



Microelectronics Research Laboratory Georgia Institute of Technology

Expertise: Biology, Life Sciences, Integrated Systems, Electronics

The Georgia Tech-NNIN (GIT-NNIN) site will especially emphasize the application of nanofabrication to bioengineering and biomedicine. Much of the GIT-NNIN activity is carried out in the Microelectronics Research Center (MiRC). The MiRC is housed in its own 100,000 sq. ft. building that includes an 8,500 sq. ft. cleanroom (75% class 100, 25% class 10). The major fabrication facilities in the cleanroom include thin film deposition, plasma processing, optical and electron beam lithography (100 keV / 4nm spot size JEOL JBX 9300FS), thermal processing, electroplating, wafer lapping, polishing, dicing, bonding and sawing, wire bonding, flip chip bonding, III-V MBE growth, and a 2-metal/2-poly CMOS and MEMS line (ion implantation outsourced). Characterization tools include optical and electron microscopy, AFM, SCM, STM, stylus and optical profileometry, low/high force scanning nanoindentation tribology, surface analysis tools, and high speed electronic and optical testing. Design and simulation tools are available on PC and workstation clusters under campus wide site licenses. Other GIT-NNIN resources include the GIT Electron Microscopy Center and the Laser Dynamics Lab (LDL). These facilities are open to a NNIN user community from a wide range of disciplines including electrical, computer, mechanical, chemical, materials and biomedical engineering as well as physics, chemistry, and biology.



The MiRC has historically supported research on a wide variety of materials, structures, and processes, much of which is nonstandard. The scope of research includes: nanostructures nanoelectronics photonics, MEMS and BioMEMS, materials growth, process chemistry, and Biological and Chemical Sensors (CMOS ChemFETs, microacoustic bio/chem sensors).

The full-time technical staff supports the installation and maintenance of equipment, development of baseline processes, management of training and safety programs, maintaining stock consumables, and supporting the cleanroom website. Training has been designed to promote the culture of open-access facilities, foster research, education, and outreach in diverse fields, to break the isolation between fields, to lower the barrier between users and well-equipped research facilities, and to support nanoscience and nanotechnology activities. Core to the operation of the cleanroom, the website (<http://www.mirc.gatech.edu/>) provides equipment scheduling, remote access and virtual training and troubleshooting capability, as well as providing an interactive forum for users and staff. The MiRC facilities are open 24/7 with the exception of 4 days at Thanksgiving and the last week of the calendar year.

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