The Joint School of Nanoscience and Nanoengineering

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Background

• Nanotechnology involves the science & engineering know-how to manipulate atoms and molecules to form systems with customized properties and functions.

• Lux Research estimates that Nanotechnology will have a $2.6T impact on the world’s economy by 2014.

• Many challenges face our society where “nano” may play a role
  - New medical diagnostic & treatment technologies
  - Low cost manufacturing techniques
  - Communication, entertainment & information technologies
  - Green technologies
  - Economic growth and job creation


Nanofibers – Courtesy Professor A. Kelkar
The Joint School of Nanoscience and Nanoengineering (JSNN) was created by NC A&T and UNCG with the support of the University of North Carolina system, the North Carolina General Assembly and the Greensboro/Triad community. Initial funding includes:
- $50M for construction of the JSNN building
- $8.0M for capital equipment

JSNN’s goal is to be a world leader in research and nano-related education.
- Develop research strengths in interdisciplinary areas
- Achieve economic growth for the Triad through joint investment & co-location with NC, National & International company partners
- Initial focus has been in the areas of Curriculum, JSNN Facility, Hiring, Outreach and Engagement

Scientific Focus
- Nanobio
  - Molecular Biology
  - Biochemistry including Drug Discovery & Delivery
  - Biophysics
- Nanoenvironmental
  - Energy & Sustainability
- Nanomaterials
  - Materials Characterization and Analytical Capability
  - Nanocomposites
  - Coatings
  - Biomaterials
- Nano & Bio Electronics
Partnership Strategy

JSNN

Triad Community
JSNN Status

- Curriculum
  - Two degree programs planned
    - Professional Master of Science in Nanoscience
    - Ph.D. in Nanoscience
  - Request to Establish Proposals have been reviewed and approved by NC A&T and UNCG and submitted to UNC General Administration for approval

- JSNN Facility
  - ~88,000 sq. ft. facility planned for Gateway South Campus
  - Programming activity completed, design phase initiated
  - Current projected completion date is mid-year 2011

- Faculty and Staff Hiring underway
  - Plan to hire 12 faculty for 2 departments (Nanoscience and Nanoengineering)
  - Underway but slowed by financial crisis. Initial focus on Nanoscience hires
    - Nanoscience Department Head search nearing completion
    - Candidate for Joint Appointment with NC A&T Math identified
    - Candidate for Joint Appointment with UNCG Chemistry identified
  - 50 UNCG and NC A&T affiliated faculty with “nano” research interests

- Outreach and Engagement
  - Pursuing relationships with nanobusinesses and government funding agencies
Summary

• Nanotechnology is a critical part of our economy
  – Nanotechnology is revolutionizing IT, electronics, medicine, defense, entertainment, transportation, and communication

• JSNN will be a top academic institution in nanotechnology.
  – JSNN focus is on four goals: establish the curriculum, build the facility, hire the faculty and staff and begin outreach
  – Partnerships at JSNN will help build infrastructure and foster innovation.

• The JSNN model and infrastructure will grow as new educational, technological and partnership opportunities arise.

Model of silicon lattice showing channeling direction for ion implantation