

PROPOSAL PLANNING

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.

IMPORTANT:

In order to submit a proposal, an  ORCID iD is required for the principal investigator (★) and co-investigator (★) only (i.e., the individuals designated on the *Participants page* of the electronic proposal form with gold and silver stars). Other team members do not need iDs in order to submit.

Before starting your proposal, please ensure that both the PI and co-PI have an ORCID iD linked to their EMSL User Portal account. Additional information about associating an ORCID iD to your Portal account can be found on our [FAQ page](#).

PROPOSAL CHECKLIST

- Discuss your planned research with the appropriate EMSL staff (*highly recommended*).
- Identify which [type of proposal](#) you are submitting.
 - *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.*
- Create a user account on [EMSL's User Portal](#), unless you are a returning user.
- **IMPORTANT**** Register for an  ORCID iD or link your existing  ORCID iD to your User Portal account **prior** to starting your proposal (required for principal and co-investigators; optional for other participants).
 - *New users will be asked to link an ORCID iD during the registration process. Current researchers will see instructions on their Portal homepage.*
 - *See additional information on our [FAQ page](#).*
- Collect information needed for each section of the proposal (e.g., contact information, team information, capability identification – detailed below).
- 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.
- 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](#) 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

This section will walk you through the three parts of the online proposal form that you will fill out in the User Portal.

PART 1: PARTICIPANTS*

Please list all researchers who will be involved in your work. 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.

- **First Name**
- **Last Name**
- **Profession** (*Graduate Student, Postdoc, Faculty, etc.*)
- **Email Address**
- **ORCID iD** (*required for ★PI and ★co-PI; optional for other participants*)
- **Institution Name**
- **Institution Type** (*Academia, Private Industry, etc.*)
- **Country**
- **State** (*if U.S. or Canada*)
- **City**
- **Postal Code**

Notes:

- *Currently, only a single co-investigator can be identified on the electronic proposal form, but you may list all co-investigators in your Project Description file.*
- *While anyone can write and submit the proposal on behalf of the research team, **postdocs and students may not serve as the principal investigator or co-investigator** in order to maintain a longer-term point of contact with the institution for the proposal life-cycle. A lead professor or advisor must be included and marked as principle investigator.*
- *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.*
 - *This delegate cannot be an EMSL staff member.*

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 for accepted proposals, 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.**
 - Content requirements for project description and/or appendices may vary, depending on the proposal type you are submitting, Please consult the EMSL website for specific requirements based on [proposal type](#).
 - We strongly recommend reading EMSL's [proposal review criteria](#), which includes scoring descriptions and potential considerations within each criterion.
 - *Note: For joint calls with another facility, proposals will **not** be reviewed against EMSL's Science Areas. 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 subcategory, if listed. Additional details about each type and its duration can be found on [our website](#).
 - **Open Calls** (*potential options, if open*)
 - **Winter Cycle**
 - **Large-Scale EMSL Research**
 - Functional and Systems Biology
 - Environmental Transformations and Interactions
 - Novel Applications of EMSL Capabilities
 - **FICUS Research**
 - Biofuels, biomaterials and bioproducts
 - Biogeochemistry
 - Inter-organismal Interactions
 - Novel Applications of Molecular Techniques
 - Soils from NEON Biorepository
 - **Research Campaign**
 - **Summer Cycle**
 - **Exploratory Research**
 - Functional and Systems Biology
 - Environmental Transformations and Interactions
 - **Limited Scope**
 - **Capacity**
 - **Proprietary**
 - **Scientific Partner Proposal**
 - **Resource Owner**
- **Is this proposal associated with a National Science Foundation [Supplemental Funding Request](#)?**
- **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 and can be found on EMSL's [website](#).

PART 3: LOGISTICS

Proposal Logistics

- **Funding Sources***. Required for ★PI and ★co-PI. Please specify the funding source supporting the PI's and co-PI's work **for this current project** (*ex: Department of Defense; DOE, Office of Biological & Environmental Research; University, U.S.; National Science Foundation; etc.*).
 - If "DOE, Office of Biological & Environmental Research" is selected for the PI or co-PI, are they the PI on the BER grant funding this work?
 - If so, for which BER program(s)? (*ex: Bioenergy Research Center, Early Career Research Program, Terrestrial Ecosystem Science, etc.*)
 - If "National Institutes of Health" is selected for the PI or co-PI, please provide the grant number(s) associated with the NIH funding.

- **Work Package # / Subcontract #.** Required for PNNL staff, and for external PIs who have selected “Capacity” or “Proprietary” as their proposal type. 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, including the location where the samples were collected. For example, transgenic biological material from Brazil, dilute solution or environmental samples containing explosives from New Mexico, 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](#).

