

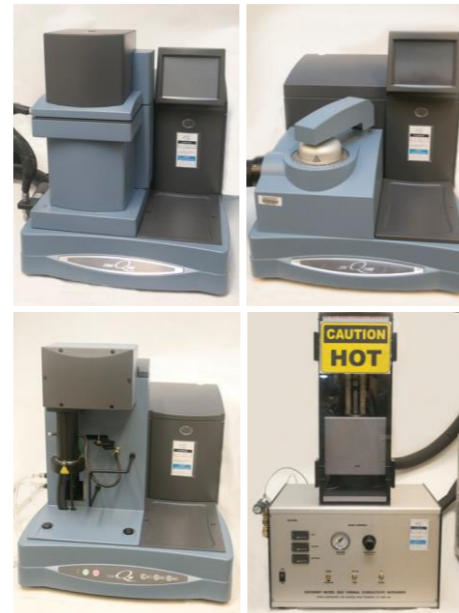
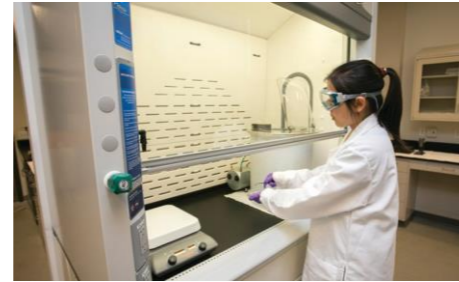
SAMPLE PREPARATION AND THERMOMECHANICAL CHARACTERIZATION

Thin Film Processing

- 6-ft. chemical fume hood
- Photoresist spinner
- Oil-trapped vacuum oven
- Ellipsometer

Thermomechanical Characterization

- Thermal Gravimetric Analysis (TGA, TA Q50):
Temp. range: ambient+5~1000°C
- Differential Scanning Calorimetry (DSC, TA Q2000):
Temp. range: -90~550°C
- Dynamic Mechanical Analysis (DMA, TA Q800):
Temp. range: -145~600°C
- Thermal Conductivity Meter (DTC-300):
Temp. range: -20~300°C;
Thermal conductivity range: 0.1~40 W/m.K



ThINC

**THERMOMECHANICAL & IMAGING
NANOSCALE CHARACTERIZATION**

AT STONY BROOK UNIVERSITY

FEES FOR SERVICE (As of June 2013) Fees are subject to change without notice;
internal rate is applied to users or PIs affiliated with Stony Brook University faculty positions.

Use of Facility

Internal: \$69/hour
External: \$98/hour

Sample Preparation

Internal: \$68/hour
External: \$96/hour

CONTACT US

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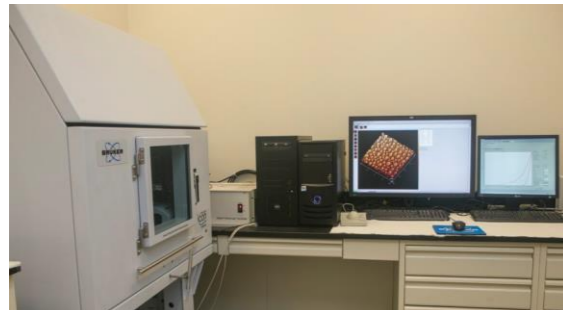
Instrumentation Scientist
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631.216.7412

ThINC is a core facility of the Advanced Energy Research and Technology Center (AERTC). It is dedicated to establishing partnerships between Stony Brook University and industrial laboratories for enabling cutting-edge research in nanoscience.

We are a new comprehensive core for multiscale characterization and imaging, with facilities for sample preparation, imaging and thermo-mechanical characterization. We have PhD scientists ready to run your samples and provide guidance in choosing the best solutions for your materials-related problems.

aertc.org



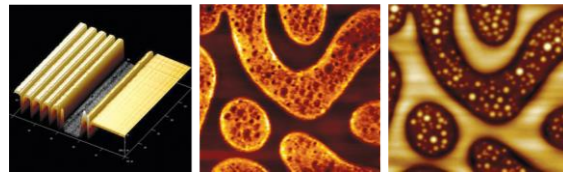


SCANNING PROBE MICROSCOPE WITH HYSITRON ATTACHMENT

Bruker Dimension ICON

- Nanomechanics/nanoindentation
- Nanoelectrical characterization
- Imaging in fluid
- Heating and cooling stages
- Contact, Tapping and ScanAsyst modes

Scanning probe microscope images: (left) 3D image of photoresist-imprinted patterns on silicon wafer scanning by Contact mode; 2D image of organic photovoltaic polymeric solar cell (PMMA/P3HT/PCBM) scanning by PeakForce TUNA mode, showing the topography (middle) and conductive current (right) measurement

