Overview

The ANML is devoted to developing material and manufacturing solutions for emerging engineering problems without regard for political, socioeconomic, or cultural boundaries. The ANML is led by Professor David Estrada. The ANML is not a recharge center, and thus, access to resources is prioritized for sponsored programs and ANML researchers and affiliates.

The ANML facilities are located at the Micron Center for Materials Research (MCMR) Building at Boise State University and are dedicated to the research listed below.

- MCMR 121 & 123 focus on nano and 2D materials synthesis, nanomaterial-based ink formulation, and characterization.
- MCMR 125 is a shared user laboratory where 1-3 Bays are devoted to the ANML thin films suite, which is equipped with instruments to support thin film growth, device fabrication, and material/device post-processing.
- MCMR 131 is dedicated to bioengineering, focusing on tissue engineering and regenerative medicine.
- MCMR 229 houses advanced materials characterization tools that support materials and device development.
- MCMR 126 is a shared space and houses the Raman tool.
- MCMR 138 houses electrical and thermal transport measurement tools.

For more details on the equipment and capabilities, please visit https://www.boisestate.edu/coen-anml/.

Please submit this form and all other requested documents as individual attachments to anml@boisestate.edu. If the required documents are not attached, it is highly likely the request will be automatically rejected.

Request Details

Request Type: ☐ Sample Characterization ☐ Tool Training and Use ☐ New Request ☐ Renewal Request

**It is recommended that ANML tool leads complete characterization when few samples need analyzed. Tool training is recommended when there will be regular, long-term use of the tool for a large number of samples.*

Please give a justification for renewal (if applicable):

Project Title:

Requestor/User:

PI/Research Advisor:

Funding Source (Consumables & Potential Repairs):

Requested Tools (Select all that apply):

*Tools highlighted in blue are not available for training, an ANML researcher will work with you to complete sample characterization

MCMR 121 – Nanomaterial Ink Synthesis & Characterization

- ☐ Allegra 64R Fixed Angle Centrifuge
- ☐ Beckman Optima XE-90 Ultracentrifuge
- ☐ B'U'CHI Rotovapor
- ☐ Micro-Viscometer
- ☐ Brookfield DV3T Extra / EVNext Rheometers
- ☐ Fractionator
- ☐ Silverson Shear Mixer
- ☐ Repligen Tangential Flow Filtration (TFF) System
- ☐ QSonica Probe Tip Sonicators (Q125 & Q700)
- ☐ Nordson EFD Extrusion Printer
- ☐ StonyLab Electrospinning Machine
- ☐ Thinky Conditioning Mixer

MCMR 123 – Nanomaterial Ink Synthesis & Characterization

- ☐ MBRAUN Glovebox (Argon)
- ☐ Agilent UV-Vis-NIR Spectrophotometer
- ☐ Biolin Scientific Tensiometer & Contact Angle
- ☐ MTI High Temp Furnace (1200 C) 1 zone or 4 zone
- ☐ nanoScience Langmuir-Blodgett System
- ☐ MTI High Temperature Furnace (1500 C, 1 zone)
- ☐ NETZSCH STA 449 Jupiter TGA Jupiter (F5 or F1)
- ☐ Bruker FTIR
- ☐ BioLogic SP-50 or SP-50e Potentiostat
- ☐ NanoBrook Omni DLS

MCMR 125 – Thin Films Synthesis & Deposition

- ☐ In-House CVD, Thermo Scientific Tube Furnace
- ☐ **Pfeifer He Leak Checker***
- ☐ **KJ Lesker Physical Vapor Deposition (PVD) 75***
- ☐ **PlanarTech CVD/CVT***
- ☐ Thermo Scientific Muffle Furnace

MCMR 131 – Bioprinting & Tissue Engineering

- ☐ Tuttnauer Tabletop Autoclave Cellink
- ☐ BioX
- ☐ Cellink Lumen X
- ☐ **Tethon Bison 1000 Ceramic Printer***
- ☐ Nuaire Laminar Airflow Work Station Nuaire
- ☐ Biosafety Cabinet
- ☐ Nuaire Incubator
- ☐ Zeiss Axio Imager M2.m

MCMR 138 – Transport Characterization

- ☐ **Cascade Microtech MicroChamber Probe Station***
- ☐ **Tektronix Parameter Analyzer (4200A / 4200A-SCS)***
- ☐ **LakeShore Janis (Tabletop)***
- ☐ **LakeShore Janis (4 Probes) ***
- ☐ **LakeShore Fast Hall Measurement System***
- ☐ Tektronix Digital Oscilloscope

MCMR 126

- ☐ Horiba Raman Spectroscopy

MCMR 229 – Surface & Interface Science

- ☐ **X-Ray Photoelectron Spectroscopy***
- ☐ AnyCubic SLA M3 Max Printer
- ☐ AnyCubic DLP Photon Mono X 6K

Required Documents:

Please include all documents and certificates with the User Application.

