EMSL PROPOSAL PLANNING

User Support Office, (509) 371-6003, emsl@pnnl.gov

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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.pnl.gov/access/calls/index.jsp#types). *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, which can be posted on the EMSL website if the proposal is accepted (*does not apply to proposals containing proprietary information)*
- ☐ Write your Project Description, adhering to the instructions on EMSL's website. Proposals not consistent with these instructions will not be considered: (http://www.emsl.pnl.gov/access/proposal_guidance.jsp)
- ☐ 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 (^PNNL EMSL User Support) confirming receipt of your proposal. *Note: You will not be able to edit your proposal from the Portal after it has been submitted. Please contact the USO if you need to make revisions after submitting the request.*

ONLINE PROPOSAL FORM

PART 1. PARTICIPANTS

Information on file for the person completing the online form will be auto-populated. For each participant, 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.*

Is this participant the principle investigator of this proposal? ☐ Yes ☐ No

Is this participant the co-investigator of this proposal? ☐ Yes ☐ No

_____ _____ _____

First Name **Last** Name **Email** Address

Profession:

☐ High School Student ☐ Postdoc ☐ Professional
☐ Undergraduate Student ☐ Faculty/Staff ☐ Other (please specify):
☐ Graduate Student ☐ Research Scientist/Engineer

_____

Institution Type:

☐ Academia
☐ Battelle Columbus
☐ DOE Lab (other than PNNL)
☐ Foreign National Laboratory
☐ Other Government Agency
☐ PNNL
☐ EMSL (if line staff)
☐ Private Industry
☐ Other (please specify): _____

_____
Institution Name

City	**State/Province** (if U.S. or Canada)	**Postal Code**	**Country**
_____	_____	_____	_____

PART 2. DETAILS

Primary Research Area:

☐ Materials Science (incl. condensed matter phys. & material chem.)
☐ Physics (excludes condensed matter physics)
☐ Chemistry (excludes materials chemistry)
☐ Polymers
☐ Medical Applications
☐ Biological and Life Sciences (excludes medical applications)
☐ Earth Sciences
☐ Environmental Sciences
☐ Optics
☐ Engineering
☐ Other (please specify): _____

Proposal Title *(must be typed or pasted into text box using **plain text only)*:**

_____

Abstract: (*must be typed or pasted into text box using **plain text only, 500 word limit**.* Abstracts for approved General proposals and proposals in response to annual calls ***will be posted on the EMSL website as received***.)

_____
_____
_____
_____
_____

Project Description: (.pdf or .doc(x) file, 4-page limit, including charts, graphs, maps, photographs, and other pictorial presentations). Do not repeat the abstract. Project Description should include:

- **Title** – Must be brief, scientifically or technically valid, intelligible to a scientifically or technically literate reader, and suitable for use in the public press.
- **Specific Aims** (generally 250 words or less) – State the specific objectives of the research proposed (e.g., to test a stated hypothesis, create a novel design, solve a specific problem, challenge an existing paradigm or clinical practice, address a critical barrier to progress in the field, or develop new technology), providing concise and unambiguous details.
- **Mission** (2-3 sentences) – Clearly describe the relevance of this project to the BER or DOE mission areas and/or its economic or societal importance.
- **Background/Introduction** (approximately 400 words or less) – State the scientific question(s) being addressed and the anticipated importance or significance of results to be obtained, especially as related to EMSL's mission.
- **Approach** (approximately 1200 - 1500 words) – Describe the work to be conducted at EMSL in the first year of the project, along with any preliminary, background measurements, or tests completed that validate the approach (include references where relevant and attach the full citations as an addendum).

- **Computational Approach (required if compute cycles requested, additional 1 page maximum)** – Does not count against the 4-page limit. Specify the computational method or approach, software to be used, and provide a strong justification for hours requested (ex: compare to the number, size, duration of calculations based on Chinook or other parallel computer). If not using NWChem, include a reference discussing scaling characteristics or scaling examples of the software. There is no upper limit, but the time requested **must** be justified, and poor justification can affect the overall resource score. Allocations are awarded in units of wall-click time expressed in node-hours. Each node contains 8 processor-cores (ex: 150,000 node-hours are equal to 1,200,000 processor-core hours). Systems newer than Chinook will contain more processor cores per node, but wall-click time on new systems will still be counted in node hours.

