

NNCI: Southeastern Nanotechnology Infrastructure Corridor (SENIC)



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SENIC Vision and Partnership

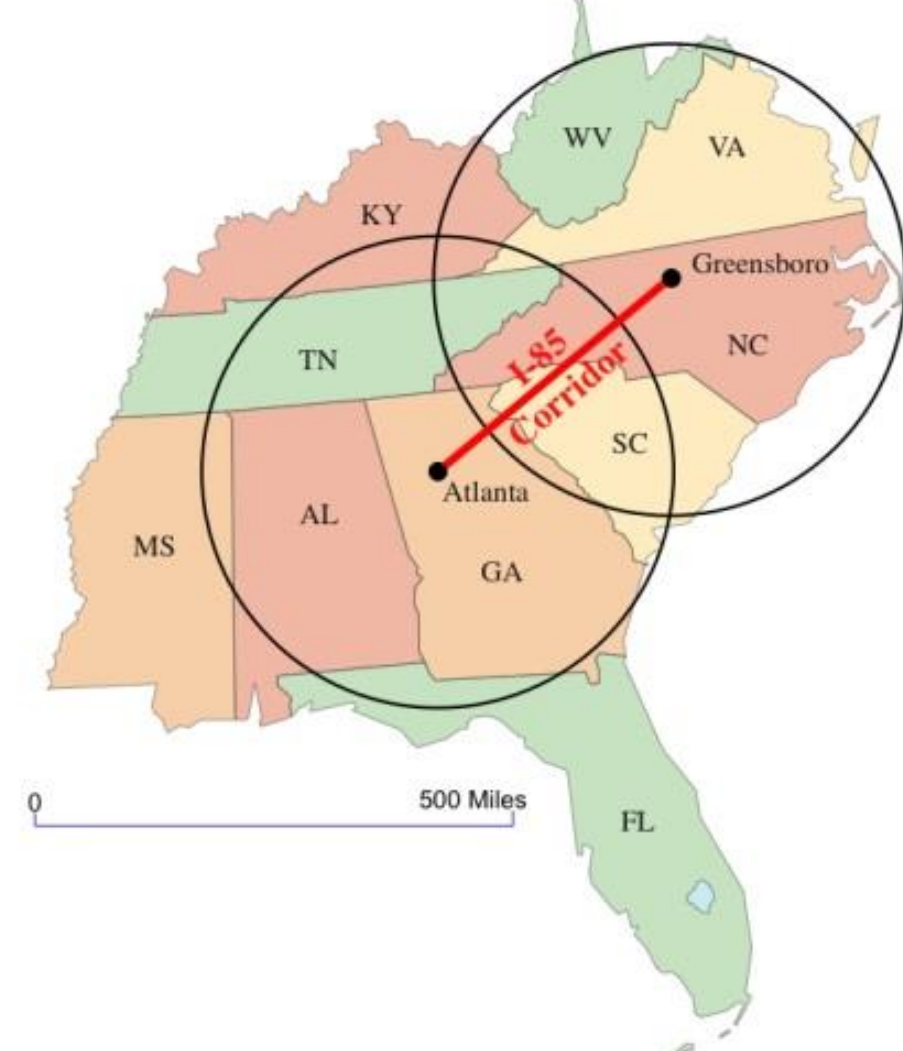
- Partnership of two major & modern nanotechnology centers in the southeastern USA:
 - Institute for Electronics and Nanotechnology (IEN), an Interdisciplinary Research Institute at Georgia Tech
 - Joint School of Nanoscience and Nanoengineering (JSNN), an academic collaboration between North Carolina A&T State University (NCA&T) and University of North Carolina, Greensboro (UNCG)



IEN Marcus Nanotechnology Building



JSNN @ Gateway Univ. Res. Park



- Innovation:** Strengthen and accelerate discovery in nanoscience and nanoengineering across the southeastern USA
- Commercialization:** Allow nanotechnology-based innovations to reach the market quicker
- Education/Outreach/SEI:** Provide education, outreach and SEI programs in nanotechnology with a focus on the southeastern US

