ILLINOIS

Illinois Materials Research Laboratory
Central Facilities
Facility Use Proposal Form for Academic Research (U of I Investigators)

Title of Research Proposal: Test proposal

Funding Source: Other (Specify) ▼ Please specify for any item with "Other": test-under $10K

Account Number: Chart - Funding - Organization - Program - Activity(if specified)

0 - 000000 - 000000 - 000000 - 1964

An account number is REQUIRED for all U of I users.
(This is the account that will be billed for all usage.)
Please remember to include an activity code (subproject number) if there is one!
If you do not include your account number, your proposal will not be processed!

Proposal is: (•) New ( ) Change of Scope If Applicable, Current Facilities User Number:

Subject of Proposal (Check all that apply)

- [x] Materials Science
- [ ] Physics
- [ ] Chemistry
- [ ] Polymers
- [ ] Medical Applications
- [ ] Biological & Life Sciences
- [ ] Earth Sciences
- [ ] Environmental Sciences
- [ ] Optics
- [ ] Engineering
- [ ] Instrument / Technique Development
- [ ] Other

1. About Your Investigators

Select the Principal Investigator:

Students and Post-Docs: *This is your faculty advisor, please select from pull down if listed.*

*If you PI is not in the pull down list: Select **New Principal Investigator** and the next page (form) will be for entering yo PI's information.*

SARDELA, Dr. MAURO: UIUC-Frederick Seitz Mat Res Lab ▼

User: (Information on the researcher who will be performing the experiments.)

Title: Ms.

First Name: Julie

Last Name: ten Have

Citizenship: United States

Employer/ Department: Acad. UIUC (Engr) | Illinois Mat Res Lab

Status: Other

Work Address:
104 S. Goodwin Avenue
Urbana, IL 61801

Work Phone: 217-244-2461

Email: tenhave@illinois.edu

Net ID: tenhave Do not include @illinois.edu, @uiuc.edu, @uic.edu or @uis.edu.

FAX: (optional)

Alternate Phone: (cell / lab) (optional)

MRL contacts or collaborators: Check all that apply, at least one.

If unknown, check Mauro Sardela (Director of Facilities)

☑ Mauro Sardela	☐ Steve Burdin	☐ CQ Chen	☐ Jeff Grau
☐ Doug Jeffers	☐ Rick Haasch	☐ Jim Mabon	☐ Lou Ann Miller
☐ Remy	☐ Tao Shang	☐ Julio Soares	☐ Jessica
☐ Timothy Spila	☐ Wacek Swiech	☐ Kathy Walsh	☐ Xiaoli Wang
☐ Zhiyu 'Jade' Wang	☐ Lon Westfall	☐ Honghui Zhou	

Next Reset Form

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Illinois Materials Research Laboratory

Central Facilities

Facility Use Proposal Form - Part 2 About Your Project

Suggestion: Use cut and paste to provide text answers. Save your answers in a text file just in case of a problem during submission.

Describe the overall research project related to the work you intend to do at the MRL facilities, and its scientific importance:

test

Describe any preliminary research you have performed:

test

Describe your samples and what materials they contain, as well as any safety precautions they require. For example, are your samples biological, radioactive, nanoparticles, toxic, carcinogenic, etc.?

test

Please select the techniques you will need to use to be able to complete your proposed project.

Please be as detailed as possible about the information you would like to obtain for each technique requested!

Failure to do this will result in the proposal being returned for additional information and significant delays.

Laser and Spectroscopy Core				
☑ Photoluminescence (PL)	☐ Photoluminescence Excitation (PLE)	☐ Time-resolved PL	☐ Ellipsometry	☐ Spectroscopic Ellipsometry

☐ Conventional Optical Microscopy	☐ Confocal Microscopy: Fluorescence	☐ Confocal Microscopy: Raman	☐ 3D Optical Profilometry	☐ nano-FTIR (AFM-FTIR)
☐ Non-linear microscopy	☐ Optical detector response and quantum efficiency	☐ Photovoltaic device characterization	☐ Reflectance/Absorption/Transmission (UV-VIS-NIR)	☐ Reflectance/Absorption/Transmission (IR:FTIR)
☐ Time-domain thermoreflectance	☐ Photoreflectance (photo-modulated reflectance)	☐ Contact angle measurement	☐ Laser treatments	☐ Custom Optical Setup (a detailed description of the setup is required)

Describe, for each LSF technique requested, the type of information you would like to obtain or the fabrication to be performed. Be specific with regard to your research. List performance requirements (e.g. sensitivity, resolution, etc.) and any specific instruments you would like to use and why.

