



**BROWN UNIVERSITY**  
Institute for Molecular & Nanoscale Innovation  
www.brown.edu/imni

### **Guidelines for Use of IMNI Core Research Facilities by External Organizations**

The Institute for Molecular and Nanoscale Innovation (IMNI) is an interdisciplinary research center at Brown University that receives core funding from the National Science Foundation, AFOSR, and private industry. The Institute operates unique centralized core research facilities that are made available to qualified research personnel from external organizations consistent with Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards.

#### **Eligibility**

Research personnel from external organizations are granted use of IMNI Core Facilities, consistent with NSF Policy, when it is determined that the proposed service is not available in the commercial sector and the project will not interfere with the progress of BROWN research or education. Collaborative programs with IMNI faculty members and Core Facilities staff are encouraged where such arrangements would enhance the research capability of both parties.

#### **Application Procedure**

All prospective users should complete the attached application and forward it to:

Kara Hebert  
IMNI Core Facilities Specialist  
Institute for Molecular and Nanoscale Innovation  
Brown University, Box M  
Providence, RI 02912  
E-mail [Kara\\_Hebert@brown.edu](mailto:Kara_Hebert@brown.edu)

Once received, the application is reviewed by the Facility Director and, if approved the agreement will be signed and a fully executed copy will be returned to the applicant. The facilities cannot be used until this form is approved, and each user has completed the required training sessions. Authorizations to use the facilities for specific projects are granted for periods of up to one year from the date of the completed application. Re-application and re-approval are necessary prior to the expiration date of the agreement or when there is a significant change in the nature or scope of the project.

#### **Reports and Publications**

All users of the IMNI core facilities must keep IMNI informed of the nature and progress of their work. Acknowledgment of the use the center facilities is expected in publications or research reports, as is the assistance of a specific IMNI technical staff member if their work has made a significant contribution to the research. We would appreciate receiving a copy of the document that cites research conducted through the use of the IMNI core research facilities.

#### **Scheduling**

Please contact the appropriate facility staff member (see attached listing and available instrumentation for details) to schedule time on our instruments or to arrange for services. The core research facilities are scheduled for the maximum effectiveness of the Brown materials research community and as such, Brown users will be given first priority. Approval to use our facilities does not guarantee time on our instruments.

#### **Charges**

A purchase order (PO) is required prior to the use of our core facilities. IMNI's administrative office invoices monthly for the use of our facilities. Most fees for the instrument use are billed on an hourly basis. In addition, fees for supplies and materials may be applied. Charges are due when billed. Failure to pay in a timely way is grounds for the termination of this agreement. Purchase orders, billing and questions regarding financial arrangements and rates should be directed to: Kara Hebert, IMNI Core Facilities Specialist.

## APPLICATION AND AGREEMENT FOR EXTERNAL ORGANIZATION TO USE THE IMNI CORE RESEARCH FACILITIES

**AGREEMENT**, entered into on this \_\_\_\_\_ day of \_\_\_\_\_ (month), \_\_\_\_\_ (year) between Brown University ("BROWN"), of Providence, Rhode Island and \_\_\_\_\_ ("USER ORGANIZATION"), of \_\_\_\_\_ (ORGANIZATION ADDRESS)

1. Research Objective. Please indicate your current research goals and specify in detail the specific objectives of your research project. Attach additional sheets if necessary. USER shall be permitted the privilege to use specified facilities and associated equipment for the following purpose. Hereafter referred to as "the ACTIVITY":

\_\_\_\_\_

2. Facilities & Equipment. Subject to the terms and conditions contained herein, USER shall be permitted to use the following BROWN facilities and the associated equipment in said facility on a non-exclusive basis.

- |   |   |
|---|---|
| <input type="checkbox"/> Electron Microscopy Facility | <input type="checkbox"/> Nanofabrication Central Facility |
| <input type="checkbox"/> NanoTools Facility           | <input type="checkbox"/> JEPIS Machine Shop               |

Herein, the use of the term "PROPERTY" shall encompass and refer to the terms "FACILITIES" and "EQUIPMENT" collectively.

