CELL ISOLATION AND SYSTEMS ANALYSIS
Capability Lead: Galya Orr • galya.orr@pnnl.gov
Biological Atomic Force and Super Resolution Fluorescence Microscope
Confocal, FLIM & Multi-Photon Fluorescence Microscope
CyTOF - Mass Cytometer
Eukaryotic Cell Culture
Influx - Flow Cytometer Cell Sorter
Laser Capture Microdissection (LCM)
Live Cell Single Molecule Fluorescence Microscope
Scanning Probe AFM Compound Microscope
Sequencing, Next Generation, High Throughput - Ion S5
Sequencing, Next Generation, High Throughput - Ion Torrent Proton (transcriptomics)
Sequencing, Next Generation, High Throughput - NextSeq550
SIM - Super Resolution Fluorescence Microscope & Confocal Airyscan
Single-Molecule Fluorescence Microscope
STORM/PALM - Super Resolution Fluorescence Microscope

DEPOSITION AND MICROFABRICATION
Capability Lead: Mark Bowden • mark.bowden@pnnl.gov
Ice Nucleation Chamber
Microfluidics and Microfabrication
Molecular Beam Epitaxy, Multi-source
Pulsed Laser Deposition

MASS SPECTROMETRY
Capability Lead: Mary Lipton • mary.lipton@pnnl.gov
Laser Ablation Sampling System

Mass Spectrometers
- 21 Tesla Fourier-Transform Ion Cyclotron Resonance
- 12 Tesla Fourier-Transform Ion Cyclotron Resonance
- 15 Tesla Fourier-Transform Ion Cyclotron Resonance (MALDI)
- 7 Fourier-Transform Ion Cyclotron Resonance FTICR-SIMS
- Aerosol, Time-of-Flight, High Resolution
- GC MS: Metabolomics
- GC QExactive Metabolomics
- Inductively Coupled Plasma (ICP-MS) System, Metallomics
- Inductively Coupled Plasma (ICP-MS), High Resolution (Element XR)
- Inductively Coupled Plasma (ICP-MS), Multi-Collector (Neptune Plus)
- Inductively Coupled Plasma (ICP-MS), Ultra-High Resolution
- Ion Mobility Spectrometry, Time-of-Flight
- LC Triple Quadrupole
- Linear Ion Trap Quadrupole (LTQ) Orbitrap MS - for environmental research (nanoDESI)
- MALDI-TOF
- Proton Transfer Reaction (PTRMS)
- Single Particle (SPLAT II)
- Thermo Orbitrap Q - Exactive
- Thermo Orbitrap Fusion Lumos
- Time-of-Flight Secondary Ion (ToF SIMS) – 1997

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MICROSCOPY
Capability Lead: Scott Lea • scott.lea@pnnl.gov
Aberration Corrected TEM, Atomic Resolution Microscope with EELS (JEOL ARM)
CARS/SRS Confocal Microscope
Cell Free Expression Pipeline
Dynamic Force AFM (Asylum)
Dynamic TEM – (available approx. Oct. 2020)
Electron Microprobe
Environmental FIB/SEM (Quanta)
Environmental TEM
Geochemistry AFM (Icon)
Helios FIB/SEM
Helium Ion Microscope
Krios CryoTEM – (available to user community FY21)
Multimode AFM (Nanoscope)
Radiological FIB/SEM (Quanta)
Raman AFM
Scanning TEM
Scattering IR SNOM
X-ray Nanotomography System – (available to user community FY21)

MOLECULAR SCIENCE COMPUTING
Capability Lead: Lee Ann McCue • leeann.mccue@pnnl.gov
Cascade (1440 node Linux cluster)
Aurora (22 Petabyte data archive)

NMR AND EPR
Capability Lead: Nancy Washton • nancy.washton@pnnl.gov
300 MHz NMR Mazama (Solids)
400 MHz NMR Karloff (Solids)
500 MHz NMR Shasta (Solids)
600 MHz NMR Baker (Liquids)
600 MHz NMR Hood (Metabolomics)
600 MHz NMR Nittany (Solids) – (limited availability)
600 MHz NMR Tumalo (Solids) – (limited availability)
750 MHz NMR Bokan (Metabolomics)
750 MHz NMR Rainier (Liquids)
800 MHz NMR (Metabolomics) – (available Aug. 2020)
800 MHz DNP (solids) – (limited availability Aug. 2020)
850 MHz NMR Ellis (Solids)
Pulsed/CW X-Band (9.5 GHz) EPR

PLANT, SOIL & SUBSURFACE FLOW AND TRANSPORT
Capability Lead: Mark Bowden • mark.bowden@pnnl.gov
C, H, N, S Analyzer
Intermediate Flow Cells
Molecular Ecology Laboratory
Plant Sciences Laboratory
Pore Scale Micromodels
Soil Incubation Laboratory

SPECTROSCOPY AND DIFFRACTION
Capability Lead: Mark Bowden • mark.bowden@pnnl.gov
Atom Probe Tomography
Fluorescence Spectrometer, Cryogenic Time-Resolved
Fluorescence Spectrometer, Time-Correlated Single Photon Counting
Fluorimeter
FTIR Microscope
High Resolution Microprobe XPS
High Resolution, Ultrafast SFG Vibrational Spectroscopy
ICP-MS (Quadrupole)
Inverted Confocal Raman Spectrometer
Ion Chromatograph
Microbeam XRD
Mossbauer Spectrometer
Multipurpose XRD
NanoSIMS
Powder XRD
Radiological Powder XRD
Radiological XPS
Stopped-Flow Absorbance/Fluorescence Spectrometer
Sum Frequency Generation for Surface Vibrational Spectroscopy
Time-of-Flight SIMS
X-ray Computed Tomography