

MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding is between:

_____ (Organization)
and the University of Pittsburgh-of the Commonwealth System of Higher Education, Nanoscale Fabrication and Characterization Facility (NFCF), an integral part of the Petersen Institute of NanoScience and Engineering (PINSE), 1140 Benedum Hall, 3700 O'Hara Street, Pittsburgh PA 15261. This Memorandum of Understanding (MOU) will serve to establish the terms & conditions under which - _____ (User) shall use the Nanoscale Fabrication and Characterization Facility (NFCF) at The University of Pittsburgh ("University"). The parties intend for this document to constitute a legally binding Agreement.

1. Background.

By signature and approval of this MOU, User represents that an authorized official of User has read, understood and agreed to the terms of this MOU and has been provided information from the University regarding the use of the University laboratory facilities, including the **NFCF Policies and Procedures** (Exhibit A) and has reviewed and understands such information and has been given the full opportunity to ask the University any questions it may have about such information.

2. Project Terms.

- a) Description of Work. A description of the proposed work that is to be performed is attached hereto as Exhibit B. No deviation from said statement of work will be permitted unless agreed to in writing by the University.
- b) Reasonable Efforts. The User acknowledges that it retains ultimate responsibility for the project development and progress and that the University does not in any way warrant or assure a particular project(s) result(s) or the results will be commercially viable, successful or useful. The User and institution fully understand and agree that any work done, or services provided, by the University are on a reasonable efforts basis. The University does not warrant or guarantee any results from a given project. The User accepts full responsibility for the progress and results of the project
- c) The University shall invoice User at the above address for costs incurred hereunder consistent with the schedule of payments set forth on Exhibit C, and payment in full shall be made by User at the address set forth above within thirty (30)-days after receipt thereof. No terms in any form prepared by User, shall be construed to change any term in this Agreement, and the terms hereof shall strictly govern in the event of an inconsistency.

3. Status of User employees.

The User understands that its agents and employees are not employees of the University and that the University provides no Worker's Compensation or other liability insurance coverage for the User's benefit. The User's employees/agents are deemed to be acting as a representative and employee of User for all purposes during work on a project in the NFCF. All such agents and employees must have their own worker's compensation health and accident insurance and the University will not be responsible for any medical expenses that the User may incur and User agrees to bear full responsibility for any liability resulting there from. User must provide copies of certificates of insurance to the University of Pittsburgh, Office of Risk Management, for the following coverage in the following amounts:

COVERAGE LIMITS

| | | |
|----|-------------------------------|---|
| a. | Workers' Compensation | Statutory |
| b. | Employer's Liability | \$100,000 |
| c. | Commercial General Liability, | \$1,000,000 Combined Single Limits for Bodily Injury and Property Damage |
| d. | Umbrella Liability | \$3,000,000 |

4. User Safety.

While the User will be informed regarding general safety policy (***NFCF Policies and Procedures***, see page 2: Exhibit A) prior to being allowed to use the laboratory facilities, the User assumes primary responsibility for the personal safety of its employees/agents. User will operate all instruments and equipment in a safe and professional manner, consistent with the operating instructions and the laboratory facility rules. The User represents and warrants that its employees' and agents' knowledge of nano-fabrication processing and cleanroom operation is adequate to permit the safe pursuit of the research work in conjunction with the User's specific project. University shall have the right to immediately prohibit further use by any employee or agent of User if University, in its sole discretion, believes that User has breached this representation with regard to any particular employee or agent. User required to use and dispose of all materials in a manner consistent with applicable laws and University guidelines, and to arrange for the appropriate disposal of any hazardous wastes generated by user's processes while at the University. User agrees to contact the University Department of Environmental Health and Safety prior to generation of such hazardous material.

5. Liability.

The User shall defend, protect, indemnify and hold the University, its trustees, officers, employees, students and agents harmless from and against any and all claims, suits, liability, loss, expense (including reasonable-attorney's fees), or claims for injury or damages to persons or property arising out of the performance of this Agreement. The University shall have no liability with respect to any direct or indirect loss, damages or claims incurred by the User or its employees/agents, or any third parties in connection with the User's use of the facilities described.