Test

MRL Fabrication Core*			
☑ Cleanroom: photolithography[1]	☐ Cleanroom: wet chemistry[1]	☐ Cleanroom: e-Beam Lithography[1]	☐ Atomic Layer Deposition (ALD)[2]
☐ Vacuum Deposition: e-beam evaporation[2]	☐ Vacuum Deposition: thermal evaporation[2]	☐ Vacuum Deposition: sputtering[2]	☐ PECVD: Oxide/Nitride deposition[2]
☐ Wire Bonding	☐ Diffusion/Annealing Furnaces	☐ Optical Microscopy	☐ Probe Station
☐ Glovebox	☐ Reactive Ion Etching (polymers)[3]	☐ Reactive Ion Etching (metals)[3]	☐ Nano 3D printer

* As part of the approval process for the MRL Fab, you will need to meet with a MRL Fabrication Facility staff member during office hours for review of your project and its suitability in the MRL Fabrication Facility.

[1] Requires Cleanroom Orientation and Lithography & Etching Process Modules

[2] Requires Deposition Process Module

[3] Requires Etching Process Module

Describe, for each Fab technique requested, the type of information you would like to obtain or the fabrication to be performed. Be specific with regard to your research. List performance requirements (e.g. sensitivity, resolution, etc.) and any specific instruments you would like

to use and why.

Test

Electron Microscopy Core				
SEM	☑ SEM Imaging	☐ Energy Dispersive Spectroscopy	☐ Cathodoluminescence	☐ Electron Back Scatter Diffraction
FIB	☐ Cross-Section	☐ TEM Prep by FIB	☐ Nano-Fabrication	
TEM	☐ TEM Imaging	☐ TEM Diffraction	☐ STEM	☐ Aberration corrected STEM
	☐ Energy Dispersive Spectroscopy	☐ Electron Energy Loss Spectroscopy	☐ TEM Sample Preparation	

Describe, for each Electron Microscopy technique requested, the type of information you would like to obtain or the fabrication to be performed. Be specific with regard to your research. List performance requirements (e.g. sensitivity, resolution, etc.) and any specific instruments you would like to use and why.

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Scanning Probe Microscopy Core		
☑ Atomic Force Microscopy	☐ Scanning Tunneling Microscopy	
☐ Nano-Indentation	☐ Nano-Scratch	☐ Soft Material Nano-Indentation

Describe, for each SPM technique requested, the type of information you would like to obtain or the fabrication to be performed. Be specific with regard to your research. List performance requirements (e.g. sensitivity, resolution, etc.) and any specific instruments you would like to use and why.

Test

Physical Properties Core		
☑ Differential Scanning Calorimetry (DSC)	☐ Thermogravimetric Analysis (TGA)	☐ Dynamic Mechanical Analysis (DMA)
☐ Zeta Potential and Dynamic Light Scattering		

Describe, for each Physical Properties technique requested, the type of information you would like to obtain or the fabrication to be performed. Be specific with regard to your research. List performance requirements (e.g. sensitivity, resolution, etc.) and any specific instruments you would like to use and why.

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Surface Analysis Core			
☑ Scanning Auger Microscopy	☐ Ultraviolet Photoelectron Spectroscopy (UPS)	☐ X-ray Photoelectron Spectroscopy (XPS)	☐ Stylus profilometry
☐ Secondary Ion Mass Spectrometry	☐ TOF-SIMS	☐ Rutherford Backscattering Spectroscopy	☐ Ion implantation

Describe, for each Surface Analysis technique requested, the type of information you would like to obtain or the fabrication to be performed. Be specific with regard to your research. List performance requirements (e.g. sensitivity, resolution, etc.) and any specific instruments you would like to use and why.

Test

X-ray Diffraction Core		
☑ Powder XRD (powder samples, nanocrystals)	☐ XRD for polycrystalline thin films and bulks	☐ High Resolution XRD
☐ X-ray Reflectivity	☐ X-ray Fluorescence	

Describe, for each X-ray technique requested, the type of information you would like to obtain or the fabrication to be performed. Be specific with regard to your research. List performance requirements (e.g. sensitivity, resolution, etc.) and any specific instruments you would like to use and why.