- ☐ **Approved SOP attached** (for procedures in ANML facilities) *
  - ☐ I need assistance with SOP development *

  **Not required for sample characterization requests; ANML personnel can assist with SOP development if requested, but will be determined case-by-case. Please see the Acknowledgement section.*
- ☐ **Materials SDS attached** (Required for **ALL** chemicals utilized in ANML facilities)
- ☐ **COEN EHS Safety Training** Certificate (Access requests only)
- ☐ **UNH CEMS Hazardous Waste** Training Completion Certificate (Access requests only):

  Link to sign in and complete the course is: EHSS/CEMS.
- ☐ **CITI Responsible Conduct in Research** (RCR)Training Completion Certificate
- ☐ **CITI Training Bio-Modules:** (Access requests for MCMR 131 Only)
  - ☐ Biosafety Essentials
  - ☐ Bloodborne Pathogens

  - **PLEASE NOTE:** CITI RCR training needs to be completed by both the applicant and principal investigator.
  - CITI registration can be completed here: https://www.citiprogram.org/. Once registered, you'll need to add the RCR module. Registration is relatively straightforward, but you may wish to watch this short video tutorial.
- ☐ **IBC protocol** (MCMR 131- Bio-Lab Only)

Access will be reviewed every 6 months. To extend your access, please resubmit the form with the "Renewal" box checked.

User Training & Costs

Due to the time investment required to train new users, ANML leadership will determine if they deem the project and scope of work sufficient to justify the training of a new user. Alternatively, ANML may decide to work collaboratively with the requestor to gather the requested data, and this determination will be made on a case-by-case basis. To determine if training on the tool(s) is justified, please answer the requested information in the "Training and Usage Justification" section. Consumables may require a funding source to cover the cost of these items. All foreseeable costs will be provided to the requestor in the MOU document sent from ANML for approved projects and will require sign-off by the requestor and PI before the requested project can proceed.

Training and Usage Justification

**This section is not needed for Renewal Request*

Detailed Description of Sample(s):

Are Samples/Materials Purchased or Synthesized? * Y ☐ N ☐

**If samples are synthesized in-house, you must provide qualitative characterization data to verify sample composition. i.e. X-ray diffraction spectra*

Characterization needed and/or goals for research project:

Brief overview of requested procedures in ANML facilities:

Expected number of samples and frequency of equipment use:

Potential sample hazards, including hazards from SDS(s):

Reason(s) to be trained instead of ANML personnel running samples:

Do you require assistance with data analysis? If so, what are the goals/information required?

Acknowledgments

All written publications (e.g., posters, papers, conference proceedings) and oral presentations that utilize primary (e.g., images, spectra) and/or secondary data (e.g., numerical plots) obtained using equipment and/or materials generated in the ANML should acknowledge the ANML and appropriate funding sources as indicated below and contained within the MOU provided for approved projects. The ANML personnel can assist you in crafting an appropriate experimental description/materials and methods section. Depending upon the extent of involvement, we will also require co-authorship on manuscripts (and, in some cases, grant applications and invention disclosures) if students/faculty/staff contributed significantly to a project, materials generation, and/or in manuscript preparation. If assistance with SOP development is requested, this constitutes experimental design, and the involved ANML person(s) will require co-authorship in this case. Additionally, any involvement with data analysis, figure generation, and/or experimental involvement beyond minimal data collection will require co-authorship for the ANML personnel involved. If it is discovered that the ANML is not properly acknowledged, ANML may restrict any future access for the person and/or group.

Agreement

By signing below, you indicate that you have read and agree to abide by all of the terms and conditions outlined in the User Request Form and all ANML Policies. In particular, you agree to: **a)** pay in a timely manner for any consumables and repairs necessitated by usage and **b) properly acknowledge ANML researchers and funding sources used in any publications or presentations arising from this work as indicated in the "Acknowledgement" section**.

Requestor/User eSignature: **Date:**

PI/Advisor eSignature: **Date:**

General Acknowledgements:

MCMR 121 and 123

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MCMR 125

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MCMR 131

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MCMR 126 and 229

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MCMR 138

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