3. Schedule of Use. USER may use the PROPERTY to conduct the ACTIVITY during the following period (start and end dates):

Start Date:		End Date:	
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4. Persons Permitted Use. Use of the aforesaid PROPERTY shall be limited to the following employees of USER: (name, title, department, telephone number and E-mail address)

Name	Title	Department	Phone	Email

5. Feasibility of Proposed Work. Have you contacted the appropriate experimental facility director concerning the feasibility of your experiment or the availability of the desired instrumentation or service? If so, please specify the name of the person to whom you spoke. If not, please contact the appropriate person to discuss this prior to the submission of this form.

\_\_\_\_\_

6. (A) If a commercial organization, have you contacted commercial laboratories about the possibility of performing this work? Brown University is prohibited from competing with commercial laboratories. Prior to submitting this application, please contact commercial laboratories. If after this review you would still like to use IMNI core facilities, please specify below the commercial laboratories contacted and why they could not provide the services that you need.

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(B) If a commercial organization, is this work being conducted with funds provided by a federal research grant? If so, please indicate the sponsoring agency and the agency grant number. A reduced rate may be available for certain government or non-profit approved research where agency grant information is provided.

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7. Services, fees, and payment.

- A. Facilities and equipment. In consideration of the use of the PROPERTY, USER agrees to pay BROWN according to the attached Rate schedule for Outside Organizations. Rate Schedules change effective July 1 of each year.
- B. Manner of Payment. All checks are to be made payable to "Brown University" and are to be made to: Brown University, Institute for Molecular & Nanoscale Innovation, Box M, Providence, Rhode Island 02912.

Please indicate your organization purchase order or reference number: \_\_\_\_\_

8. Disposal of Bio Hazardous and Hazardous Waste. USER shall introduce no bio hazardous waste without prior written approval from the facility director. USER shall limit chemical usage to those materials customarily used in the appropriate IMNI Facility and for which handling and disposal facilities are available as listed in the facility *Chemical Hygiene Plan*. Upper limits on quantities of waste generated shall be agreed upon in advance and shall be disposed of in accordance with IMNI and Brown requirements.

9. Release and Assumption of Liability. USER, on behalf of itself and others claiming through it, hereby releases and discharges BROWN, its trustees, officers, agents and employees from, and agrees to assume full responsibility for, any damages, claims, losses, suits, costs and expenses (including but not limited to reasonable attorney's fees) on account of injury or death of any person or damage to property arising directly or indirectly from acts or omissions connected with the subject matter of this agreement, or the use of the PROPERTY by and /or the presence upon the campus of BROWN of USER, it employees, agents, and other acting through it or on its behalf.

10. Indemnification. USER agrees to indemnify, defend, and hold harmless BROWN and its trustees, officers, agents and employees, from and against any suits, claims, damages, losses, costs and expenses (including but not limited to reasonable attorney's fees) on account of injury or death of any person or damage to property arising directly or indirectly from acts or omissions arising out of or connected with the subject matter of this agreement, or the use of the PROPERTY by and/or the presence upon the campus of BROWN of the USER, it employees, agents, and others acting through it or on its behalf, even if such claims, damages, losses, costs and expenses are directly related to the acts, errors, negligence, or other wrongful conduct of BROWN, its trustees, officers, agents and employees.

Indemnification (continued)

(A.) Sample Processing by Staff. By arrangement with the appropriate Facility Director, a BROWN facility staff member, that is, a Research Engineer, Technical Assistant, or Professor, may sometimes measure, process, modify, evaluate, etc. USER'S samples without USER personnel present. Such measurement, processing, etc. is only done on a best-effort basis, and the USER assumes all liability for all damages to the USER'S property, samples, research program, etc. including but not limited to incidental and consequential damages. For samples measured, processed, etc., BROWN waives the provision of USER indemnification for damage to BROWN property and equipment provided in paragraph 10 Indemnification. Graduate or undergraduate students attending BROWN who undertake sample processing for the USER either as part of subcontracted research or as implicit or explicit employees of USER are not regarded as facility staff for purposes of this clause.