CVs and Additional Files: In addition to your Project Description, please submit the following files ***in the order listed below***.

- **Addendum 1: References List (required)** – Should be submitted as an additional file (not embedded in the text). Each reference must include the names of all authors (in the same sequence in which they appear in the publication), the article and journal title, book title, volume number, page numbers, and year of publication. If the document is available electronically, the website should also be identified. Proposers must be especially careful to follow accepted scholarly practices in providing citations for source materials relied upon when preparing any section of the proposal. While there is no established page limitation for the references, this section must include bibliographic citations only and *must not be used to provide parenthetical information outside of the 4-page Project Description.*
- **Addendum 2: CVs (required)** – Must attach abbreviated curriculum vitae **(2-page maximum each)** for the PI and each of the key investigators that would support the review of the team's qualifications for the research proposed (Criterion 2).
- **Addendum 3: EMSL Resources (required)** – Include a table of resources requested for the first year of your project (instruments **and** staff support), including the units requested if known (see note below), the period of use, the expertise provided by team members on each resource (including duration of EMSL stay), and requested EMSL staff support. "Units Requested" can be instrument hours, node-hours for the supercomputer, or gigabytes for data archive storage. A template is provided below; an example is provided on EMSL's website.

  ***NOTE**: If you're uncertain about information related to samples, units requested, or specific instruments, please contact the custodian or Capability Lead listed on the website to discuss the needs for your research aims. If you're unable to reach a staff member before the proposal deadline, insert a "?" in the table for # of samples, and EMSL management will adjust your request based on your Project Description. If uncertain about the units requested (time, node hours or storage size), insert a "1" in both the table and the Details section of the electronic proposal form. This will not affect your resource score.*

Resource	# of Samples	Units Requested *(specify unit)*	Period of Use	Project Team Expertise per Resource	EMSL Support Requested

- **Addendum 4: Active Collaborator List (required)** – To help EMSL avoid conflicts of interest on our Proposal Review Panels, please attach a list of active collaborations that the PI and co-PI have had in the past 3 years. In addition to research projects, collaborations might include co-authors, co-editors, advisors or advisees, or financial affiliations with an institution or individual.
- **Addendum 5: Suggested Reviewers or Reviewers Not to Include (optional)** – You may include a list of suggested reviewers who you feel are especially well-qualified to review the proposal or persons you would prefer not to review the proposal (indicating why). These suggestions are optional. EMSL will consider the suggestions and may contact you for further information. The decision whether or not to use the suggestions remains with EMSL management.

Preferred Start Date: _____ (only for proposals submitted outside of the annual Call)

Proposal Type: Select one.

EMSL offers four proposal types: General and Scientific Partner (can be submitted at any time), and Science Theme and Research Campaign (offered only during the annual Call for Proposals).

☐ **GENERAL** – May be submitted at any time, but are reviewed on established cycles and must meet the current fiscal year's cut-off score (see http://www.emsl.pnl.gov/access/calls/ for details). ***Valid only for the fiscal year in which they are accepted*** (for example, proposals accepted in December 2012 are valid up to September 30, 2013).

Requests for special consideration:

☐ Researchers are ***providing funding for staff*** support or identifying a ***proprietary*** proposal. Valid for up to one year. Must provide a contract mechanism and are accepted provided that they do not interfere with nonproprietary competitive research. Proposals containing proprietary information will be reviewed under restricted protocols to maintain confidentiality.

☐ Requests for ***rapid access***. Accepted on a limited basis and provide 30 days access. Must clearly demonstrate one of the following:

(1) rapid turnaround of data is required for a *specific deadline* (e.g., response to requested data for finalizing thesis work or paper publication, preliminary data needed for proposal preparation). ***Must provide the working deadline.***

(2) a proof-of-principle experiment is required to be able to proceed with the development of a full proposal. Must provide sufficient detail of results expected to convince the reviewers that a proof-of-principle is required and that the proposal is not simply a small-scale experiment which would not meet the requirements of a larger proposal.

☐ Requests to use ***resources that are owned or co-owned*** by non-EMSL programs. *Must provide sufficient information for a safety review*, but aren't expected to adhere to the proposal guidance for length or formatting. Valid until the end of the fiscal year in which they're accepted with 2 extensions (total of 3 years ending Sept. 30).

