Scifres Nanofabrication Laboratory (Cleanroom)

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As a multi-user facility, the Scifres Nanofabrication Laboratory serves researchers from Purdue, external academic units, and industry. Users may elect to have Scifres engineering staff members process materials and/or devices for them, or the users may choose to come to Scifres and run the processes and equipment themselves. The cleanroom has most of the traditional semiconductor wafer fabrication processes as well as specialized equipment for nanoscale device and materials research. The facility accommodates users from all of the engineering and science departments across campus, and is a multidisciplinary research center with a host of specialties. The Scifres has the distinction of being one of the largest university nanofabrication cleanrooms in the United States. Also, nearly 20% the facility has ISO Class 3 cleanliness levels. The facility provides 25,000 square feet of cleanroom space, and the wide variety of equipment supports diverse research needs. The entire set of resources provided by this cleanroom is designed to support collaborative interdisciplinary research in nanotechnology. Equipment includes:

Atomic Force Microscopy
- Veeco Dimension Atomic Force Microscope (AFM)

Electron Microscopy
- JEOL Table-Top Scanning Electron Microscope

Analytical Systems
- Ellipsometer
- Film Stress Measurement
- Stylus-Based Surface Profilometers
- Bruker Optical Profilometer
- JEOL Table-Top Scanning Electron Microscope

Lithography – Optical and E-Beam
- JEOL 8100 Electron Beam Lithography Tool, Capable of 6 nm Resolution in Resist
- Optical Photomask Aligner and Exposure Systems
  - Karl Suss MJB-3 (2)
  - Karl Suss MA-6
  - Karl Suss MJB-4
  - Karl Suss SB-6E Wafer Bonding System
  - Nanonex Nanoimprint Lithography System
- Photoresist Application and Development Spinners

Lithography - Maskmaking
- Heidelberg Direct Write Laser System
- Automated Plate Processor
Dry Etching and Cleaning
- STS Deep Reactive Ion Etch (RIE) Systems (2)
- Panasonic E620 Plasma Etcher
- PlasmaTech RIE
- XeF2 Etching System
- Branson Plasma Asher

Metal Deposition
- Veeco 7760 Thermal Evaporator
- PVD Metal/Dielectric Sputtering System
- PVD Magnetic Sputtering System
- PVD Sputtering for Flexible Substrates
- Airco-Temescal FDC-1800 Electron-Beam Evaporator
- Varian e-Beam Evaporator
- Leybold e-Beam Evaporator
- CHA e-Beam Evaporator
- Kurt Lesker e-Beam Evaporator
- PVD e-Beam Evaporator
- CHA e-Beam Evaporator for Organic Substrates

Deposition Systems
- AXIC PECVD System
- H2S CVD System
- F-120 Atomic Layer Deposition (ALD) System
- Gemstar XT's ALDs/Glovebox
- Black Magic ALD
- Fiji ALD

Thermal Processing
- Rapid Thermal Processing Systems
- Pyrogenic Oxidation System
- Blue-M Oxidation Furnace
- Nitric Oxide Annealer
- ProTemp Furnaces for oxidation, LP Nitride, LTO, polysilicon, annealing, TEOS, and diffusion

Wet Etching and Cleaning
- Acid fume hoods (4)
- Solvent fume hoods (8)
- Flame retardant fume hoods for heated processing

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