**11. Insurance.** USER shall purchase and maintain at its sole expense and with an insurance company licensed to do business in the State of Rhode Island, the following insurance coverage and limits:

(A.) Workers' Compensation (covering USER's employees) to statutory limits; and

(B.) Comprehensive General Liability Insurance including, but not limited to Contractual Liability, Products/Completed Operation, Fire Legal Liability, and Property Damage, and Public Liability for injuries to persons and property occurring on or about the PROPERTY (including all entrances into the FACILITIES), and including, without limitation contractual coverage for the foregoing indemnify contained in Section 9 of this Agreement in an amount of at least ONE MILLION DOLLARS (\$1,000,000.00) per occurrence and TWO MILLION DOLLARS (\$2,000,000.00) aggregate, or such higher amount as BROWN may reasonably require in the future. In addition, the Certificate(s) of Insurance shall name BROWN, its Board of Trustees, Officers, Employees and Agents as "Additional Insured." The USER, its Broker(s) and Insurance Carrier(s) hereby agree and certify that the insurance policies, coverage and limits will be promptly and properly endorsed to reflect BROWN's additional insured status; and

(C.) "All Risk" Property Insurance. Insuring against damage to or loss of any property, to their full insurable value, of the USER, its officers, servants, employees, agents, guests, invitees, licensees, or any person or entity claiming by, through or under USER located on the FACILITIES, and if available such insurance shall contain a waiver of any right of subrogation which such insurance carrier might have against BROWN, its servants, or invitees.

Said policies shall be in effect throughout the duration of this agreement and a copy of the policy or certification shall be delivered with this application.

Such policies shall contain a provision/s to the effect that they may not be canceled or coverage materially altered without at least thirty days advance written notice to BROWN.

**12. Duty of Inspection.** USER hereby acknowledges that it has inspected the FACILITIES and EQUIPMENT and the surrounding areas (collectively referred to as the "PREMISES"), and that by entering into this agreement acknowledges that the PREMISES are in satisfactory condition for use by USER. USER further acknowledges that during the term of this agreement it shall have a continuing obligation to inspect the PREMISES, and that the continued use of the PREMISES shall constitute an acknowledgment by USER that they are in satisfactory condition for use by USER. BROWN has made no representations to USER relating to the condition of its PREMISES except as provided in this Agreement. Additionally, USER accepts full and complete responsibility for the operation of the EQUIPMENT during said times USER is permitted use of the same, including but not limited to

assuming responsibility for assuring that anyone using the EQUIPMENT through the USER is familiar with the operation of the EQUIPMENT and knows how to use it safely. USER further acknowledges that BROWN makes and has made no representation or claim as to the suitability or fitness of any EQUIPMENT, processes or practices available in its facilities for the uses, purposes, or requirements of the USER and that the duty to determine said fitness or suitability lies entirely with the USER.