☐ **SCIENTIFIC PARTNER** – ONLY for users with approved Letter of Intent to co-develop and co-fund a project with EMSL (http://www.emsl.pnl.gov/access/calls/). Valid based on negotiated access with EMSL's Partner Panel.

☐ **SCIENCE THEME** – Help define and direct the development of key capabilities and collections of growing user activity associated with environmental molecular scientific challenges that address topics of societal important. Proposal type only available during the timeframe of the Call. Valid for two years, provided the annual summary and extension request demonstrate sufficient progress toward the stated goals. A select number of authors may be invited to submit project plans to extend the work for a third year. Proposals should identify the specific Theme that most closely matches the research topic:

☐ Biological Interactions and Dynamics
☐ Geochemistry/Biogeochemistry and Subsurface Science
☐ Science of Interfacial Phenomena

☐ **RESEARCH CAMPAIGN** – Large-scale efforts that require significant expertise and resources from multiple institutions to address a specific topic or problem of interest to EMSL. Proposal type only available during the timeframe of the Call. Letters of Intent are solicited through the Call, and select authors will be invited to work with EMSL staff to develop a project plan to submit as a full proposal. Can be valid for multiple years and will be based on the selected proposal and project plan.

Is this proposal associated with a National Science Foundation Supplemental Funding Request? ☐ Yes ☐ No
http://www.nsf.gov/pubs/2004/nsf04025/nsf04025.htm

Will you desire the assistance of EMSL staff in obtaining and interpreting the results? ☐ Yes ☐ No

PNNL Staff Contact: _____

Resources

Determine all resources needed and estimate the time needed ***for each during the first year*** of the proposal. 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/capabilities/instrumentList.jsp).

ANALYTICAL / CHEMICAL

___ Analytical: Chromatograph, Gas/Mass Spec System 2005
___ Analytical: Chromatograph, Ion
___ Analytical: Chromatograph, Liquid
___ Analytical: Total Organic Carbon Analyzer (TOC)

BIOLOGICAL SYSTEMS CHARACTERIZATION

___ 5500XL SOLiD Sequencers
___ Flow Cytometer: Influx
___ Laser Capture Microdissection
___ Mammalian Cell Culture
___ Microbial Bioreactors

COMPUTING

___ Computing: Data File Storage (Aurora) (GB)
___ Computing: High Performance, Chinook (HP 2310-Node Linux Cluster)
___ Computing: SGI 16-processor Graphics Server (NWVisus)

DEPOSITION

Thin Film

___ Deposition: Hybrid Thin Film Deposition System
___ Deposition: Molecular Beam Epitaxy #1
___ Deposition: Oxygen Assisted Molecular Beam Epitaxy – *(avail. Feb. 2013)*
___ Deposition: Pulsed Laser Deposition System
___ Mass-Selected Ion Deposition System - Electrospray Source
___ Physical Property Management System (PPMS)

Other

___ Ion Accelerator, Beam Lines, and End Stations
___ Liquid-Beam Source

FLOW CELLS

___ SFTEL: Flow Cell
___ SFTEL: Hydraulic Property Apparati
___ SFTEL: Pore Scale Micromodels

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
___ Mass Spectrometer: Proton Transfer Reaction (PTRMS)
___ Mass Spectrometer: Single Particle (SPLAT II)
___ Mass-Selected Ion Deposition System – Electrospray Source

Imaging

___ Mass Spectrometer: MALDI-TOF

Ion Surface

___ Mass Spectrometer: FT-ICR, 6T (Ion Surface Collisions)
___ Mass Spectrometer: Inductively Coupled Plasma (ICP-MS)
___ Mass Spectrometer: Time of Flight Secondary Ion (ToF SIMS) - 1997
___ Mass Spectrometer: Time of Flight Secondary Ion (ToF SIMS) – 2007

Metallomics

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

Proteomics/Biological

___ 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

___ Microfabrication Laboratory (Clean Room)
___ Microfabrication: Deep Reactive Ion Etching System
___ Microfabrication: Mask Aligner
___ Microfabrication: Nanoimprinter