Test

☐ **Please check if you will be using biological samples in the MRL Facilities.**

Note: MRL is a BSL1 lab - most samples must be in fixative before bringing to MRL. Fixative can be provided.
Samples that cannot be fixed MUST be discussed with Lou Ann Miller from MRL Bio Safety BEFORE filling out this form.
Prion work is not permitted in this facility.

☐ Please check if Biological samples will be processed in the MRL for analysis.

The following materials must be registered with the Institutional Biosafety Committee (IBC)/Division of research Safety before you may utilize the MRL Facilities:

- Recombinant and synthetic nucleic acids (even if the work is exempt from the NIH guidelines)
- Transgenic animals or plants (use or creation)
- Any human, animal, or plant pathogen
- Any human or non-human primate material (including human or non-human primate cell lines)
- Biotoxins

Please provide your IBC project registration number and list all the biological substances you will use at the MRL.
(If you wish to add new substances at a later date, you will need to fill out a "Change of Scope" to this proposal.)
Even if you plan on fixing your cells or tissue, if you are using cells and tissues that are cancer cells, human cells, pathogenic or mutated cells, please list the exact cell lines and origins of the cells you will be working with, and any vector you may be applying to the cells.
Analysis of samples which have not been cleared by MRL Staff will result in loss of facilities usage privileges!

What are the critical issues you would like to resolve with the capabilities of the MRL facilities? Roughly, how many specimens will be examined or fabricated? What is the approximate duration of the project and how often do you anticipate using the MRL facilities for this project?

Test

MRL Facilities Use Proposal Form - Part 3 About Your Needs

How would you rate your experience (hands-on) with same/similar materials characterization or fabrication techniques as requested:

(•) Novice ( ) Some Knowledge ( ) Experienced ( ) Extensive Experience ( ) Expert

Do you need instrument training? (required for self use, regardless of prior experience) (•) Yes ( ) No

If yes, for which techniques? Please also include information about prior experience for the investigators to be trained.

Test

Indicate your anticipated need for facility staff assistance while performing the proposed experiments:

(•) Extensive ( ) Some ( ) Little ( ) None

Anticipated extent of any specimen preparation in the MRL Facilities:

Test

Read and Agree to the following Usage Agreement before submitting your proposal.

Usage Agreement:

This proposal process is for academic research usage of the facilities and access to the expertise available at the Illinois Materials Research Laboratory Central Facilities at the University of Illinois at Urbana-Champaign. A University of Illinois Facilities Usage Agreement must also be executed if any work (i.e. "hands-on") is to be performed by any user not directly affiliated with the University of Illinois at Urbana-Champaign. Once a proposal is accepted, usage of the MRL Central Facilities is limited to the scope of work described in the proposal. Work outside of this scope will require that a change of scope or new proposal be submitted and approved prior to performing this work.

Note: Usage that is proprietary or connected with a proprietary project (this includes all business or industrial work) requires the execution of a *University of Illinois Technical Testing Agreement*, instead of this form, and is performed on a cost-recovery basis. Other regulations also may limit us from accepting certain work. These forms and more information may be obtained from the MRL offices.

Intent-to-publish. As a condition for performing nonproprietary research at the MRL Central Facilities, researchers are expected to publish any publishable results obtained from the research performed at the MRL. The following acknowledgement **must** be included in all publications that incorporate any results obtained through the MRL Central Facilities:

> **... was carried out in part in the Illinois Materials Research Laboratory Central Research Facilities, University of Illinois**

The staff of the MRL Central Facilities frequently makes a major contribution to the research of the facility users. They can have an important scientific role through the planning and realization of experiments, through the analysis and interpretation of data, or through a full collaboration in the research. When this occurs, the staff person should be included as a co-author on papers.

By submitting this proposal, all parties named as users or principal investigator agree to all terms specified in this agreement including the intent-to-publish polices and the required acknowledgement for all publications or presentations. The parties also attest to the non-proprietary character of the research work to be performed and that no proprietary information is to be generated as indicated by the terms of the funding grant or contract (supporting documentation to be supplied to MRL upon request). The parties understand that copies of all material to be published must be supplied to the MRL prior to or at the time of submission for publication. The parties will also provide the MRL with reprints, when available, and the full reference following any publication or presentation. *

* Please address these materials to MRL-Facilities at the MRL administration office, 104 S. Goodwin Ave., Urbana, IL 61801.

(•) Agree ( ) Disagree

Submit Proposal