- 13. Drugs and Alcohol Prohibited.** USER shall not possess or use alcoholic beverages and illicit drugs on the campus of BROWN.
- 14. Compliance with Laws and Regulations.** USER shall pay for and supply all requisite licenses it requires for the conduct of its ACTIVITY. It shall be the obligation of USER to assure that its use of the PROPERTY, and its conduct of the ACTIVITY, complies with any and all conditions of all such licenses and with applicable laws, ordinances, regulations and orders of federal, state and municipal authorities. USER further agrees to comply with any BROWN rules and regulations applicable to the use of the PROPERTY and its activities under the ACTIVITY, as well as any applicable standards in the industry. USER agrees it is responsible for, and agrees to indemnify and hold BROWN harmless for and on account of any loss, cost, damage or expense, including, without limitation, reasonable attorney's fees, which BROWN may suffer or incur by reason of any such non-compliance.
- 15. Property Use Coordination.** It is understood that BROWN instructional and research programs take precedence over any activities associated with this agreement, and that BROWN reserves the right to use the PROPERTY at any time. All scheduling must be coordinated with and approved by the technical staff person responsible for the FACILITIES and EQUIPMENT.
- 16. Repairs and Maintenance.** USER shall not abuse the PROPERTY, and/or the remainder of any other portion of the campus of BROWN. USER shall comply with established practice for laboratory "clean-room" cleanliness, take good care of the PROPERTY and shall keep the PROPERTY in as good order, repair and condition, free of the accumulation of debris, dirt, litter and rubbish during the term of USER's use of the PROPERTY as the same are at the commencement of said term or may be put during the continuation thereof, reasonable wear and tear excepted. USER shall not treat the PROPERTY, or the remainder of the PREMISES in any manner to create either fire, health or liability hazards, and shall use all reasonable precaution to prevent waste, damage, or injury to the PROPERTY or any part thereof. In the event that the PROPERTY, the halls, and/or the remaining portions of the PREMISES are damaged by the acts or omission of USER, its officers, servants, employees, authorized agents, licensees, or any other person or entity claiming by, through or under USER, BROWN shall repair said damage and shall be reimbursed for the cost of the same by USER. USER shall pay/reimburse BROWN for the cost of said repairs within thirty (30) days of the date of BROWN invoicing USER for the cost of said repairs. If USER shall become aware of any needed repairs, replacements or restorations to the PREMISES, notice shall be promptly given to BROWN by USER. There shall be no liability whatsoever upon BROWN arising out if its failure to make repairs in accordance with the provisions of this paragraph.
- 17. Publicity.** The USER agrees not to use BROWN's name, trademarks, logos, or like indicia, in connection with publication, advertising, marketing, or in any other matter without the prior written approval of BROWN.
- 18. Patent Rights.** The IMNI Core Research Facilities' primary purpose is to provide a venue for science and engineering research. Recognizing, however that inventions may be made under this agreement, the parties agree to the following:
  - (A.) Any invention made solely by the USER while using the facilities shall be the property of the USER provided, however, that in the event such invention constitutes an improvement to or new experimental techniques involving equipment located in IMNI's facilities, the USER shall

grant Brown a royalty-free, non- exclusive license to use such inventions for the purpose of education and research.

(B.) If research is undertaken that is jointly between the USER and a Brown employee, that work must be covered under a different agreement that describes the patent agreement between Brown and USER for that work.

- 19. Conflict of Interest.** If this agreement is with an employee of BROWN, the employee acknowledges that the proposed usage of BROWN's facilities, equipment, and/or personnel is consistent with BROWN's policies/statements on conflict of interest.
- 20. No Assignment.** USER is prohibited from assigning the rights conferred pursuant to this agreement for any purpose or function without the written consent of BROWN. In the event of any such assignment, all of the terms and conditions of this agreement shall be binding upon the assignee as they are to USER.
- 21. Default.** BROWN shall have the unilateral and unrestricted right to cancel the ACTIVITY, terminate this agreement, and terminate BROWN's obligations hereunder, without liability to USER and without prejudice to BROWN's other rights and remedies, and without relieving USERS of its obligations and duties under this agreement, if USER shall fail to make payment when due or in the case of USER's failure to perform and observe all the covenants and agreements contained in this agreement. Upon termination of this agreement, USER shall immediately vacate, quit and surrender its rights to the use of the facility for the ACTIVITY, remove all its items and possessions from the FACILITIES, and return to BROWN all items belonging to BROWN (e.g. access cards).
- 22. Termination.** BROWN and the USER shall each have the unilateral and unrestricted right to cancel the ACTIVITY, terminate this agreement, and terminate the parties obligations hereunder for any reason or no reason at all upon Brown's giving of thirty (30) days' notice of termination to the other party, provided however that USER's obligations pursuant to Articles 8, 9, 10, 11, 14, 16, 18, 23, 24 and 26, of this agreement shall survive any such termination/expiration of the agreement. Upon termination of this agreement, USER shall immediately vacate, quit and surrender its rights to the use of the Facility for the ACTIVITY, remove all its items and possessions from the FACILITIES, and return to BROWN all items belonging to BROWN (e.g. access cards). In the event of termination pursuant to this Article 19, USER shall be obligated to make payment for fees pro-rated as of the date of termination
- 23. Non-Profit Status.** If, as a result of any federal, state, or local law, rule, ordinance, or regulation, etc., USER's use of the FACILITIES is deemed inconsistent with BROWN's status as a non-profit educational institution, BROWN may terminate this agreement immediately upon the giving of notice to USER.
- 24. Obligation to Pay Taxes.** In the event that any taxes, licenses or fees are assessed against BROWN as a result of USER's use of the FACILITIES, USER will pay such taxes, licenses, or fees promptly.
- 25. Limitation of Brown's Liability.** Any liability of BROWN to USER arising out of this agreement or BROWN's performance or non-performance of its obligations hereunder, whether such liability is based on warranty, negligence, strict liability or otherwise, shall be limited to the amount of the fees to be paid pursuant to Paragraph 5.a. hereof. BROWN shall not be liable to USER for loss of anticipated profits, loss resulting from the cancellation/termination of this agreement or USER's inability to use the PROPERTY, or incidental or consequential loss or damage of any nature arising from any cause whatsoever.
- 26. Integration.** BROWN and USER acknowledge that this agreement is the complete and exclusive statement of the agreement between the parties, and that it supersedes and merges all prior proposals, understandings, and agreements, oral and/or written between the parties relating to the

