### CCMR Shared Facility Rates - Industrial Use
(Effective August 1, 2014)

* indicates additional setup or labor charge may apply

<table>
<thead>
<tr>
<th>Role</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manager Labor Rate</td>
<td>$140 /hr</td>
</tr>
<tr>
<td>Technician Labor Rate</td>
<td>$90 /hr</td>
</tr>
</tbody>
</table>

### Electron Microscopy

- FEI F20 TEM STEM $400 /hr
- NION UltraSTEM 100 (4 hr minimum) $400 /hr
- FEI Strata 400 STEM FIB $250 /hr
- FEI Tecnai T12 Spirit TEM STEM $200 /hr
- FEI Tecnai 12 BioTwin TEM $200 /hr
- LEO 1550 FESEM (Keck SEM) $200 /hr
- Tescan-Mira3-FESEM $200 /hr
- JEOL 8900 Microprobe $200 /hr
- LEICA 440 SEM $200 /hr

### TEM Sample Preparation:

- Allied Multiprep Polisher (A or B) $100 /hr
- Leica EM UC7/FC7 Cryoultramicrotome $100 /hr
- Leica Ultracut UCT Ultramicrotome - RT $100 /hr
- WELL Diamond Wire Saw $60 /use

### Microscopy, Spectroscopy, Surface Analysis

- X-Ray Photoelectron Spectroscopy (XPS) $165 /hr*
- Asylum-MFP3D-Bio-AFM-SPM $145 /hr
- Veeco Dimension 3100 Ambient AFM STM $145 /hr
- JEOL JSPM 4500 UHV STM $145 /hr
- Bruker Hyperion FT-IR Spectrometer & Microscope $145 /hr
- Nanonics Multiview 1000 or 2000 Near-field $145 /hr
- Scanning Optical Microscopy (NSOM) $145 /hr
- Renishaw InVia Confocal Raman microscope $145 /hr
- Tencor Alpha Step 500 Stylus Profilometer $75 /hr
- ADE Phase Shift MicroXAM Optical Interferometric Profiler $110 /hr
- Shimadzu UV-3600 UV-Vis-NIR Spectrometer $110 /hr
- Aviv 400 Circular Dichroism Spectrometer $110 /hr
- Mattson 5020 FTIR Spectrometer $110 /hr
Novocontrol Broadband Dielectric Spectrometer $110 /hr
Novocontrol Thermal Stimulated Depolarization Current (TSDC) $110 /hr

**Soft Matter/Polymer Analysis**
- TA Instruments DHR3 Single Head Rheometer $100 /hr
- Waters MALDI Micro MX (MALDI-TOF) $200 /sample
- JAI-LC9110NEXT-Recycling-Preparative-GPC $200 /sample
- Waters Ambient-Temperature GPC $80 /sample
- Waters Ambient-Temperature Aqueous GPC $80 /sample
- High Temperature GPC $90 /sample
- TA Instruments Q500 Thermogravimetric Analyzer (TGA) $100 /sample
- TA Instruments Q1000 Modulated Differential Scanning Calorimeter (MDSC) $160 /sample

**X-Ray and Diffraction Analysis**
- Rigaku SmartLab X-Ray Diffractometer $110 /hr
- Scintag Theta-Theta X-ray Diffractometer (XRD) $100 /hr
- Bruker General Area Detector Diffraction System (GADDS) $150 /hr
- Multiwire Back-Reflection Laue Detector $170 /hr
- Scintag XDS2000 Diffractometer $100 /hr

**Mechanical Properties Testing and Analysis**
- TA Instruments DMA Q800 Dynamic Mechanical Thermal Analysis (DMTA) $100 /hr*
- TA Instruments Q400EM Thermomechanical Analysis (TMA) $80 /hr
- Micro Hardness Tester $50 /hr
- Micromechanical Analyzer $50 /hr
- ATM Sonic sifter $25 /hr

**Thin Film Deposition, and Material Processing**
- Varian Thermal Bell Jar Evaporator Clark Hall $150 /use
- Sputter Deposition $200 /use
- KJL Magnetron Sputtering Tool $300 /sample
- Neocera EX200 Pulsed Laser Deposition System $30 /hr*
- KSV-NIMA-KN4010 Dip Coater $40 /hr*
KSV-NIMA-KN2002 Langmuir Blodgett Trough $40 /hr*
Laurell WS-400A Spin Coater $40 /hr*

**Heat Treating**
Lindberg Vacuum Tube Furnace $5 /hr*
AcrossInternational, LabTemp, Lindbergh Tube Furnaces (two furnaces, Bard Hall) $5 /hr*
Marshall Two Zone Tube Furnace 1100C $5 /hr*
All other Air/Box Furnaces (Labtemp, Lindberg, and Vulcan) $4 /hr*
Hotpack or National Vacuum Ovens $4 /hr*

**Electronic & Magnetic Measurements**
Quantum Design Physical Property Measurement System (PPMS) $20 /hr*
Quantum Design MPMS-XL SQUID Magnetometer $40 /hr* + helium costs
Lakeshore Full Wafer Cryogenic Probe System $40 /hr
Lakeshore Tabletop Magnetic-Cryogenic Probe System $30 /hr
GMW-5201 Projected Field Magnet Probe System $30 /hr
GMW-5403 C-Frame Magnet Probe System $30 /hr
Cascade CPS-06 Four Point Probe $30 /hr

