

University of South Florida

USF Thin Film Pilot Line (COMING SOON)

Web Site Link: Not available yet

Contact Information

Email: TBD

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Description

Thin Film Pilot Line at the University of South Florida, Tampa, is a \$2M state funded 2500 ft² facility. It is adjacent to the USF Incubator Building to foster the genesis of university/industry partnerships. The facility will enable the complete fabrication and evaluation of thin film solar modules.

Fee Schedule

TBD

USF Nanotechnology Research and Education Center (NREC)

Web Site Link: <http://www.nrec.usf.edu/>

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Description

The Nanotechnology Research and Education Center (NREC) housed in the 15,000 square foot Nanotech I building at the University of South Florida has five laboratories available for user access. A Class 1000, 1800 square foot Cleanroom, Thin Film Lab, Metrology Suite, Electrical Test/Packing Lab, and Wet Chemistry Lab. In addition, there are 4 full-time technical staff and one office staff to run the Nanotech I facility.

Thin Film Laboratory

The laboratory contains an aluminum thermal evaporator, a four pocket Ebeam evaporator, a rapid thermal anneal tool, and a multi-chambered sputter tool. Various metals are available in either pellet or sputter target form.

Metrology Suite

This suite of rooms contains a FEI TF20 Transmission Electron Microscope with STEM, EDS and Gatan digital imaging options, a Digital Instruments Atomic Force Microscope, a Panalytical XPert Pro Materials Research Diffractometer, a Field Emission Hitachi S800 Scanning Electron Microscope with EDS capabilities, a Hitachi SU-70 Ultra High Resolution Scanning Electron Microscope Schottky FE-SEM with nanolithography capabilities, EDS and Gas Injection, and a FEI Quanta 3D Dual Beam

Focused Ion Beam. Various optical microscopes and material preparation table top tools are also available to support the sample preparation aspect of the major equipment.

Electrical Test/Package Laboratory

This laboratory contains Models 6200/6000 Micromanipulator probe stations, a HP 4280A 1 MHz C Meter & C-V Plotter, a HP4145B Semiconductor Parameter Analyzer, a HP 4284A Precision LCR Meter, a HP 4294A Precision Impedance Analyzer a Dektak Profilometer, and a K&S 4123 Wire Bond station.

Wet Chemistry Laboratory

This laboratory contains a solvent and an acid/base wet bench to support chemical processes such as nickel and gold electroplating. The lab also contains a MA 1006 Micro Automation wafer dicing saw, a tape moulder, a Buehler saw, wire saw, and polisher for material preparations.

Device Fabrication Laboratory/Cleanroom

This laboratory contains equipment to support optical contact lithography, wet chemical cleaning/etching, film thickness/profile measurement, furnace oxide growth, doping, contact anneals, low pressure chemical vapor deposition, plasma dry etching, deep reactive ion etching, plasma enhanced chemical vapor deposition and other more specific research techniques and processes. Photomask fabrication is also available for most designs with features larger than 2 microns.

Cleanroom Process/Equipment Capability Detail

- Three Wet benches – Chemically clean samples and substrates; chemically etch films and substrates, general chemical processes. Services: Exhausted bench with deionized water guns and dump rinsers, nitrogen blow guns, process timers, and plenum flush.
- Develop & Spinner Hoods – Develop photoresists, photoresist stripping, general solvent cleaning. Services: Deionized water gun and dump rinser, nitrogen blow guns, and process timers.
- Soft/Hard bake ovens and hot plates
- Karl Suss Masker Aligner – Align mask sets for patterning wafers. Capable of handling 2, 3, and 4” wafers. Supports down to 1 micron technology.
- Quintel Mask Aligner
- Two Photoresist Spinners – Laurel Technologies Spinner – capable of spinning fragment samples up to 8” wafers. Integrated Technologies Spinner - Capable of spinning fragment samples up to 6” wafers. For photoresists, spin on dopants, spin on glasses and polymers.
- Mitutoyo Ultraplan FS-110 microscope – Long working distance microscope with video still picture capture and onscreen critical dimension measurement capability. Contains bright and dark field, polarized light, Nomarski, and reflected and transmitted illumination capabilities together with extra-long working distance objectives and fraction of a micron resolution.
- Rudolph Ellipsometer – Capable of measuring film thickness and index of refraction on many different types of films.
- Nanospec 210 film thickness tool for patterned structures.
- Veeco Dektak 150 State of the art profilometer with film stress option.
- Sopra Spectroscopic Ellipsometer
- Veeco Wyco D9100 Optical Profilometer
- Alphastep Profilometer – Capable of measuring film or substrate surface features with nanometer resolution.
- BTI Furnaces (Two banks, 8 Tubes) – Four inch wafer capable tubes. Each tube has three heating zones. Computer controlled recipe storage and process controller. Spin on and solid source dopants n and p types, contact anneal, dry and pyrogenic oxidations. LPCVD undoped polysilicon films.

- Plasma Therm 700 – PECVD and Plasma Etcher – Plasma etcher used for ashing, nitride etching, SiC etching. PECVD α -Silicon, SiO₂, and Si_xN_y films.
- Four point probe station for measurement of sheet resistivity.
- AMS 100 Deep Reactive Ion Etcher – Capable of high aspect ratio etching of glass, quartz, silicon dioxide, silicon and silicon carbide films and substrates.
- GCA 3600F Pattern Generator capable of producing 5x5 inch chrome on glass photo masks or reticules
- GCA 3696 Photorepeater
- Denton Gold & Chrome thermal evaporator

Fee Schedule

Facility use is negotiated on a per-proposal basis.