subject matter of this agreement. This agreement may not be modified or altered except by a written instrument executed by authorized representatives of both parties.

- 27. Governing Law & Jurisdiction. This agreement shall be governed by and construed in accordance with the laws of the State of Rhode Island, and that any and all proceedings relating to the subject matter hereof shall be maintained exclusively in the state and federal courts of the State of Rhode Island.
- 28. Cumulative Remedies. The remedies expressly provided in this Agreement to BROWN shall not be deemed to be exclusive but shall be cumulative and in addition to all other remedies in favor of BROWN now or hereafter existing at law or equity.
- 29. Waiver. USER agrees with BROWN that the failure of BROWN to insist in any one or more instance upon the strict and literal performance of any of the covenants, terms or conditions of this agreement shall not be construed as a waiver for the future of such covenant, term, or condition, but the same shall continue and remain in full force and effect. No waiver of any covenant, term or condition shall be deemed to have been made by BROWN, unless made or acknowledged in writing by an authorized representative of BROWN.
- 30. Severability. If any provision of this agreement is held invalid, illegal or otherwise unenforceable, the validity, legality, and enforceability of the remaining provisions shall not be affected or impaired thereby.
- 31. Notices. Notices hereunder shall be given in writing, mailed postage prepaid, addressed:

IF TO USER: \_\_\_\_\_

IF TO BROWN: Kara Hebert, IMNI Core Facilities Specialist, IMNI Box M, Brown University, Providence RI 02912.

- 32. USER hereby acknowledges receipt of the documents listed in the enclosures list at the end of this agreement. USER agrees that it will ensure that its employees using the FACILITIES are familiar with these documents and are instructed to comply with the safety procedures contained therein. Actions by an employee of the USER that are deemed hazardous to personnel or equipment in the FACILITY by the Facility Director thereof are grounds for immediately barring that person from further use of the FACILITY at the Director's sole discretion.

IN WITNESS WHEREOF, the parties hereto, by their duly authorized representatives, have set their hand as of the date first noted above.

**FOR EXTERNAL ORGANIZATION**

**External User (1):**

Signature  
: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Date: \_\_\_\_\_

**Authorized Signature -for External User Organization:**

Signature  
: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Date: \_\_\_\_\_

**External User (2):**

Signature  
: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Date: \_\_\_\_\_

**External User (3):**

Signature  
: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Date: \_\_\_\_\_

**FOR BROWN UNIVERSITY**

**Acknowledgement of IMNI Facility Directors** as selected in item 2.0, page 1.

Signature: \_\_\_\_\_  
Name: Domenico Pacifici  
Title: Director, Nanofabrication Central Facility  
Date: \_\_\_\_\_

Signature: \_\_\_\_\_  
Name: David C. Paine  
Title: Director, Electron Microscope Facility  
Date: \_\_\_\_\_

Signature: \_\_\_\_\_  
Name: Nitin Padture  
Title: Director, NanoTools Facility  
Date: \_\_\_\_\_

Signature: \_\_\_\_\_  
Name: Michael Packer  
Title: Manager, Joint Engineering & Physics Instrument Shop  
Date: \_\_\_\_\_

**BROWN UNIVERSITY AUTHORIZED APPROVAL**

Signature: \_\_\_\_\_  
Name: Nitin Padture  
Title: Director, Institute for Molecular and Nanoscale Innovation  
Date: \_\_\_\_\_