ANALYTICAL / CHEMICAL / OTHER

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

BIOLOGICAL SYSTEMS GROWTH, ISOLATION, AND CHARACTERIZATION

- Cell-Free Expression Pipeline
- Cryostat (CISA)
- CyTOF - Mass Cytometer
- Eukaryotic Cell Culture
- Influx - Flow Cytometer Cell Sorter
- Laser Capture Microdissection (LCM)
- LiCOR 6800
- Molecular Ecology Laboratory
- Plant Sciences Laboratory
- Sequencing, Next Generation, High Throughput - Ion S5
- Sequencing, Next Generation, High Throughput - Ion Torrent Proton (transcriptomics)
- Sequencing, Next Generation, High Throughput - NextSeq550
- Soil Incubation Laboratory

Note: Biological fluorescence microscopy (super resolution, single molecule, confocal, Airyscan, atomic force) can be found under the Microscopy section below.

COMPUTING

- Computing: Aurora (Data Archive) (GB)
- Computing: Cascade (Linux Cluster) - (*avail. until. Oct. 2020*)
- Computing: Tahoma (Linux Cluster) - (*avail. Oct. 2020*)
- Computing: Data Visualization

DEPOSITION

Thin Film

- 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

- Isotope Ratio Mass Spectrometry
- Laser Ablation Sampling System
- Mass Spectrometer: Aerosol, time-of-flight, high resolution
- Mass Spectrometer: Inductively Coupled Plasma (ICP-MS) System
- 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

Imaging

- Mass Spectrometer: Imaging (MALDI)
- NanoPOTS

Ion Surface

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

Metallomics

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

Omics / Biological

- Mass Spectrometer: 21T FTICR
- Mass Spectrometer: Agilent IMS
- Mass Spectrometer: Fourier-Transform Ion Cyclotron Resonance
- Mass Spectrometer: FTICR-SIMS
- Mass Spectrometer: GC-MS (metabolomics)
- Mass Spectrometer: GC QExactive
- Mass Spectrometer: Imaging (MALDI)
- Mass Spectrometer: Ion Mobility Spectrometry, Time of Flight
- Mass Spectrometer: LC Triple Quadrupole
- Mass Spectrometer: Linear Ion trap (LTQ)
- Mass Spectrometer: Orbitrap
- Mass Spectrometer: Waters Synapt G-2
- NanoPOTS

MICROFABRICATION

- Microfluidics and Microfabrication

MICROSCOPY

Electron

- Aberration Corrected TEM, Atomic Resolution Microscope with EELS (JEOL ARM)
- CryoTEM (Tecnai)
- Dynamic TEM - (*avail. approx. Oct. 2020*)
- Electron Microprobe
- Environmental FIB/SEM (Quanta)
- Environmental TEM
- Helios FIB/SEM
- Krios CryoTEM – (*avail. Oct. 2020*)
- MAC-STEM – (*avail. Oct. 2020*)
- Photoemission Electron Microscope
- Plasma FIB – (*avail. Oct. 2020*)
- Radiological FIB/SEM (Quanta)
- Scanning TEM

Fluorescence / Optical

- Biological Atomic Force and Super Resolution Fluorescence Microscope
- CARS/SRS Confocal Microscope
- Confocal, FLIM & Multi-Photon Fluorescence Microscope
- Laser Capture Microdissection (LCM)
- Live Cell Single Molecule Fluorescence Microscope

- SIM - Super Resolution Fluorescence Microscope & Confocal Airyscan
- Single-Molecule Fluorescence Microscope
- Stereo Zoom Microscope
- STORM/PALM - Super Resolution Fluorescence Microscope

Ion

- Helium Ion Microscope

Scanning Probes

- Biological Atomic Force and Super Resolution Fluorescence Microscope
- Combined Raman AFM
- Dynamic Force AFM (Asylum)
- Geochemistry AFM (Icon)
- Low Temperature UHV STM/AFM
- Microscope: VTM STM - White
- Multimode AFM (Nanoscope)
- Radiological AFM
- Scanning Probe AFM Compound Microscope
- Scattering IR SNOM
- Variable Temperature UHV STM/AFM

NMR / EPR

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)

Metabolomics

- 600 MHz NMR Hood (Metabolomics)
- 750 MHz NMR Bokan (Metabolomics)
- 800 MHz NMR Tava (Metabolomics) – (*avail. Spring 2020*)

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*)
- 600 MHz NMR Tumalo (Solids) - (*Limited Time Available*)
- 800 MHz Dynamic Nuclear Polarization (DNP) Ison – (*avail. Summer 2020*)
- 850 MHz NMR Ellis (Solids)

SPECTROSCOPY / SPECTROMETRY

Electron

- Electron and Photon Stimulated Desorption (BES 2)
- Electron Spectrometer: XPS with Laser Interface
- 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
- NanoSIMS
- Time-of-Flight SIMS

Mössbauer

- Mossbauer Spectrometer

Optical

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

Vibrational

- FTIR Microscope
- Inverted Confocal Raman Spectrometer
- Laser Desorption Analysis
- Transient Kinetic Analysis

X-RAY DIFFRACTION AND TOMOGRAPHY

- Microbeam XRD
- Multipurpose XRD
- Powder XRD
- Radiological Powder XRD
- Thin Film XRD
- X-ray Computed Tomography
- X-ray Micro-tomography – (*avail. Mar. 2020*)
- X-ray Nanotomography Microscope – (*avail. Oct. 2020*)