UNIVERSITY DISCLAIMS AND MAKES NO WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED, AS TO ANY MATTER, INCLUDING BUT NOT LIMITED TO WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, PATENTABILITY OR THAT THE USER'S USE OF RESULTS WILL BE FREE FROM INFRINGEMENT OF PATENTS, COPYRIGHTS, TRADEMARKS OR OTHER RIGHTS OF THIRD PARTIES.

UNIVERSITY shall not be liable to User for any direct or indirect, special or consequential damages, including but not limited to lost profits or loss of use of research data resulting from use of the NFCF.

6. Relevant documentation.

Each User warrants that he/she has been provided with the ***NFCF Policies and Procedures*** (Exhibit A). The User has read and understands and agrees to abide by the usage rules and safety provisions discussed in this manual.

7. Warranties of User.

The User, by completion of this Memorandum of Understanding, hereby warrants that it:

- a.) has been provided with a copy of the ***NFCF Policies and Procedures*** (Exhibit A)
 - b.) has had the opportunity to ask any questions he/she might have about the procedures, policies, rules and/or guidelines.
 - c.) has received and understands the answers to those questions
 - d.) has been provided with the University fee structure (Exhibit C) for the use of NFCF.
 - e.) has fully read and agrees with this MOU, and
 - f.) has obtained any necessary export licenses under Commerce Department or Department of State regulations and any other necessary regulatory approvals, to perform the work set forth in paragraph 2 above.
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8. Intellectual Property.

User agrees that under no circumstances will it: 1) disclose to University any of its Intellectual Property (trade secrets or confidential information), or 2) ask the University to conduct research which is covered by User's patents or patent applications, absent a prior written and non-enabling disclosure to University identifying that proprietary information. Neither party grants to the other party any intellectual property rights hereunder, provided that if University makes any inventions, as that term is defined under Title 35 of the United States Code in carrying out services under this Agreement, User shall have an opportunity, for a period of ninety (90) days following disclosure of such invention to User, to negotiate non-exclusive license rights thereto upon reasonable terms and conditions acceptable to both parties.

9. Export Control.

User agrees to comply with all applicable U.S. export control laws and regulations with respect to the work to be done under this MOU including obtaining all licenses, approvals, and customs clearances required for the activities to be carried out hereunder.

Approval by:

University of Pittsburgh / NCFP:

Name (Print) _____

Signature: _____ Title: _____

Date: _____

Organization:

Name (Print) _____

Signature: _____ Title: _____

Date: _____

The following Employees/ Agents of User acknowledge they have read the foregoing and understand their obligation.

Individual users:

Name: _____ Signature: _____ Date: _____

Name: _____ Signature: _____ Date: _____

Name: _____ Signature: _____ Date: _____

Name: _____ Signature: _____ Date: _____

Name: _____ Signature: _____ Date: _____

Name: _____ Signature: _____ Date: _____



ASSESSMENT PROCEDURE FOR ELIGIBILITY TO USE
NANOSCALE FABRICATION AND CHARACTERIZATION
FACILITY'S MEMORANDUM OF UNDERSTANDING

1. A publication or thesis is not an expected outcome.
True False

2. No students will be involved in the work.
True False

3. The research project proposed will not generate new IP that is patentable or licensable, but will be limited to general "know how."
True False

4. No legal right to existing University background IP will be provided to the Sponsor.
True False

5. No final or end-stage product will be delivered to Sponsor. (This requirement is included to eliminate potential product liability.)
True False

6. The project does not present a conflict of interest for the PI or project personnel (i.e., the faculty member or other project staff do not have a significant financial interest in the Sponsor).
True False

7. No tax-exempt bond-financed facility will be used in conjunction with this project.
True False

EXHIBIT A

NFCF POLICIES & PROCEDURES

Petersen Institute of NanoScience and Engineering
University of Pittsburgh

All Users must complete the New User Orientation prior to beginning any training or work in the NFCF

Visitors are permitted Monday – Friday, excluding holidays, from 8:00 AM until 6:00 PM without making special arrangements

- The NFCF Staff must be informed anytime a visitor is brought into the NFCF
- Visitors must remain with their sponsor at all times while in the NFCF
- Visits to the Cleanroom require advance approval by the NFCF Staff
- Visits to Characterization and TEM do not require approval.