Shared-User Facilities

	GT-IEN	JSNN
Cleanroom Area	28,500 sq.ft.	8,000 sq.ft.
# Fab./Charac. Tools	200+	100+
Wafer Sizes	100 mm (some 150 mm) 300 mm panels (packaging)	200 mm
Technical Staff Support	30	12
Facility Strengths	<ul style="list-style-type: none"> Broad top-down micro/nanofabrication Patterning down to <10nm Packaging facility Teaching cleanroom 	<ul style="list-style-type: none"> Bottom-up material synthesis 200 mm wafer processing He-ion imaging and nanofabrication High-performance computing
Capabilities for Users from Non-traditional Disciplines	<ul style="list-style-type: none"> Nanomaterial dep./growth Organic/bio cleanroom Laser machining Imaging & metrology 	<ul style="list-style-type: none"> Nanomaterial synthesis Analytical chemistry lab BSL-3 lab Material testing lab

User Benefits

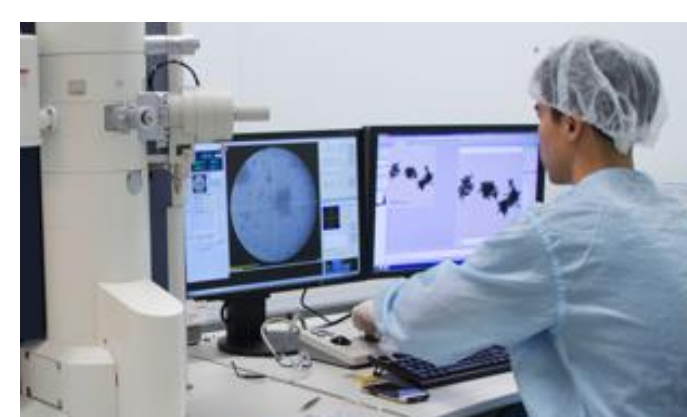
- Single facility with 2 locations
- Complementary capabilities
- Single agreement and billing
- Education and outreach programs
- Seed grant program



