

An EMSL user proposal requires a lot of detailed information for a thorough peer and management review. To aid in this process, we suggest you use this document to help you track the proposal steps and collect the necessary information before you begin filling out the web-based proposal form on EMSL's User Portal. **Proposals submitted without the required information will not be considered.** Please contact the User Support Office if you have any questions throughout this process.

PROPOSAL CHECKLIST

- Discuss your planned research with the appropriate EMSL staff (*highly recommended*).
- Identify which type of proposal you are submitting (<http://www.emsl.pnnl.gov/emslweb/proposal-opportunities>).
 - *Note: Most research conducted at EMSL is non-proprietary, with results disseminated to the scientific community through publications in open literature or conference presentations and papers.*
- Collect information needed (e.g., contact information, team information, capability identification).
- Write an abstract. *Nonproprietary abstracts as submitted may appear on public user facility websites, and a limited set of project data will be sent to the Department of Energy Office of Science (SC) each fiscal year or upon request.*
- Write the Project Description and Appendices, adhering to the instructions on EMSL's website for the proposal type you are submitting. Proposals not consistent with the applicable guidance will not be considered.
- Create a user account on EMSL's User Portal (<https://eus.emsl.pnl.gov/Portal/>), unless you are a returning user.
- Complete the 3-part, web-based proposal form: 1. Participants, 2. Details, 3. Logistics.
- Save** (for further editing later) or **Submit Proposal** when completed. Once submitted, you will receive an email from the User Support Office (emsl@pnnl.gov) confirming receipt of your proposal.
 - *Note: You will have a limited window in which to edit your proposal after submission. Once it has passed the screening step, you will no longer see the "Edit Proposal" link.*

ONLINE PROPOSAL FORM

PART 1: PARTICIPANTS*

Information on file for the person completing the online form will be auto-populated, and you will be able to search EMSL's database for other participants. For each participant who isn't already in the database, the following information is required.

Note: While anyone can write and submit the proposal on behalf of the research team, **postdocs and students may not serve as the principle investigator or co-investigator.** A lead professor or advisor must be included and marked as principle investigator. In addition, the PI will receive an Annual Satisfaction survey, which can be delegated to another person on the team. This delegate can be selected when adding participants.

- **First Name**
- **Last Name**
- **Profession** (*Graduate Student, Postdoc, Faculty, etc.*)
- **Email Address**
- **Institution Name**
- **Institution Type** (*Academia, Private Industry, etc.*)
- **Country**
- **State** (*if U.S. or Canada*)
- **City**
- **Postal Code**