**Enclosures:**

- Directory of Facility Staff and Available Instrumentation
- Current Rate Schedule for Outside Organizations
- Brown University Laboratory Safety Manual: <http://www.brown.edu/Administration/EHS/lab/chpindex.htm>
- Brown University Environmental Health & Safety Training: <http://www.brown.edu/Administration/EHS/training/index.htm>
- Chemical Hygiene Plan: Will be sent to each user via e-mail



**Directory of Facility Staff and Available Instrumentation****IMNI CORE RESEARCH FACILITIES OPERATIONS**

Nitin Padture, Director of IMNI

Tel: (401) 863-2859

E-Mail: [Nitin\\_Padture@brown.edu](mailto:Nitin_Padture@brown.edu)

Kara Hebert, IMNI Core Facilities Specialist

Tel: (401) 863-1386

E-Mail: [Kara\\_Hebert@brown.edu](mailto:Kara_Hebert@brown.edu)**ELECTRON MICROSCOPE FACILITY**

David C. Paine, Director, Electron Microscope Facility

Tel: (401) 863-1457

E-Mail: [David\\_Paine@brown.edu](mailto:David_Paine@brown.edu)

Anthony McCormick, Electron Microscopist

Tel: (401) 863-3909

E-Mail: [Anthony\\_McCormick@brown.edu](mailto:Anthony_McCormick@brown.edu)***Available Equipment in the Electron Microscope Facility***

- FIB – Helios Focused Ion Beam
- Philips CM20 Transmission Electron Microscope
- JEOL 2100F Scanning Transmission Electron Microscope
- LEO1530 Scanning Electron Microscope
- FEI ThermoFisher- QuattroS
- ThermoElectron- K-Alpha XPS

**NANOFABROICATION CENTRAL FACILITY****Tel: (401) 863-3016**

Domenico Pacifici, Director, Nanofabrication Central Facility

Tel: (401) 863-2637

E-Mail: [Domenico\\_Pacifici@brown.edu](mailto:Domenico_Pacifici@brown.edu)

William Patterson, Associate Director,

Tel: (401) 863-1449

E-Mail: [William\\_Patterson\\_III@brown.edu](mailto:William_Patterson_III@brown.edu)

Michael Jibitsky, Senior Research Engineer

Tel: (401) 863-1402

E-Mail: [Michael\\_Jibitsky@brown.edu](mailto:Michael_Jibitsky@brown.edu)***Available Equipment in the Nanofabrication Central Facility***

- Class 1000 Clean Room with Additional Class 100 Clean Room

**THIN FILM DEPOSITION:**

- Lesker - Lab 18
- Cambridge - ALD System -
- Angstrom - Organic Evaporator

**THERMAL PROCESSING:**

- Silicon Thermal Annealer
- RTA Rapid Thermal Annealer

**LITHOGRAPHY:**

- Photoresist Spinner
- Wet Chemistry Hoods
- Heidelberg-MLA150 Maskless Aligner
- NIL Technology - Nano Imprinter
- Oriel - Aligner

**PLASMA ETCHING**

- Electron Beam Evaporator
- SPP-ICP-RIE System -Inductively Coupled RIE M2000
- PlasmaTherm - model 790; PECVD/RIE Tool

**CHARACTERIZATION:**

- Dektak - Profilometer
- Woollam Ellipsometer



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***Directory of Facility Staff and Available Instrumentation  
Continued***

**NANOTOOLS FACILITY**

Nitin Padture, Director, NanoTools Facility

Tel: (401) 863-2859

E-Mail: [Nitin\\_Padture@brown.edu](mailto:Nitin_Padture@brown.edu)

Hector Garces, Facility Manager,

Tel: (401) 863-5942

E-Mail: [Hector\\_Garces@brown.edu](mailto:Hector_Garces@brown.edu)

***Available Equipment in the NanoTools Facility***

- Bruker- D8; Hi Resolution X-Ray Diffraction System
- Bruker- D8; 2-Dimensional X-Ray Diffraction System
- Bruker- EMXplus; EPR Spectrometer
- Asylum – MFP-3D Origin; Atomic Force Microscope
- WITEC – A300M+; Confocal Raman Microscope