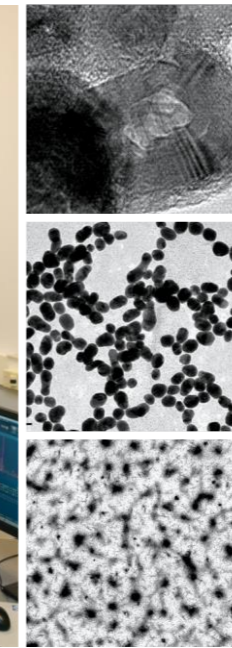
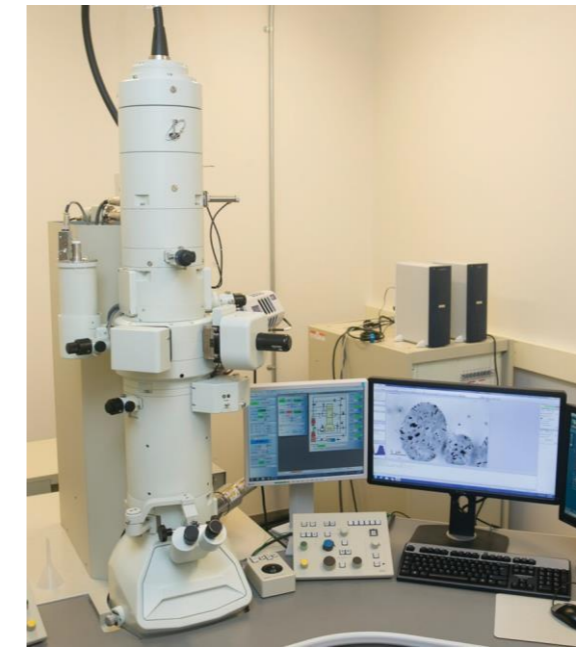
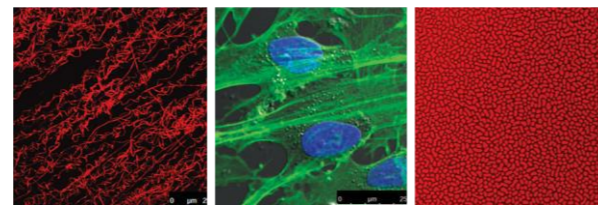
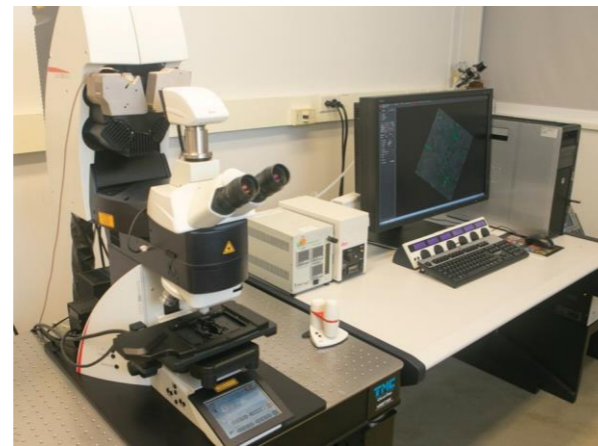


UPRIGHT CONFOCAL MICROSCOPE

Leica TCS SP8 X

- Upright geometry suitable for materials science applications with opaque samples or substrates
- Immersion lenses permit imaging of submerged samples
- GaAsP hybrid detection system (HyD)
- White light laser 470~670 nm, and UV laser 405 nm
- Tokai Hit stage incubator providing 37°C and 5% CO₂ (live cell imaging)

Confocal microscope images: (left) Organic photovoltaic polymer MEH-PPV electrospun fibers; (middle) Dental pulp stem cells grown on polyisoprene (PI) thin film treated with micro-sized beads taken together by incident (fluorescence) and transmitted (DIC) lights. Stained with Alex Flour Phalloidin 488 (actin filaments) and DAPI (nuclei); (right) Organic photovoltaic polymer P3HT blended with PMMA



TRANSMISSION ELECTRON MICROSCOPE (TEM)

JEOL JEM 1400

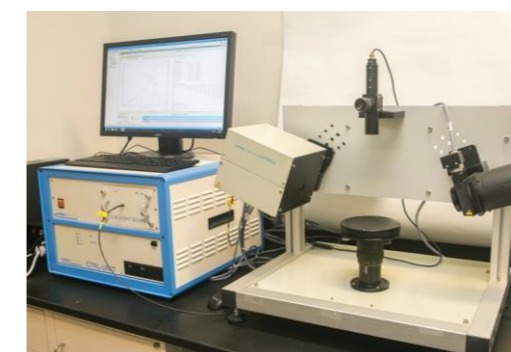
- Suitable for materials science, polymer and biological applications
- Features available: Cryotomography, STEM, EDS for elemental identification
- Accel. Vol.: 40~120 kV
- Magnification: x5,000~2,000,000/ x120~4,000

TEM images: (top) Graphitized carbon, showing a distance between graphene layers of approximately 3.4Å; (middle) Synthesized gold nanoparticles, with average size ~40 nm; (bottom) P3HT/PCDTBT blend polymer thin film

EM SAMPLE PREPARATION

Leica EM UC7 with Cryo Attachment

- High-quality ultramicrotome for precise room temperature and cryo sectioning (-15~ -185°C)
- Prepare excellent quality semi- and ultra-thin sections, as well as the perfectly smooth surfaces for light, electron and atomic force microscopy examination
- Diamond and glass knives available
- Ideal for elastomers, polymers, organic photovoltaics
- Well suited for biological samples, either embedded or lyophilized



SPECTROSCOPIC ELLIPSOMETRY

Horiba UVISEL FUV

- Spectral range from 190 to 880 nm; thin film thickness from 1Å to > 30 μm
- Nanometer film thickness determination with multilayer and interface capabilities
- Optical constant (refractive index n, extinction coefficient k) measurements for isotropic and anisotropic films
- Transparent samples with backside reflections are eligible



AMG EVOS FL MICROSCOPY

- Light Cubes: DAPI (Ex 360/ Em 447 nm) GFP (Ex 470/ Em 525 nm) White (non-transparent samples)
- With monochrome camera, it can capture images at 16-bit monochrome TIFF or PNG; 24-bit color TIFF or PNG; JPEG or BMP (1280 x 960 pixels)
- Equipped with Biopetechs stage temperature controller providing 37°C for live cell observation