The MiRC is an open research facility. We welcome researchers from academia, industry, and government research labs.

### MiRC User Support

- **Extensive User Training**
  - 24/7 availability
  - typically once a month/per tool
  - ~1 hr per session
  - 8 users per session
  - select video/text instructions available

- **Process Development**

- **Equipment Maintenance**

- **Equipment Installation, Facilities Maintenance and Upgrades**

- **Web-based Research and Equipment Support, Message Boards, e-mail training and equipment alerts**

### MiRC Contact Information

**Kevin Martin, Ph.D.**
Associate Director
Microelectronics Research Center
Georgia Institute of Technology

791 Atlantic Dr. NW
Atlanta, GA 30332
Phone: 404.894.5030
Fax: 404.894.5028
kevin.martin@mirc.gatech.edu

**Gary Spinner**
Cleanroom Manager
Microelectronics Research Center
Georgia Institute of Technology

791 Atlantic Dr. NW
Atlanta, GA 30332
Phone: 404.385.4010
Fax: 404.894.9951
gary.spinner@mirc.gatech.edu

For more information, visit: [http://grover.mirc.gatech.edu](http://grover.mirc.gatech.edu)
or e-mail: newuser@grover.mirc.gatech.edu
Tystar Nitride/Polysilicon Furnaces
TYTAN Furnace systems can be used for all conventional atmospheric and low-pressure CV processes employed in the semiconductor industry. A variety of advanced wafer fabrication processes are also possible, including: Thick Thermal Oxides, Silicon-Germanium, etc.

Nitride furnace: Deposition
- tube 1 - LTO/implantation anneal
- tube 2 - KOI, P-well drive, and dry oxidation
- tube 3 - Gate oxide growth
- tube 4 - Polysilicon deposition

Polysilicon furnace: Thermal growth
- tube 1 - N-type doping, Polysilicon doping (N-type)
- tube 2 - P-type Doping
- tube 3 - Padox, Well, Field (LOCOS) oxide growth
- tube 4 - LPOVD silicon nitride

trainer(s) email: tystar_nitride-trainers@grover.mirc.gatech.edu
trainer(s) email: tystar_poly-trainers@grover.mirc.gatech.edu

Lindberg Furnaces
The Lindberg furnaces are used for curing polymers, sintering, and growing oxides and nitrides on silicon wafers.

trainer(s) email: lindberg-trainers@grover.mirc.gatech.edu

Unaxis PECVD
A PECVD (Plasma Enhanced Chemical Vapor Deposition) reacts gases in a RF (radio frequency) induced plasma to deposit materials such as silicon dioxide and silicon nitride. This PECVD has one chamber.
- Operates at 13.56 MHz
- Large deposition electrode: up to 5 - 3", 4 - 4" wafers or a single 6" wafer
- Designed to control the stress of deposited films by adjusting the ratio of He:N
- Typical deposition rates range from 80Å/min to 400Å/min, varying with temperature and power

trainer(s) email: pcvd3-trainers@grover.mirc.gatech.edu

Coyote PECVD
The Coyote PECVD is a tube furnace PECVD used to deposit silicon nitride.

trainer(s) email: coyote-trainers@grover.mirc.gatech.edu

STS PECVD
A PECVD (Plasma Enhanced Chemical Vapor Depositor) process reacts gases in a RF (radio frequency) induced plasma to deposit materials such as silicon dioxide and silicon nitride.
- Large deposition electrode: up to 5 - 3", 4 - 4" wafers or a single 6" wafer
- Programmable dual frequency operation for precise process control
- Reproducible plasma properties

trainer(s) email: pevcd2-trainers@grover.mirc.gatech.edu

PlasmaTherm PECVD
A PECVD (Plasma Enhanced Chemical Vapor Depositor) reacts gases in a RF (radio frequency) induced plasma to deposit materials such as silicon dioxide and silicon nitride. This PECVD has two chambers.
- Operates at 13.56 MHz
- Sample size: pieces to 6" wafers
- Typical deposition rates: 100 Å/min - 400 Å/min
- Typical processes: Silicon Dioxide
  - Silicon Nitride
  - Silicon Oxynitride

trainer(s) email: pcvd2-trainers@grover.mirc.gatech.edu

Astex ECR
Electron Cyclotron Resonance (ECR) is a technology that produces higher density plasmas and better ion separation than a parallel plate reactor.

trainer(s) email: ecr-trainers@grover.mirc.gatech.edu

Materials Deposited

Thermal Growth
- poly-silicon
- gate oxide
- thermal oxide
- thermal nitride
- oxidation

Dielectrics Deposition (non-thermal)
- oxide & nitride films
  - silicon oxide
  - silicon nitride
  - silicon oxynitride
  - phosphorous-doped oxide
- silicon carbide
- diamond-like carbon
- RF sputter dielectrics
  - Al, BST, Cu, Au, Fe, ITO, lithium niobate, etc.