



JSNN

Joint School of Nanoscience and Nanoengineering



The Joint School's Institute for Research Technologies

The Joint School of Nanoscience and Nanoengineering (JSNN), an innovative collaboration between North Carolina A&T State University (NC A&T) and the University of North Carolina at Greensboro (UNC Greensboro), proposes to establish an **Institute for Research Technologies** that will be joint between the two universities. The purpose of the Institute is to accelerate research and innovation through state-of-art research facilities, and collaborative partnerships with industry driven by the brainpower of the faculty of the two universities. The Institute will serve as a hub for convergence research strengthened by industry partnerships and academic expertise.

STATEMENT CHALLENGE: JSNN has had a program titled “*NanoManufacturing Innovation Consortium (NIC)*,” administered by the Gateway Research Park. The initial intent of the program was to build university-industry partnerships. While, some success has been gained, in that the program has attracted some companies to use the equipment at JSNN, the name of the program has constrained the growth of university-industry partnerships, as well limited the opportunities of faculty from the main campuses to engage with JSNN. Two specific aspects have led to the constraint:

- (1) the restriction of the research and the program to the “*nano*” scale and,
- (2) the focus toward “manufacturing”.

Recent analysis of the research facilities and equipment available at JSNN demonstrate capabilities to conduct research in through analysis and characterization spanning various length scales from the atomic scale through the macro scale. Furthermore, the number of faculty conducting manufacturing research at the nanoscale at JSNN is very small, thus making a consortium model in “Manufacturing at the nanoscale” difficult to sustain. Consequently, there is an urgent need to establish a structure to support university-industry partnerships that encompass and further captures the nature and breath of the work being conducted at JSNN, while engaging a broader industry audience.

Proposed herein is an Institute for Research Technologies that will address the limitation. The Institute’s objective, mission and vision have been established to align with the future goals of JSNN.

OBJECTIVES:

- To support the research of the faculty at JSNN, NC A&T and UNC Greensboro by providing access to research facilities, opportunities to establish research consortia with industry partners, access to best educational practices from industry that can be adapted to train students, and opportunities for joint projects and external funding.
- To support JSNN, NC A&T and UNC Greensboro students with access to internships and job opportunities, research facilities, and STEM entrepreneurship education.
- To support industry partners by providing access to research resources including access to research instrumentation, opportunities to build partnerships with faculty, and access to students to work on projects.

MISSION: The Institute will accelerate research and innovation through access to analytical and characterization instrumentation, strategic partnerships with faculty and industry, and building a skilled workforce.

VISION: The Institute aims to gain national recognition as a science, engineering, and nanotechnology research and innovation hub for the Triad and beyond. (*Recent acquisition of funding from the National Science Foundation for the research facilities at JSNN are indicators of the potential for this Institute*).

MEASURE OF INSTITUTE'S EFFECTIVENESS

The Institute will use the following metrics as measures of effectiveness:

- Level of success of faculty to build partnerships with industry on projects.
- External funding generated to NC A&T and UNC Greensboro as a result of the industry partnerships.
- Opportunities created for students for internships and employment through the Institute-Industry partnerships.
- Level of industry demand for resources at the Institute.
- Surveys of community groups and organizations to assess the University's responsiveness and effectiveness in helping support community and organizational efforts.
- Amount and quality of academic, professional development and applied research support obtained by initiatives initiated by the Institute.

ADVISORY BOARD

As JSNN continues to emerge, an Advisory Board will be put in place consisting of academic, government and industry experts. The Advisory Board will serve as a resource for JSNN's leadership to:

1. Advance University-Industry partnerships for the faculty
2. Remain on the cutting edge of research by establishing research consortia and identifying funding opportunities
3. Update the curriculum and provide students with the most relevant and newest educational skills needed for the workforce.

To this end, JSNN will immediately begin to identify Board Members with the goal of having a full board by the first quarter of 2020.