PART 2: DETAILS

Proposal Details

- **Primary Research Area*** (*Materials Science, Chemistry, Physics, Biological and Life Sciences, etc.*)
- **Proposal Title*** (*plain text only*)
- **Abstract*** (*plain text only*). Nonproprietary abstracts as submitted may appear on public user facility websites, and a limited set of project data will be sent to the Department of Energy Office of Science (SC) each fiscal year or upon request.
- **Proposed Research** (*single PDF file to include project description and appendices*)
 - Requirements may vary, depending on the proposal type you are submitting. Please consult the EMSL website for specific requirements based on proposal type:
 - **General and Science Theme:** <http://www.emsl.pnnl.gov/emslweb/emsl-proposal-package-guidance-fiscal-year-2016>
 - **JGI-EMSL Collaborative Science Initiative – Letters of Intent:** <http://www.emsl.pnnl.gov/emslweb/guidance-letters-intent-call-fy2017-jgi-emsl-collaborative-science-proposals>
 - **JGI-EMSL Collaborative Science Initiative – Full Proposals (Invited Only):** <http://www.emsl.pnnl.gov/emslweb/guidance-full-proposals-call-fy2017-jgi-emsl-collaborative-science-invited-only>
 - We strongly recommend reading EMSL's proposal review criteria (http://www.emsl.pnnl.gov/emslweb/proposal_criteria), which includes scoring descriptions and potential considerations within each criterion.
 - *Note: For joint calls with another facility, proposals will **not** be reviewed on EMSL's Science Themes. See the specific call announcement on our website for details.*
- **Preferred Start Date** (*only for proposals submitted outside of a Call*)
- **Proposal Type.** Select one of the proposal types below and any sub-theme, if listed. Further details about each type and its duration can be found at <http://www.emsl.pnnl.gov/emslweb/proposal-opportunities>.
 - **General**
 - Requests for special consideration:
 - PI providing funding for staff support or identifying a proprietary proposal
 - Requests for rapid access
 - Requests to use resources that are owned or co-owned by non-EMSL programs
 - **Partner Proposal**
 - **Current Calls** (*potential options, if open*)
 - **Science Theme**
 - Atmospheric Aerosol Systems
 - Biosystem Dynamics and Design
 - Energy Materials and Processes
 - Terrestrial and Subsurface Ecosystems
 - **JGI-EMSL Collaborative Science Initiative**
 - **Research Campaign**
- **Is this proposal associated with a National Science Foundation Supplemental Funding Request?** <http://www.nsf.gov/pubs/2004/nsf04025/nsf04025.htm>
- **Will you desire the assistance of EMSL staff in obtaining and interpreting the results?**
- **Laboratory Staff Contact.** If you have discussed this proposal with a Laboratory staff member, please include his/her name.
- **Resources.** Determine all resources needed and estimate the time for each **during the first year** of the proposal. Resources are organized in groupings at the end of this document.

PART 3: LOGISTICS

Proposal Logistics

- **Funding Agencies*** (Ex: Department of Defense; DOE, Office of Biological & Environmental Research; University, U.S.; etc.).
 - If “DOE, Office of Biological & Environmental Research” is selected for the PI or co-PI, are they currently a BER-funded PI?
 - If so, for which BER project(s) do they have funding?
- **Work Package # / Subcontract #.** Required for PNNL staff, and for external PIs who have indicated that they’ll be providing funding for EMSL staff support. If external, put “TBD Contracts” if institutional negotiations are pending.

Materials & Equipment

Note: Failure to provide sufficient information for a thorough environmental health and safety review can delay consideration of your proposal.

- **Will your research involve the use of human blood, tissues, DNA, cells, cell lines, or human biological samples in any form?**
- **Does this work involve the use of animals?**
- **Will you be bringing or sending any chemicals to the EMSL facility?**
 - If yes:**
 - Description of chemicals (*note the type and quantity of each*).
 - How do you plan to bring/send the chemicals to the facility?
 - At the end of the project, what will be done with the chemicals (ex: dispose at EMSL, return to you, etc.)?
- **Does your experiment on EMSL resources involve samples?**
 - If yes:**
 - Description of samples (*note the **type and quantity of each***). Include any unique characteristics, such as transgenic biological material, dilute solution or environmental samples containing explosives, soil or ground waters collected from Hanford, etc.
 - *Examples of transgenic biological material: Agrobacterium tumefaciens; Oryza sativa; Petunia hybrid.*
 - *Examples of explosives diluted in solution: RDX in methanol; Wetted TNT; PETN in ethanol; C-4 in ethanol; thin film deposit of TNT*
 - Do any of the samples contain radioactive isotopes?
 - Do any of the samples contain bound or unbound engineered nanomaterials?
 - Are any of the samples regulated USDA APHIS (ex: certain soils containing biological material)?
 - If yes, provide each Permit Number
 - Are any of the samples biological?
 - If yes, can the biologic samples contain plant pathogens/pests?
 - If yes, are the pathogens/pests alive or inactive?
 - How do you plan to bring/send the samples to the facility?
 - Will you need to perform sample preparation at the facility?
 - At the end of the project, what will be done with the samples (ex: dispose at EMSL, return to you, etc.)?

Note: Do not ship any equipment, chemicals or samples to EMSL/PNNL without first coordinating with your host or the User Support Office (509-371-6003) and providing a Sample Submission Form (available on the User Portal for approved proposals). Samples will not be accepted without an approved Sample Submission Form. In addition to EMSL regulations, users are responsible for adhering to all Department of Transportation regulations.