MICROSCOPY

Electron

___ Electron Microprobe
___ Electron Microscope: Dual FIB/SEM (FEI Helios)
___ Electron Microscope: Dual FIB/SEM, Environmental (FEI Quanta)
___ Electron Microscope: Dual FIB/SEM, Environmental for radiological samples (Quanta)
___ Electron Microscope: Photoemission (PEEM)
___ Electron Microscope: Transmission with EELS (for radiological samples) (JEOL 2010F)
___ Electron Microscope: Transmission, CRYO 2005
___ Electron Microscope: Transmission, Dynamic - *(avail. approx. Jan. 2014)*
___ Electron Microscope: Transmission, Environmental
___ Electron Microscope: Transmission, Liquid Helium, Cryo (JEOL) - *(avail. Mar. 2013)*
___ Electron Microscope: Transmission, Scanning

Fluorescence / Optical

___ Microscope: Confocal, Multi-Photon/FLIM Integrated
___ Microscope: Fluorescence, Confocal, Real-Time
___ Microscope: Fluorescence, Single-Molecule
___ Microscope: Fluorescence, Single-Molecule /Patch Clamp
___ Microscope: Fluorescence, Super Resolution STORM
___ Microscope: Fluorescence, Super Resolution Structured Illumination

Ion

___ Microscope: Helium Ion

Scanning Probes

___ Microscope: Scanning Probe, AFM Compound
___ Microscope: Scanning Probe, AFM, Bioscope, Radiological
___ Microscope: Scanning Probe, AFM, Geochemistry
___ Microscope: Scanning Probe, DI Nanoscope IIIa Multimode
___ Microscope: Scanning Probe, Dynamic Force
___ Microscope: Scanning Probe, Scattering IR SNOM
___ Microscope: Scanning Probe, STM/AFM, Low Temperature, UHV
___ Microscope: Scanning Probe, STM/AFM, PicoSPM
___ Microscope: Scanning Probe, Variable Temperature
___ Microscope: Scanning Probe, Variable Temperature UHV

NMR / EPR

EPR

___ EPR Spectrometer: High Field (W-band, 95 GHz)

___ EPR Spectrometer: Pulsed/CW (X-band, 9.5 GHz)

High-Resolution Liquids

___ NMR Spectrometer: 600-MHz NB Varian Inova - Cryoprobe (Liquids) - (Baker)

___ NMR Spectrometer: 600-MHz NB Varian NMR System - metabolomics cryoprobe (Liquids) - (Hood) – *(subscribed through Sept. 2013)*

___ NMR Spectrometer: 750 MHz (17.6 Tesla) WB Bruker (Liquids, Solids, Imaging) - (Bokan) – *(subscribed through Sept. 2013)*

___ NMR Spectrometer: 750-MHz (17.6 Tesla) NB Varian - (Rainier)

___ NMR Spectrometer: 800-MHz (18.8 Tesla) Varian Cryoprobe (Liquids) - (Denali)

___ NMR Spectrometer: 900-MHz (21.1 Tesla) Varian NMR System (Solids & Liquids) - (Everest) – *(subscribed through Sept. 2013)*

Imaging

___ NMR Spectrometer: 500-MHz WB Bruker (Imaging) - (Bastiat)

___ NMR Spectrometer: 750 MHz (17.6 Tesla) WB Bruker (Liquids, Solids, Imaging) - (Bokan) – *(subscribed through Sept. 2013)*

Solid-State

___ NMR Spectrometer: 300-MHz (7.05 Tesla) WB Varian NMR System (Solids) - (Mazama)

___ NMR Spectrometer: 500-MHz (11.7 Tesla) WB Agilent (Solids) - (Shasta)

___ NMR Spectrometer: 600-MHz NB Varian NMR System (Solids) - (Nittany) - *(Limited Time Available)*

___ NMR Spectrometer: 750 MHz (17.6 Tesla) WB Bruker (Liquids, Solids, Imaging) - (Bokan) – *(subscribed through Sept. 2013)*

___ NMR Spectrometer: 850-MHz (20 Tesla) WB Varian (Solids) - (Ellis) – *(subscribed through Sept. 2013)*

___ NMR Spectrometer: 900-MHz (21.1 Tesla) Varian NMR System (Solids & Liquids) - (Everest) – *(subscribed through Sept. 2013)*