**JOINT ENGINEERING PHYSICS INSTRUMENT SHOP (JEPIS)**

Michael Packer, Manager

Tel: (401) 863-2575

E-Mail: [Michael\\_Packer@brown.edu](mailto:Michael_Packer@brown.edu)

The Joint Engineering Physics Instrument Shop (JEPIS) offers hourly machine shop services, plus the cost of materials. The Student Shop or instruction is not available under the guise of this agreement

**IMNI Core Research Facilities**  
**Rate Schedule for EXTERNAL Brown Users**  
**Effective July 1, 2020 – June 30, 2021 (Rates Subject to Change)**

IMNI consists of the Joint Engineering & Physics Instrument Shop (JEPIS) and three Core Research Facilities: Electron Microscopy Facility (EMF), NanoTools Facility (NTF) and Nanofabrication Central Facility (NCF). Each facility has a separate rate schedule to offset the annual cost of operating the facility by collecting a fee based upon usage. The three Core Research Facilities are self-use facilities with trained personnel who will provide new users with a facility orientation and instrument tutorial.

Effective July 2018, the Brown internal user rate for all IMNI facilities will be extended to Brown University Hospital Affiliates and Rhode Island Academic Institutions (Please refer to the Rate Schedule for Internal Brown Users).

External organizations may use the IMNI Core Facilities upon providing a completed External User Agreement, Insurance Certification and Purchase Order. Each approved user within an external organization must complete the required Brown University Environmental Health and Safety (EHS) training. EHS training is not required if Brown Technical Staff performs the use on behalf of the user. External user's facility access is limited to University business hours.

<b>Electron Microscopy Facility (EMF)</b>			
<p>There is a 30-minute minimum charge for all instruments, with the exception of the FIB Helios, which has a 1-hour minimum charge. After the minimum charge time, instruments are then billed in 15-minute increments. Any instrument run time that is less than the minimum will default to the minimum charge. FIB Helios reservations that are not cancelled within 24 hours of scheduled use may be subject to the 1-hour minimum charge. Sample preparation space and miscellaneous tools are available in the Electron Microscopy Facility to authorized users as part of the usage fee.</p> <p>Effective 9/1/2019, an Initial Training Fee will be charge to new and existing users who wish to be trained on any of the EMF Instruments. This initial training fee is in addition to the instrument time used.</p>			
Description	External Academic (non-profit)	External Commercial (for profit)	Unit
<b>Transmission Electron Microscope (TEM):</b> JEOL S(TEM) 2100F and FEI CM20	\$100.00	\$164.00	per hour
<b>Scanning Electron Microscope (SEM):</b> FEI Quattro S SEM and LEO 1530	\$86.00	\$90.00	per hour
<b>Focused Ion Beam Electron Microscope (FIB):</b> FEI Helios NanoLab 660	\$107.00	\$124.00	per hour
<b>X-Ray Photoelectron Spectrometer (XPS):</b> ThermoElectron K-Alpha XPS	\$67.00	\$72.00	per hour
<b>Initial Instrument Training Fee:</b> Required of new & existing users who wish to be trained on any of the EMF instruments. User sample required. Charge is in addition to the instrument time.	\$95.00*	\$102.00*	per hour
	*Plus Instrument Time		
<b>Instrument Assisted Use by Brown Facility Technical Staff:</b> Prior approval required. This is a self-use facility unless otherwise requested as part of the user agreement. Charge is in addition to the instrument time.	\$95.00*	\$102.00*	per hour
	*Plus Instrument Time		

## NanoTools Facility (NTF)

There is a 30-minute minimum charge for all instruments. After the minimum charge time, instruments are then billed in 15-minute increments. Any instrument run time that is less than the minimum will default to the minimum charge.

Effective 9/1/2019, an Initial Training Fee will be charge to new and existing users who wish to be trained on any of the EMF Instruments. This initial training fee is in addition to the instrument time used.

