

**LABORATORY FOR ELECTRONIC MATERIALS & DEVICES  
SCHEDULE OF INDUSTRY USER FEES FOR FY 2016-2017**

|  | INSTRUMENT / BRAND / MODEL                  | INITIATION FEES                    | DAILY FEES                                       | Industry Hourly Rates FY16 |                        |                   |   |                     |
|--|---|------------------------------------|--|----------------------------|------------------------|-------------------|---|---------------------|
|  |   |                                    |  | unassisted                 | assisted               | cost of materials |   |                     |
| <b>Optical Spectroscopies</b>                                    | UV-vis-NIR spectrometer                     | Shimadzu UV-3600                   | 1-hr assisted use (training)                     |                            | \$ 20.00               | \$ 40.00          |   |                     |
|  | PL spectrometer                             | Photon Technology Ins.             | 1-hr assisted use (training)                     |                            | \$ 20.00               | \$ 40.00          |   |                     |
| <b>Ultraviolet Photoelectron Spectroscopy</b>                    | UPS Instrument                              | OMICRON ESCA+S UPS                 | \$1000/user (includes 3 x 3hr training sessions) |                            | \$ 100.00              | \$ 200.00         |   |                     |
|  | Supplied substrates for sample fabrication  | ITO                                |  | \$100/day * <sup>§</sup>   |                        |                   | * All standard materials and instruments for sample fabrication are free of charge (excluding Au, Ag evaporation) |                     |
|  |   | PEDOT:PSS/ITO                      |  |                            |                        |                   |   |                     |
|  |   | Au/Si                              |  |                            |                        |                   |   |                     |
| Ag/Si  |   |                                    |  |                            |                        |                   |   |                     |
|  | Cu/Si                                       |                                    |  |                            |                        |                   |   |                     |
| <b>Electronic Device Fabrication &amp; Characterization Line</b> | Spin-coater in GB                           | SCS G3P-8                          | 1-hr assisted use (training)                     |                            | \$ 10.00               | \$ 20.00          |   |                     |
|  | Thermal Evaporator in GB                    | MBraun 2-source                    | 3-hr assisted use (training)                     |                            | \$ 40.00               | \$ 80.00          |   |                     |
|  | Supplied materials for thermal evaporation  | Boats                              |  |                            |                        |                   |   | Free of charge      |
|  |   | Au                                 |  |                            |                        |                   |   | \$50/pellet (50 nm) |
|  |   | Ag                                 |  |                            |                        |                   |   | \$5/pellet (50 nm)  |
|  |   | Al, Ca, LiF, MoO <sub>3</sub> , Cu |  |                            |                        |                   |   | Free of charge      |
|  | IV station (includes solar simulator) in GB | Keithley 2400 / SS 91160           | 1-hr assisted use (training)                     |                            | \$ 30.00               | \$ 60.00          |   |                     |
|  | QE/IPCE Instrument                          | Oriel QE-PV-SI Kit                 | 1-hr assisted use (training)                     |                            | \$ 20.00               | \$ 40.00          |   |                     |
|  | Supplied materials for device fabrication   | Shadow masks                       |  |                            | \$250/day <sup>§</sup> |                   |   | Free of charge      |
|  |   | ITO substrates                     |  |                            |                        |                   |   | \$4/pc.             |
| PEDOT:PSS  |   |                                    |  |                            |                        |                   | Free of charge  |                     |
| Common org. solvents   |   |                                    |  |                            |                        |                   | Free of charge  |                     |
| Vials  |   |                                    |  |                            |                        |                   | Free of charge  |                     |
| Syringes/Needles   |   |                                    |  |                            |                        |                   | Free of charge  |                     |
| Pipets/Tips  |   |                                    |  |                            |                        |                   | Free of charge  |                     |
| Cotton/polyester gloves  |   |                                    |  |                            |                        |                   | Free of charge  |                     |
| PVDF & PTFE filters  |   |                                    |  |                            | Free of charge         |                   |   |                     |
| <b>Electrochemical Characterization</b>                          | Cyclic voltammetry (CV)                     | BASI, Epsilon Basic w/C3           | 1-hr assisted use (training)                     |                            | \$ 20.00               | \$ 40.00          |   |                     |
|  | Supplied materials                          | Pt electrodes                      |  |                            |                        |                   | \$350   |                     |
|  |   | Ferrocene reference                |  |                            |                        |                   | Free of charge  |                     |
| <b>Electrical Characterization</b>                               | Time-Of-Flight Instr.                       | Custom-made                        | 3-hr assisted use (training)                     |                            | \$ 50.00               | \$100.00          |   |                     |
|  | Impedance meter                             | Agilent 4293A                      | 2-hr assisted use (training)                     |                            | \$ 40.00               | \$ 80.00          |   |                     |
|  | IV with Solar Simulator                     | Keithley/Oriel SOL2A               | 1-hr assisted use (training)                     |                            | \$ 30.00               | \$ 60.00          |   |                     |

§ Includes access to: (1) ultrasonic cleaner and organic solvents, (2) oven, (3) UV-Ozone cleaner, (4) Spin-coaters for aqueous solutions outside and organic solvents in GB, (5) hot plates; metal evaporation is charged at regular thermal evaporator rates

<sup>§</sup> Includes access to: (1) N2 storage cabinet and glove box, (2) ultrasonic cleaner with organic solvents, (3) oven, (4) UV-Ozone cleaner, (5) spin-coater for aqueous solutions, (6) balances, (7) hot plates, (8) multimeters, (9) surface profiler; metal evaporation is charged at regular thermal evaporator rates

Signature \_\_\_\_\_

Date \_\_\_\_\_