- **User Equipment.** List any equipment you intend to bring to EMSL for the proposed research, including computers that will need to connect to the PNNL network.
- **Comments.** Any additional comments you have regarding the proposal or process.

RESOURCES

Resources are organized below in alphabetical order by groupings of instrument types (not by capabilities), and operate either 24 hours a day/7 days a week or 10 hours a day/5 days a week. The capabilities that use these instruments, as well as their operating hours, are listed on EMSL's website (<http://www.emsl.pnl.gov/emslweb/instruments>).

ANALYTICAL / CHEMICAL / OTHER

- Analytical: Chromatograph, Agilent
- C, H, N, S Analyzer
- GC-MS, Volatile Organic Compounds
- Ice Nucleation Chamber
- Ion Chromatograph
- Liquid Chromatograph
- Zeta Potential Analyzer

BIOLOGICAL SYSTEMS CHARACTERIZATION

- 5500XL SOLiD Sequencers
- CyTOF – Mass Cytometer
- Influx - Flow Cytometer Cell Sorter
- Ion Torrent Proton
- Mammalian Cell Culture
- Microbial Bioreactors
- PALM - Laser Capture Microdissection

Note: Fluorescence microscopy and spectroscopy can be found in the sections below.

COMPUTING

- Computing: Cascade (Atipa 1440 Intel Xeon-Phi Node FDR-Infiniband Linux Cluster)
- Computing: Data File Storage (Aurora) (GB)

DEPOSITION

Thin Film

- Hybrid Thin Film Deposition System
- Mass-Selected Ion Deposition System - Electrospray Source
- Molecular Beam Epitaxy
- Molecular Beam Epitaxy, Multi-source
- Physical Property Measurement System
- Pulsed Laser Deposition

FLOW CELLS

- Intermediate Flow Cells
- Pore Scale Micromodels
- Soil Hydraulic Property Measurement

MASS SPECTROMETRY

Aerosol Particle / Isotopic Elemental

- Laser Ablation Sampling System
- Mass Spectrometer: Aerosol - time-of-flight, high resolution
- Mass Spectrometer: Inductively Coupled Plasma (ICP-MS), High Resolution (Element XR)
- Mass Spectrometer: Inductively Coupled Plasma (ICP-MS), Multi-Collector (Neptune Plus)
- Mass Spectrometer: Inductively Coupled Plasma (ICP-MS), Ultra-High Resolution
- Mass Spectrometer: Linear Ion Trap Quadrupole (LTQ) Orbitrap MS - for environmental research (nanoDESI)
- Mass Spectrometer: Proton Transfer Reaction (PTRMS)
- Mass Spectrometer: Single Particle (SPLAT II)
- Mass-Selected Ion Deposition System – Electrospray Source

Ion Surface

- ICP-MS (Quadrupole)
- Mass Spectrometer: FT-ICR, 6T (Ion Surface Collisions)
- Mass Spectrometer: Time of Flight Secondary Ion (ToF SIMS) – 1997
- Nano-SIMS
- Time-of-Flight SIMS

Imaging

- Mass Spectrometer: MALDI-TOF

Metallomics

- Mass Spectrometer: Inductively Coupled Plasma (ICP-MS) System, Metallomics

Proteomics/Biological

- Mass Spectrometer: 21T FTICR
- Mass Spectrometer: Fourier Transform Ion Cyclotron Resonance
- Mass Spectrometer: GC MS
- Mass Spectrometer: Ion Mobility Spectrometry, Time of Flight
- Mass Spectrometer: LC Triple Quadrupole
- Mass Spectrometer: Linear Ion Trap (LTQ)
- Mass Spectrometer: MALDI-TOF
- Mass Spectrometer: Orbitrap

MICROFABRICATION

- Aligned Wafer Bonder
- Deep Reactive Ion Etching
- Microfabrication Laboratory (Clean Room)
- Nanoimprint Lithography
- Photomask Aligner