Lockers are not available & we cannot be responsible for lost items

- Please do not bring valuables or unnecessary items to the NFCF

There is limited coat rack and shelf storage in the entry hallway of the for heavy wraps & backpacks

- Heavy outer wraps and backpacks should be left in this area, not taken into the labs

No food, beverages, or gum allowed in any NFCF lab at any time!

Shoes that completely & securely cover the foot must be worn at all times in all NFCF labs areas

- No sandals, slides, flip-flops, Crocks, etc & absolutely no bare feet!
- No platforms, wedges, high heels or boots
- No deeply grooved shoe soles such as heavy lugged boots
- Clean shoes with the Shoe Cleaner in outer hallway before every entry to the NFCF's main door

November 1 through March 31:

- Shoes worn into Benedum Hall from outside may not be worn into the NFCF
- You must change shoes immediately before entering the main NFCF door
- There are chairs in the hallway outside the main door – Shoes should not be left in the outer hallway, they may leave them in a bag under the coat rack in the entry hallway

Walk on all sticky mats provided when entering a lab

- Do not step around or over mats
- Do not scrape shoes on the mats

Do not wear clothing of extremely fuzzy fabrics in the lab areas

Do not wear Make-Up in the lab areas

All equipment and/or supplies brought into the NFCF require prior approval of the NFCF Staff

Safety Policy

Follow all common sense lab safety practices

All chemicals brought into the NCFE require prior approval of the NCFE Manager

Eye protection must be worn by everyone in the designated work area of the hoods as well as anywhere in the NCFE chemicals are in use

- Aprons are required anytime chemicals are being mixed
- Face Shields are required if the hood's shield must be open
- Chemical Gloves are required when using acids or caustics
- Safety glasses, goggles, face shields and chemical aprons & gloves are provide in all lab areas

Pick up after yourself

- Wipe up all spills immediately! No mater how small

Report all accidents and / or injuries – no matter how minor – to the NCFE Staff

If the fire alarm goes off – GET OUT – EXIT BY THE CLOSEST DOOR

- Do not take time to save experiments
- Do not take time to shut down anything
- Do not stop to remove cleanroom garments

If the gas alarm goes off – GET OUT – EXIT BY THE CLOSEST DOOR

- Do not take time to save experiments
- Do not take time to shut down anything
- Do not stop to remove cleanroom garments

Specific safety issues related to individual equipment will be covered during training for the equipment

MSDS forms for all materials stocked in the NCFE labs are available in room SB62

All users must be trained before using any instrument and/or facility in the NFCF

- Training requests may be made through FOM: <https://fom.nano.pitt.edu/fom/>

Training is done by NCF Staff only

Reservations for all use of all instruments and/or facilities are strongly recommended

- This is especially so for persons not located in Benedum Hall
- Reservations may be made through FOM: <https://fom.nano.pitt.edu/fom/>

Users must 'log-on' before beginning use of NCF facilities

Users must 'log-off' when finished using NCF facilities

- 'Log-on' / 'Log-off' is accomplished through FOM: <https://fom.nano.pitt.edu/fom/>

Follow all instrument policies & procedures

- These are provided during training

Leave instruments in appropriate 'Stand By' condition when finished

Do not attempt repairs on any equipment – contact NCF Staff

Do not attempt to change modules, add accessories, make any modification or change alignments to any instrument without prior approval of the NCF Staff

Do not contact equipment manufacturers with problems – contact NCF Staff

Lab phones will connect to area codes 412 & 724

- Please – no personal calls – phones are for business & emergencies only
- Do not talk on phones while working – stop work & complete call before resuming work

Do Not drag the chairs that do not have wheels

Please – Feet belong on the floor – Not in the chairs

Pick up the work area when you are finished

Do not remove any items supplied by the NCF from the lab

If you have questions ASK!