**Sample Preparation, Cutting, Polishing, etc.**
**Sample Prep**
Grimco Compression Molding press $25 /hr*
Parr Pressure Reactor $25 /hr
Enerpac Hydraulic Press $25 /hr
Buehler Simplemet II mounting press $25 /hr*
Inert Gas Glove Box $40 /use
Ball Mill $15 /hr
Spex 8000 MIXER /MILL $40 /hr
Garlock GEM-T Jet mill $25 /hr
Meteor Coil Winder $40 /use

**Cutting/Cleaning/Polishing**
MicroMech Wafering Machine $50 /hr*
Buehler Isomet Low Speed Diamond Saw $50 /hr
Wale Diamond Band Saw $40 /hr
Conrad Universal Cutting Machine $70 /use
Glass Bead Abrasive Units (sand blasting)-Bard or Clark $40 /hr
SS White Sand Blasting Unit $40 /hr*
Buehler Grinding/Polishing 12-inch $40 /hr*
Buehler SiC Grinding Papers-Bard $50 /use
Struers Rotopol $60 /hr
Branson Ultrasonic Bath (large) $20 /hr

Welding/Bonding
Miller Intellitig40 Welder $40 /use
Unitek Portable Spot Welder (Bard Hall) $20 /use
Stationary Spot Welder Hughes HRW250B (Clark Hall) $20 /use
TPT HB05 Manual Wire Bonder $40 /hr
Kulicke - Soffa 4500 manual bonder $40 /hr

Vacuum Equipment
Extorr XT200amu Portable RGA Pump Station 1-Clark $1.67 /hr*
SRS RGA200amu Portable RGA Pump Station 2-Clark $1.67 /hr*
Varian 979 Port Leak Detector $3.75 /hr*
Portable Turbo Pump Stations (Clark Hall or Bard Hall) $3.75 /hr
Rough Pumps (Clark Hall) $0.40 /hr

Test Equipment Lending Library
(more info at http://www.ccmr.cornell.edu/LendingLibrary)
Common items: model name (facility tag number). Hourly rate can be calculated from daily rate.
Extech DC and BK Precision AC Power Supplies (9047-9051) $1 /day
Agilent E3631A Triple Output Power Supplies (9040-9046) $1 /day
GPIB-to-USB Adaptors (9180-9183) $2 /day
HP 3325A Function Generators (9072-9077) $2 /day
HP 8657B 2GHz Signal Generator (9085) $2 /day
FW Bell Hall Probes (9140-9144) $2 /day
Extech IRC40 250C Thermal Imager (9152) $3 /day
Signal Recovery 5113 Preamplifiers (9024-9106) $3 /day
<table>
<thead>
<tr>
<th>Equipment Description</th>
<th>Cost per Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agilent 33521A Arbitrary Waveform Generator (9078)</td>
<td>$3</td>
</tr>
<tr>
<td>Stanford Research SR560 Low Noise Amplifiers (9020-9031)</td>
<td>$3</td>
</tr>
<tr>
<td>HP 85662A Spectrum Analyzer (9132)</td>
<td>$4</td>
</tr>
<tr>
<td>Tektronix TDS2024 Four Channel Digital Oscilloscopes (9101-9103)</td>
<td>$5</td>
</tr>
<tr>
<td>DL Instruments DL1121 Preamplifiers (9021-9028)</td>
<td>$5</td>
</tr>
<tr>
<td>Yokogawa 7651 DC Programmable Power Sources (9060-9065)</td>
<td>$6</td>
</tr>
<tr>
<td>Signal Recovery 7265 Lock-in Amplifier (9001-9009)</td>
<td>$12</td>
</tr>
<tr>
<td>Stanford Research SR844 RF Lock-in (9000)</td>
<td>$15</td>
</tr>
<tr>
<td>Keithley 6430 Sub-femtoamp Source Meter (9160)</td>
<td>$20</td>
</tr>
<tr>
<td>Agilent 4284A Precision LCR Meter (9171)</td>
<td>$30</td>
</tr>
<tr>
<td>Tektronix TDS8000 Digital Sampling Oscilloscopes (9107-9108)</td>
<td>$30</td>
</tr>
<tr>
<td>Agilent E8257 PSG Analog Signal Generators (9081-9084)</td>
<td>$30</td>
</tr>
<tr>
<td>Picosecond 10070A Pulse Generators (9090, 9092)</td>
<td>$30</td>
</tr>
<tr>
<td>LeCroy 8500A Wavemaster Oscilloscope (9109)</td>
<td>$30</td>
</tr>
<tr>
<td>LeCroy SDA11000 Oscilloscope (9109)</td>
<td>$30</td>
</tr>
<tr>
<td>Agilent 8722ES Network Analyzer (9120)</td>
<td>$30</td>
</tr>
<tr>
<td>Agilent 8565E Spectrum Analyzer (9130)</td>
<td>$30</td>
</tr>
<tr>
<td>Andeen Hagerling DCPAX/TP1 Capacitance/Loss Bridge (9170)</td>
<td>$30</td>
</tr>
<tr>
<td>Agilent E4991A RF Impedance/Material Analyzer (9201)</td>
<td>$30</td>
</tr>
<tr>
<td>Agilent B1500 Device Analyzer (9203)</td>
<td>$30</td>
</tr>
</tbody>
</table>