STRUCTURE AND LEADERSHIP

The Institute will be an integral part of JSNN and oversight for its establishment and operations will be done by the JSNN dean. Support for operations will be provided by the Associate Dean for Research as well as two Assistant Deans as shown in Figure 1. There will be three distinct areas for oversight:

1. **Core facilities, equipment and research consortia:** These activities will be overseen by the JSNN Associate Dean for Research. Lab and instrumentation managers will report directly to the Associate Dean.
2. **Financial oversight:** Financial matters, contracts, and other budget-related matters will be undertaken by the JSNN Assistant Dean for Budget and Research Administration. The Dean along with the Assistant Dean will work closely with the NC A&T Budget offices as

well as the NC A&T Office of Research and Economic Development, and the UNC Greensboro Office of Research and Engagement to execute the necessary programs. The Assistant Dean will also work closely with the Budget Offices of both universities to establish procedures that benefit each institution, such that when work is conducted that is related to nanoscience and engages those faculty it will be handled through UNC Greensboro; whereas when work is conducted that is related to nanoengineering and engages those faculty it will be handled through NC A&T; In particular the Assistant Dean will oversee billing for instrument use by industry users as well as other internal and external users.

3. Educational programs: All education and student related matters will be overseen by the Assistant Dean for Graduate Education. The Assistant Dean will support graduate students by identifying internship opportunities, fostering partnerships with companies that may have an interest in employing our graduates, and furthermore, in helping our students be better prepared and positioned for industry positions.

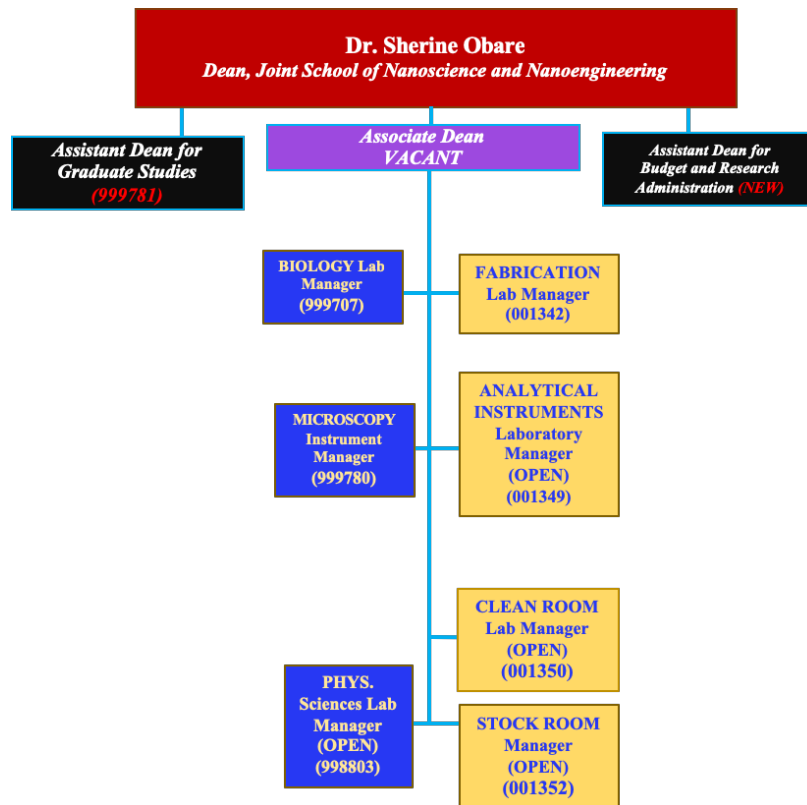


Figure 1: Organizational Chart for the leadership of the Institute

SUMMARY

The establishment of the Institute for Research Technologies at JSNN for University-Industry partnerships will play an integral role in building research innovation at the NC A&T and UNC Greensboro. Coupled with innovative research, will be the ability to provide new opportunities for our students both in terms of the training they receive as well as internship and employment prospects. Consequently, this Institute will play an important role in workforce development in the Triad region.