Contact nfcf@nano.pitt.edu or 412-383-8001

EXHIBIT B

NFCF Project Initiation Form

Petersen Institute of NanoScience and Engineering
University of Pittsburgh

Project Title: _____

Proposed Project Start Date: _____

Project Principal Investigator/Customer: _____

Department/Company: _____

Phone: _____ ; Fax: _____ ; E-mail: _____

Mailing Address: _____

Project Description:

Describe the proposed experiments (process/fabrication/characterization) in conjunction with planned use of instruments at NFCF.

EXHIBIT C

University of Pittsburgh
NFCF Commercial Rates 2010 - 2011 (Effective 8/2/2010)

| Equipment / Facility | Per | Rate | Notes |
|--|------|------------|--|
| FABRICATION / CLEANROOM | | | |
| Cleanroom Entry | day | \$30.00 | 1 entry / day charged |
| Etching - Cleaning | | | |
| Plasma Cleaner | hour | \$40.00 | |
| Reactive Ion Etcher (RIE) | hour | \$80.00 | |
| Acid Hood | hour | \$30.00 | |
| Caustic Hood | hour | \$30.00 | |
| Deposition | | | |
| Evaporator w/ e-beam source | hour | \$50.00 | |
| <i>Surcharge - Au & Pt</i> | gm | current | charged for actual amount used |
| Plasma Enhanced Chemical Vapour Deposition (PECVD) | hour | \$60.00 | |
| Lithography | | | |
| Litho Hood w/ Spin Processor | hour | \$40.00 | |
| Mask Aligner (Quintel Q4000) | hour | \$60.00 | |
| Mask Aligner (Karl Suss MJB3) | hour | \$60.00 | |
| Dual Beam (FIB/SEM) | hour | \$110.00 | |
| DipPen Lithography (DPN) | hour | \$60.00 | |
| Electron Beam Lithography System (EBL) | hour | \$100.00 | |
| Imprint Lithography - MII 55 | hour | \$80.00 | |
| Inspection - Testing | | | |
| Optical Microscope | n/c | n/c | |
| <i>Computer use</i> | day | \$50.00 | |
| Surface Profiler | hour | \$50.00 | |
| CHARACTERIZATION | | | |
| Transmission Electron Microscope (TEM) | hour | \$110.00 | |
| <i>use with special accessories</i> | hour | \$110.00 | Be - Low Background - Double Tilt Holder |
| SB 60 | | | |
| Ellipsometer | hour | \$40.00 | |
| EPMA - JEOL JXA-8530F | hour | \$150.00 | |
| FT-IR | hour | \$50.00 | Vertex 70 &/or Hyperion Microscope |
| <i>use with special accessories</i> | hour | \$70.00 | ATR, Seagull, Polymer Stretcher |
| MSP | hour | \$50.00 | |
| SEM - JEOL JSM-6510LV/LGS | hour | \$60.00 | |
| SPM | hour | \$60.00 | Dimension &/or MultiMode |
| <i>use with special accessories</i> | hour | \$70.00 | SCM, SSRM, TUNA |
| XRD | hour | \$60.00 | |
| <i>use with special accessories</i> | hour | \$100.00 | High Res, Hot Stage, GADDS |
| General Purpose Hood | hour | \$30.00 | |
| Sample Prep Bench | hour | \$30.00 | |
| SB 60A | | | |
| Dilution Fridge | week | \$1,440.00 | |
| Raman Microscope | hour | \$60.00 | |
| Misc. | | | |
| Staff Time | hour | \$100.00 | |

Training time charged at full hourly rate for instrument + staff hourly rate / all persons in training

All expendables used during training or assisted use will be charged to trainees



NanoScale Fabrication and Characterization Facility
Commercial User Information

Exhibit D

Submission of this form is an agreement to learn & follow all NCF policies & procedures.
NCF Orientation is required before access to any NCF facility is permitted.

Training must be completed prior to unassisted use of any NCF equipment is allowed.
It is the responsibility of the Company to inform the NCF Office of any changes to the information on this form.