Description	External Academic (non-profit)	External Commercial (for profit)	Unit
<b>X-Ray Diffractometer (XRD):</b> Bruker D8 Hi-Resolution XRD and Bruker D8 2-D XRD	\$48.00	\$111.00	per hour
<b>Electron Paramagnetic Resonance (EPR):</b> Bruker EMX+ EPR Spectrometer	\$41.00	\$62.00	per hour
<b>Atomic Force Microscope (AFM):</b> Asylum MFP-3D Origin AFM	\$46.00	\$73.00	per hour
<b>Confocal Raman Microscope:</b> WITEC - A3000M+; Confocal Raman Microscope	\$44.00	\$73.00	per hour
<b>Initial Instrument Training Fee:</b> Required of new & existing users who wish to be trained on any of the NTF instruments. User sample required. Charge is in addition to the instrument time.	\$71.00*	\$78.00*	per hour
	*Plus Instrument Time		
<b>Instrument Assisted Use by Brown Facility Technical Staff:</b> Prior approval required. This is a self-use facility unless otherwise requested as part of the user agreement. Charge is in addition to the instrument time.	\$71.00*	\$78.00*	per hour
	*Plus Instrument Time		

## Nanofabrication Central Facility (NCF)

The usage calculation is based on a per use method for all major and supportive instruments. The clean room usage is charged per day, with a clean room exemption (no clean room charge) when used in conjunction with a major instrument during the same visit.

Description	External Academic (non-profit)	External Commercial (for profit)	Unit
<b>Clean Room Only:</b> This includes the use of chemicals, spinner, hot plate, and hood (without the use of any major or supportive instruments).	\$78.00	\$210.00	per day
<b>Major Instruments:</b> The use of major instruments also includes the necessary chemical treatments.			
Heidelberg MLA150 Maskless Aligner	\$158.00	\$380.00	per use
Karl Suss MJB3 UV300 Mask Aligner	\$158.00	\$380.00	per use
NIL Technology Nano Imprinter	\$158.00	\$380.00	per use
Newport-Oriel Flexible Mylar-Mask Lithography System	\$158.00	\$380.00	per use
Cambridge NanoTech Fiji F200 Atomic Layer Deposition System	\$158.00	\$380.00	per use
Electron Beam Evaporator	\$158.00	\$380.00	per use
Lesker Lab-18	\$158.00	\$380.00	per use
Angstrom Multi-Target Sputtering System	\$158.00	\$380.00	per use
Angstrom Organic Evaporator	\$158.00	\$380.00	per use
PlasmaTherm Model 790 RIE/PECVD System	\$158.00	\$380.00	per use
SPTS LPX Inductively Coupled Plasma RIE System	\$158.00	\$380.00	per use
<b>Supportive Instruments:</b>			
RTA Rapid Thermal Annealer	\$42.00	\$133.00	per use
Wet & Dry Oxidation Furnace	\$42.00	\$133.00	per use
Annealing & Drive-in Heat Treatment	\$42.00	\$133.00	per use
Dektak3 - Profilometer	\$42.00	\$133.00	per use
JA Woollam M-2000 Ellipsometer	\$42.00	\$133.00	per use
<b>Instrument Assisted Use by Brown Facility Technical Staff:</b> Prior approval required. This is a self-use facility unless otherwise requested as part of the user agreement. Charge is in addition to the instrument time.	\$96.00*	\$101.00*	per hour
*Plus Instrument Time			

	Lithography
	Thin Film Deposition
	Plasma Etching
	Furnaces
	Characterization

## Joint Engineering & Physics Instrument Shop (JEPIS)

The usage calculation is based on an hourly rate, with actual usage being rounded to the quarter hour. Any materials purchased for a work order will be invoiced based on actual material costs, with the exception of the Rapid Prototype Machine, which is invoiced based on materials costs x3.

Description	External Academic (non-profit)	External Commercial (for profit)	Unit
<b>Machine Shop Labor Rate</b> Cost of actual materials will be added (if applicable).	\$87.00*	\$121.00*	per hour
	*Plus actual materials		
<b>Overtime Machine Shop Labor Rate</b> Prior approval required. Cost of actual materials will be added (if applicable).	\$131.00*	\$182.00*	per hour
	*Plus actual materials		
<b>Electrical Discharge Machine (EDM)</b>	\$65.00	\$73.00	per hour
<b>Rapid Prototype Machine (RPM)</b>	\$13.00	\$20.00	per hour
	*Plus materials x3		