SPECTROSCOPY / SPECTROMETRY

Electron

___ Catalysis: UHV Model Catalysts, High Pressure

___ Electron and Photon Stimulated Desorption (BES 2)

___ Electron Spectrometer: HREELS, UHV Surface Chemistry

___ Electron Spectrometer: Scanning Multiprobe Surface Analysis System - Versaprobe

___ Electron Spectrometer: Scanning XPS Microprobe, High Resolution (Quantera)

___ Electron Spectrometer: XPS Imaging

___ Electron Spectrometer: XPS with Laser Interface

___ Photoelectron Spectrometer: X-Ray, High Sensitivity (for radiological samples)

___ Photoelectron Spectroscopy: Low Temperature

Fluorescence

___ Spectrometer: Fluorescence, Cryogenic

___ Spectroscopy: Fluorescence, Time-resolved

___ Spectrometer: Fluorimeter

___ Spectrometer: Fluorescence, Picosecond

Ion/Molecular Beam

___ Ion Accelerator, Beam Lines, and End Stations

___ Molecular Beam Kinetics

___ Spectrometer: Atom Probe

___ Spectrometer: High Spatial Resolution Secondary Ion Mass Spectrometry (NanoSIMS)

Mössbauer

___ Spectrometer: Mössbauer

Optical

___ Spectrometer: Circular Dichroism

___ Spectrometer: Stopped-Flow, Absorbance, BioLOGIC SFM-400

___ Spectrometer: Sum Frequency/Second Harmonic Generation, Femto-Picosecond, High Resolution, Ultrafast Dynamics

___ Spectrometer: Sum Frequency/Second Harmonic Generation, Picosecond, Surface Spectroscopy

Vibrational

___ Atmospheric Pressure Reactor System

___ Energetic Processes (Surfaces/Solids) Instrumentation w/Lasers

___ Spectrometer: FTIR - standard

___ Spectrometer: Raman/Epifluorescence, Inverted Confocal

___ Transient Kinetic Analysis (TKA)

X-RAY DIFFRACTION AND TOMOGRAPHY

___ X-ray Computed Tomography

___ X-ray Diffraction: Four-Circle

___ X-ray Diffraction: General Purpose

___ X-ray Diffraction: Microbeam

___ X-ray Diffraction: Special Applications

PART 3. LOGISTICS

Funding Agencies:

DOE requires that we report on the subject discipline of all proposals. Select all funding agencies associated with your team's proposed research.

Department of Defense
DOE, Office of Advanced Scientific Computing Research
DOE, Office of Biological & Environmental Research
DOE, Office of Environmental Management
DOE, Office of Nonproliferation & National Security
DOE, Other: _____
Environmental Protection Agency
Foreign Government Agency
Industry, Foreign
LDRD, Other National Lab
LDRD, PNNL
National Aeronautics and Space Administration
National Institutes of Health
National Science Foundation
Nuclear Regulatory Commission
Other U.S. Government Agency: _____
University, Foreign
University, U.S.
Other (please specify): _____

Work Package #/Subcontract # *(required if proprietary or funding EMSL staff)*: _____

Materials & Equipment

Will your research involve the use of human blood, tissues, DNA, cells, cell lines, or human biological samples in any form? ☐ Yes ☐ No

Does your work involve the use of live animals? ☐ Yes ☐ No

Will you be bringing or sending any chemicals to the EMSL facility? ☐ Yes ☐ No

Does your experiment on EMSL resources involve samples? ☐ Yes ☐ No

Do any of your samples contain bound or unbound engineered nanoparticles? ☐ Yes ☐ No

Do any of your samples contain radioactive isotopes? ☐ Yes ☐ No

If bringing/sending samples, what are your plans? ☐ Ship ☐ Hand Carry ☐ Other, Specify_____

Will you need to perform sample preparation at EMSL? ☐ Yes ☐ No

At the end of the project, the samples should be ☐ Returned ☐ Disposed at EMSL ☐ Other, Specify_____

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. *Samples will not be accepted without a Sample Submission Form. In addition to EMSL regulations, users are responsible for adhering to all Department of Transportation regulations.*

User Equipment: If you intend to bring equipment to EMSL, including computers that will need to connect to the PNNL network, please list them here.

_____

_____

Comments: If you have any additional needs or comments regarding the proposal or the process, please enter them here:

_____

_____