MICROSCOPY

Electron

- CryoTEM (Tecnai)
- Dynamic TEM – (*avail. Jan. 2016*)
- Electron Microprobe
- Environmental FIB/SEM (Quanta)
- Environmental TEM
- Helios FIB/SEM
- Liquid He CryoTEM
- Photoemission Electron Microscope
- Radiological FIB/SEM (Quanta)
- Radiological TEM (ARM)
- Scanning TEM

Fluorescence / Optical

- Biological Atomic Force and Super Resolution Fluorescence Microscope
- Confocal, FLIM & Multi-Photon Fluorescence Microscope
- Live Cell Single-Molecule Fluorescence Microscope
- SIM – Structured Illumination Super Resolution Fluorescence Microscope
- Single-Molecule Fluorescence Microscope
- STORM/PALM – Super Resolution Fluorescence Microscope

Ion

- Helium Ion Microscope

Scanning Probes

- Dynamic Force AFM (Asylum)
- Geochemistry AFM (Icon)
- Low Temperature UHV STM/AFM – (*unavailable after 9/30/16*)
- Multimode AFM (Nanoscope)
- Radiological AFM
- Scanning Probe AFM Compound Microscope
- Scattering IR SNOM
- STM/AFM (PicoSPM)
- Variable Temperature STM/AFM – (*unavailable after 9/30/16*)
- Variable Temperature UHV STM/AFM – (*unavailable after 9/30/16*)

NMR / EPR

EPR

- CW X-band (9.5 GHz) Radiological EPR
- Pulsed/CW X-band (9.5 GHz) EPR

High-Resolution Liquids

- 600 MHz NMR Baker (Liquids)
- 600 MHz NMR Hood (Metabolomics)
- 750 MHz NMR Rainier (Liquids)
- 750 MHz Radiological NMR Bokan (Liquids, Solids)
- 800 MHz NMR Denali (Liquids)

Imaging

- 500 MHz NMR Bastiat

Solid-State

- 300 MHz NMR Mazama (Solids)
- 400 MHz NMR Karloff (Solids)
- 500 MHz NMR Shasta (Solids)
- 600 MHz NMR Nittany (Solids) – *(Limited Time Available)*
- 750 MHz Radiological NMR Bokan (Liquids, Solids)
- 850 MHz NMR Ellis (Solids)

SPECTROSCOPY / SPECTROMETRY

Electron

- Catalysis: UHV Model Catalysts, High Pressure
- Electron and Photon Stimulated Desorption (BES 2)
- Electron Spectrometer: Scanning Multiprobe Surface Analysis System - Versaprobe
- Electron Spectrometer: XPS with Laser Interface
- High Resolution EELS
- High Resolution Microprobe XPS
- Imaging XPS
- Low Temperature Photoelectron Spectroscopy
- Radiological XPS

Fluorescence

- Fluorescence Spectrometer, Cryogenic Time-resolved
- Fluorescence Spectrometer, Time-correlated Single Photon Counting
- Fluorimeter

Ion/Molecular Beam

- Atom Probe Tomography
- Mass Spectrometer: Time of Flight Secondary Ion (ToF SIMS) - 1997
- Molecular Beam Kinetics
- Nano-SIMS
- Time-of-Flight SIMS

Mössbauer

- Mössbauer Spectrometer

Optical

- Circular Dichroism Spectrometer
- High Resolution, Ultrafast SFG Vibrational Spectroscopy
- Stopped-Flow Absorbance/Fluorescence Spectrometer
- Sum Frequency Generation for Surface Vibrational Spectroscopy

Vibrational

- Atmospheric Pressure Reactor System
- FTIR Microscope
- Inverted Confocal Raman Spectrometer
- Laser Desorption Analysis
- Transient Kinetic Analysis

X-RAY DIFFRACTION AND TOMOGRAPHY

- Epitaxial Thin Film XRD
- Microbeam XRD
- Multipurpose XRD
- Powder XRD
- Radiological Powder XRD
- X-ray Computed Tomography