Analytical tools



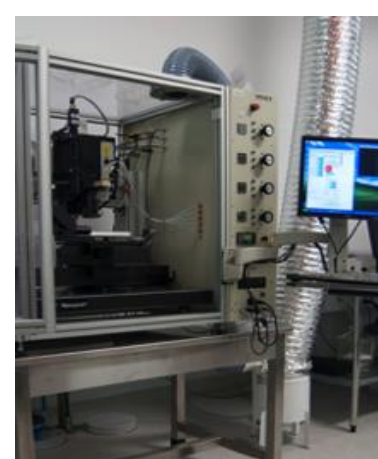
E-beam lithography



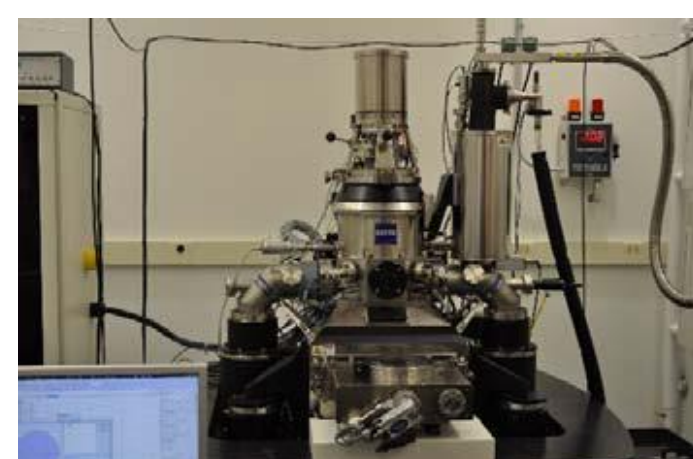
TEM



200 mm Fabrication Tools



Inkjet Deposition



