulting in realization of nanosystems.

As part of the INDI initiatives to developing new undergraduate and graduate track in nanotechnology, center members have been instrumental in the recent development of two interdisciplinary courses, Nanosystems Principles and Integrated Nanosystems Process & Devices which are now being offered by various departments. Moreover, INDI associated faculty members were recently awarded \$200,000 from NSF Nanotechnology Undergraduate Education Program for integrating nanotechnology in engineering curricula at IUPUI. To increase the awareness in the community and promote recruitment of future students in nanotechnology, INDI is organizing workshops, offering short courses for industrial employees, and hosting summer camps for high school teachers and students. Summer of 2010 attracted more than 30 high school students for the Nanotechnology Discovery Summer Camp hosted by INDI at IUPUI. Moreover, this program has been extended to include a session for high school teachers in summer of 2011. The poster will summarize the mission, vision, faculty and center collaboration, research projects, achievements, and future plans of INDI.