Date: _____

Company Name: _____

Primary Contact _____
(last - required) (first - required) (middle initial)

E-Mail: _____ / _____
(Business - Required) (Other)

Phone / Fax: _____ / _____

Mailing Address: _____

Billing Contact: _____
(last - required) (first - required) (middle initial)

E-Mail: _____ / _____
(Business - Required) (Other)

Phone / Fax: _____ / _____

Billing Address: _____

Account Number: _____
(if required by your company for billing)

Researchers from your company authorized to use the NCF - use provided continuation sheet if needed

Primary User / DOB: _____ / _____
(last - required) (first - required) (mi) (DOB - mm/dd/yy - required)

E-Mail: _____ / _____
(Company - Required) (preferred - if different)

Phone: _____ / _____
(Company - Required) (preferred - if different)

Account Number: _____
(if required by your company for billing & different than above)

When this form is complete please return to: ncf@nano.pitt.edu

For Questions: Call: (412) 383-8001
e-mail: ncf@nano.pitt.edu

NOTE: Previous versions of this form are obsolete.

Additional Users

Use this form to include additional users authorized to use the NFCF

Additional User / DOB: _____ / _____
(last - required) (first - required) (mi) (DOB - mm/dd/yy - required)

E-Mail: _____ / _____
(Company - Required) (preferred - if different)

Phone: _____ / _____
(Company - Required) (preferred - if different)

Account Number: _____
(if required by your company for billing & different than above)

Additional User / DOB: _____ / _____
(last - required) (first - required) (mi) (DOB - mm/dd/yy - required)

E-Mail: _____ / _____
(Company - Required) (preferred - if different)

Phone: _____ / _____
(Company - Required) (preferred - if different)

Account Number: _____
(if required by your company for billing & different than above)

Additional User / DOB: _____ / _____
(last - required) (first - required) (mi) (DOB - mm/dd/yy - required)

E-Mail: _____ / _____
(Company - Required) (preferred - if different)

Phone: _____ / _____
(Company - Required) (preferred - if different)

Account Number: _____
(if required by your company for billing & different than above)

Additional User / DOB: _____ / _____
(last - required) (first - required) (mi) (DOB - mm/dd/yy - required)

E-Mail: _____ / _____
(Company - Required) (preferred - if different)

Phone: _____ / _____
(Company - Required) (preferred - if different)

Account Number: _____
(if required by your company for billing & different than above)

Additional User / DOB: _____ / _____
(last - required) (first - required) (mi) (DOB - mm/dd/yy - required)

E-Mail: _____ / _____
(Company - Required) (preferred - if different)

Phone: _____ / _____
(Company - Required) (preferred - if different)

Account Number: _____
(if required by your company for billing & different than above)



University of Pittsburgh

**NANOSCALE FABRICATION AND
CHARACTERIZATION FACILITY**

EXPORT CONTROL ACKNOWLEDGMENT

Sponsor hereby certifies that no export-controlled materials are being provided to the University under the Nanoscale Fabrication and Characterization Facility Memorandum of Understanding dated as of _____ (the "Memorandum"). Notwithstanding any other provision of this Memorandum, the parties understand and agree that they are subject to, and agree to abide by, any and all applicable United States laws and regulations controlling the export of technical data, computer software, laboratory prototypes and other commodities. The University's obligations hereunder are contingent on its ability to comply with applicable United States export and embargo laws and regulations.

Sponsor agrees that it will not provide or make accessible to University any export-controlled materials (including, without limitation, equipment, information and/or data) without first informing University of the export-controlled nature of the materials and obtaining from University's Office of Research its prior written consent to accept such materials as well as any specific instructions regarding the mechanism pursuant to which such materials should be passed to University. Sponsor agrees to comply with any and all applicable U.S. export control laws and regulations, as well any and all embargoes and/or other restrictions imposed by the Treasury Department's Office of Foreign Asset Controls.

I have read the Agreement and this Export Control Acknowledgment and shall abide by all the terms contained in these documents.

[NAME OF SPONSOR]

By: _____

Name: _____

Title: _____

Date: _____