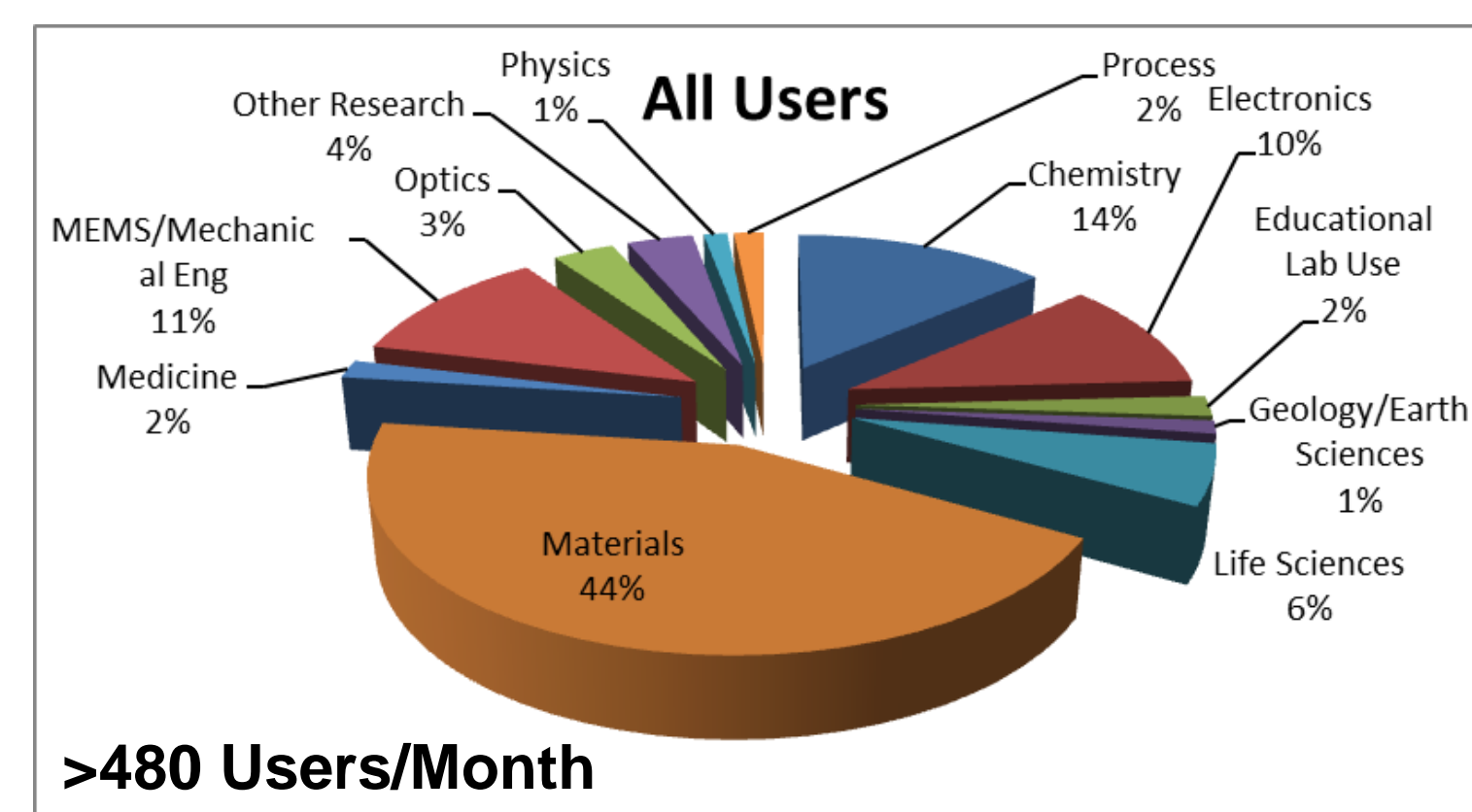
Helium Ion Microscope



Nanoscribe 3D Lithography

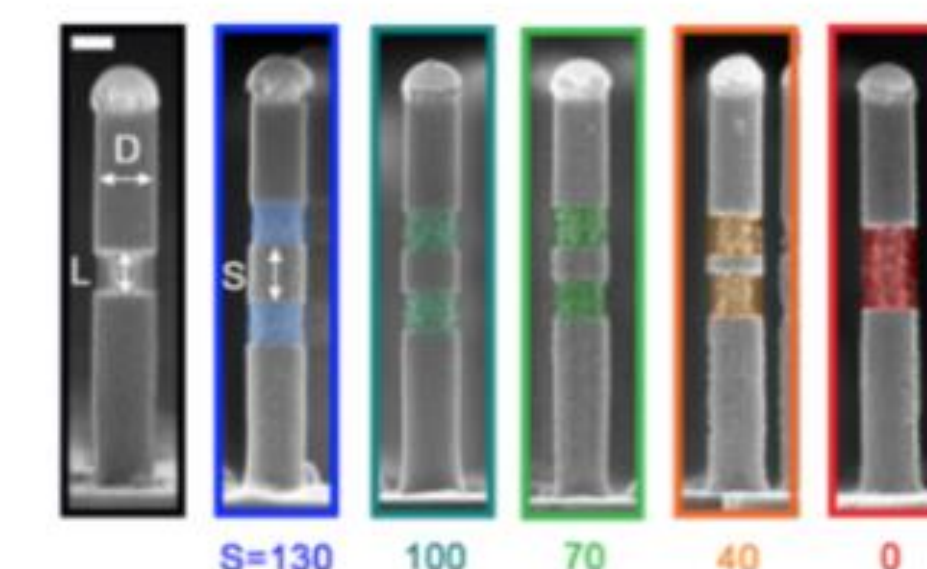
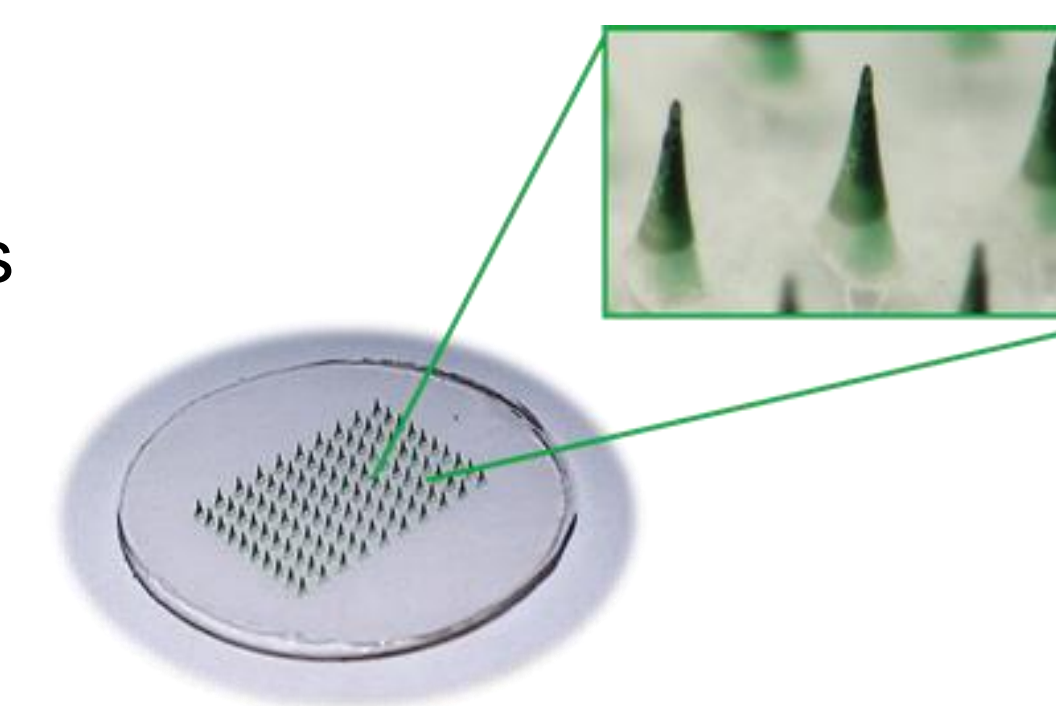
