



**PARTNERSHIP FOR RESEARCH AND EDUCATION IN MATERIALS  
UNIVERSITY OF PUERTO RICO AT HUMACAO**



**SERVICE CHARGE POLICY FOR THE USE OF INSTRUMENTS AND TECHNICAL SUPPORT  
IN THE FACILITIES EQUIPPED AND ADMINISTERED BY  
THE PREM PROGRAM OF THE UNIVERSITY OF PUERTO RICO AT HUMACAO**

**I. Charges for Services**

**Internal Community:** Any person who study or work in any of the campuses of the University of Puerto Rico (UPR) system.

**External Community:** Any person who does not study or work at the UPR system.

**Sample Characterization (CNL-110 and CNL-112)**

Instrument or Equipment Setup	Cost per hour		Cost per hour of training or technical assistance	
	Internal	External	Internal	External
Powder X-ray Diffraction (XRD) D2-Phaser by Bruker	\$25.00	\$40.00	\$50.00	\$80.00
Scanning Electron Microscope (SEM) ModelJSM-IT100 by JEOL	\$25.00	\$40.00	\$50.00	\$80.00
Energy Dispersive X-ray Spectroscopy (EDS)	\$25.00	\$40.00	\$50.00	\$80.00
Profilometer Model Alfa Step D-500 by KLA Tencor	\$25.00	\$40.00	\$50.00	\$80.00
Cold Finger (Vacuum Chamber for electrical measurements with dependence on temperature 300K-15K) - Refrigerator Model 22 by CTI-CRYOGENICS - Temperature Controller Model 32 by CRYO.CON	\$25.00	\$40.00	\$50.00	\$80.00

- Electrometer/High Resistance Meter Model 6517A by Keithley				
Electrochemical Measurement System: Potentiostat/Galvanostat by EG & Princeton Applied Research Bipotentiostat Model AFCBP1 with Speed Control Model MSRX by Pine Instrument				
Ask for quote as prices may vary by type of electrodes and electrolytes.				
Electrochemical Measurement System: Potentiostat/Galvanostat Model SP-150 by BioLogic Science Instruments				
Ask for quote as prices may vary by type of electrodes and electrolytes.				
Critical Point Dryer (CPD) Model samdri-PVT-3D by Tousimis	\$50.00	\$70.00	\$80.00	\$100.00
High Speed Refrigerated Centrifuge Model Allegra 64R w. Fixed Angle Rotor Model F0630 by Beckman Coulter. Capacity of 6 x 38.5 mL.	\$25.00	\$40.00	\$50.00	\$80.00

**Sample Processing (CNL-110 and CNL-112)**

Instrument or Equipment	Cost per hour		Cost per hour of training or technical assistance	
	Internal	External	Internal	External
Electrostatic Deposition System (Electrospinning Set Up) - High Voltage Source Model ES30 by Gamma High Voltage Research - Syringe Pump by Cole Palmer	\$25.00	\$40.00	\$50.00	\$80.00
Prices for fibers' preparation <u>do not</u> include preparation of the precursor solution.				

Spin Cast System Model PWM32 by Headway Research w. W Series 7 High Vacuum Pump by Welch	\$10.00	\$15.00	\$20.00	\$30.00
Tip Sonicator: Controller and Chamber Model S-3000 by Misonix	\$25.00	\$40.00	\$50.00	\$80.00
Burnout Furnaces				
<ul style="list-style-type: none"> <li>- Drying Oven Model DX 300 by Yamoto</li> <li>- Fisher</li> </ul>				
Tube Furnaces				
<ul style="list-style-type: none"> <li>- Thermolyne 21100</li> <li>- Carbolite Model GHC 12/1200 w. Eurotherm 3216 Temperature Controller <ul style="list-style-type: none"> <li>• Compressed Air</li> <li>• Gases: Argon, Ammonia, Nitrogen</li> </ul> </li> </ul>				
Thermal Evaporator System High Vacuum Evaporator by Polaron Range	Ask for quote as prices may vary by type of metal and thickness to be evaporated.			
Glovebox System by LC Technology Solutions Inc				
<ul style="list-style-type: none"> <li>• Gases: Argon, Nitrogen or Compressed Air</li> <li>• Vacuum</li> </ul>				

### **Mathematical Modeling and Simulations (CN-102)**

Service	Cost per hour		Cost per hour with technical support	
	Internal	External	Internal	External
High Performance Computing Service	Ask for quote: prices may vary by number of processors, processing time and type of programming.			

**Videoconference Room**

Meeting room equipped with Logicom Videoconference System (includes HD video camera, speakerphones and microphones), one 65" LG Smart TV and Infocus projector. Room accommodates ~30 people.

<b>Cost per hour</b>		<b>Cost per hour for training in the use of the equipment and/or technical assistance</b>	
<b>Internal</b>	<b>External</b>	<b>Internal</b>	<b>External</b>
\$25.00	\$40.00	\$50.00	\$80.00