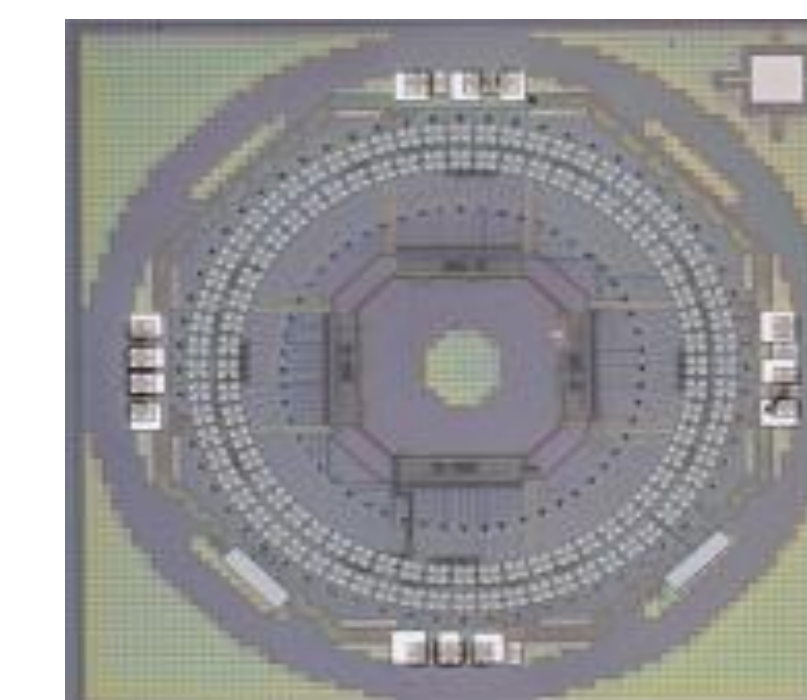
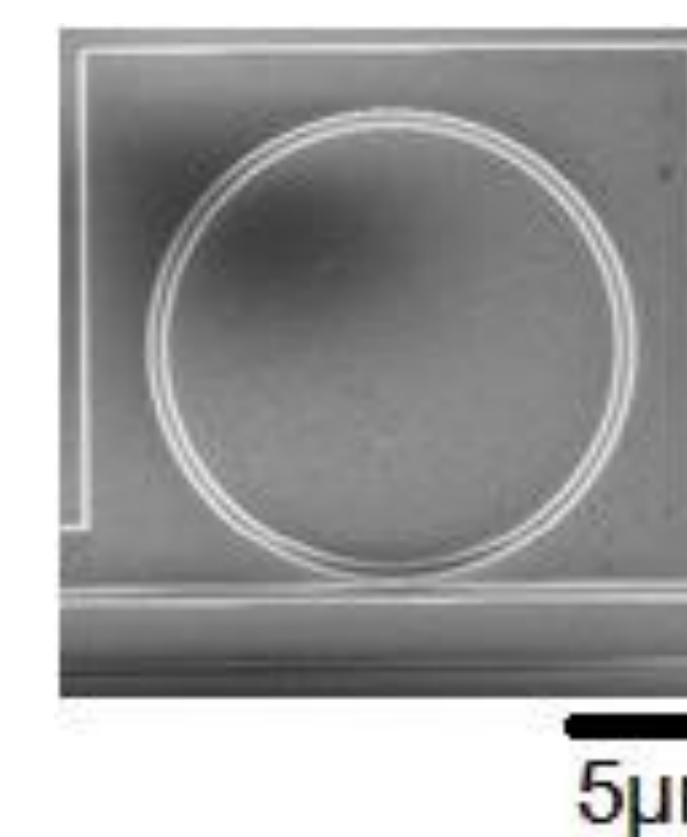
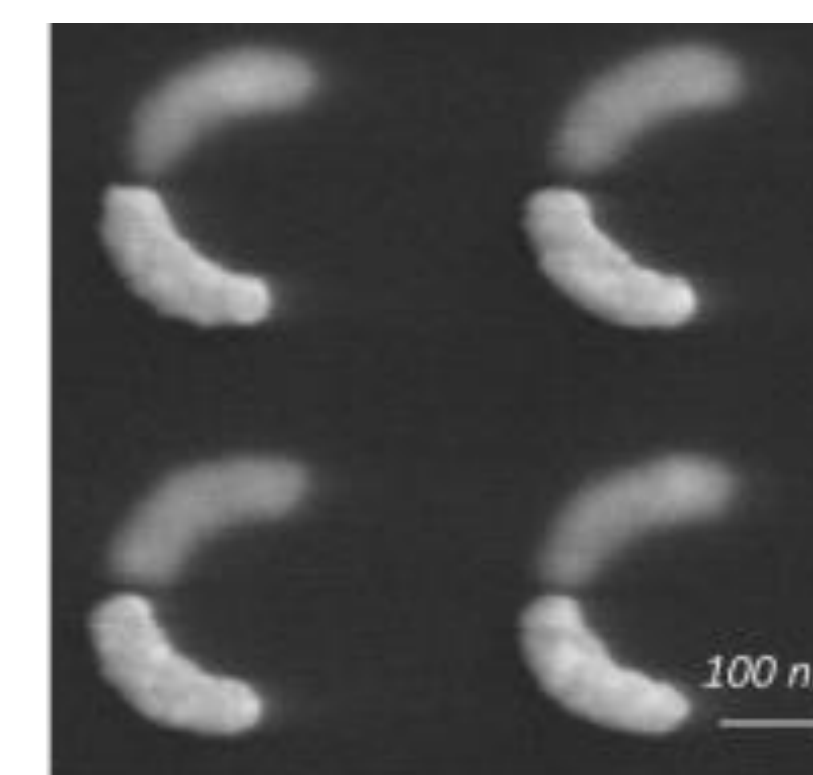
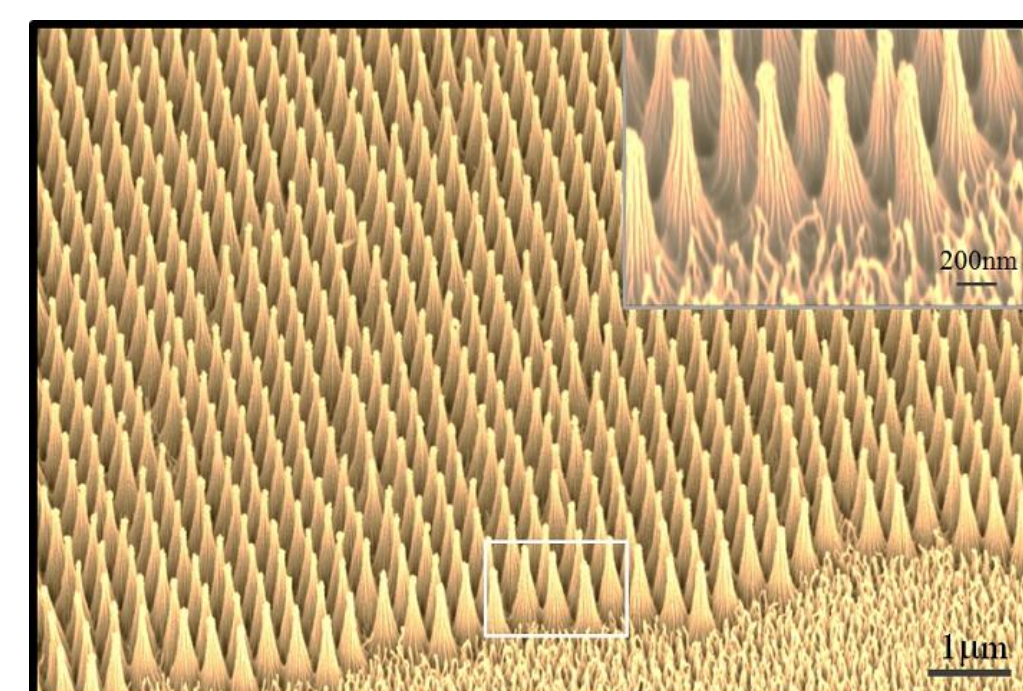


Nanobiocleanroom



Principal Research Areas

- Nanomaterials and Structures
- Flexible Electronics
- Compound and Next-Gen Semiconductors
- Optoelectronic and Photonic Devices and Systems
- MEMS, NEMS, and Sensors
- Interconnect and Packaging
- Medical/Health
- Energy



Materials • Processes • Devices • Systems & Applications

Education, Outreach & Dissemination

- REU, Community College Internships
- Outreach Training, Facility Training
- Professional Development

Use SENIC Resources

Develop Technical & Innovative Individuals

Tools & Resources to Encourage STEM

- Portable AFM & SEM
- Teaching Modules and Demos
- Interactive Tours & Remote Tool Access NanoBus

Focus on Southeast

- Workshops and Seminars
- Targeted Marketing
- Seed Grants

Outreach to Users

Broadening Particip.

- MSI Outreach
- Nano-Ambassadors
- On-campus Programs



Open House @ Atlanta Science Festival



NanoBus



Teacher Workshop



Atlanta Girl School @ GT-IEN

Social and Ethical Implications

- I-Corps Plus: add a social and ethical implications module
- Nano-Informatics User Infrastructure: briefings, training, hosting visitors
- Education and Training: presentations, workshops, advising doctoral minors



For more information about using SENIC facilities, contact:

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