Integrated chemical imaging of biogeochemical processes and interfaces: molecular to ecosystem scale

Pacific Northwest National Laboratory, Environmental Molecular Sciences Laboratory

August 12 – 13, 2024

Zoom link - https://pnnl.zoomgov.com/meeting/register/vJItd-6grDMqHcXTAnMV-UH9lQoFIr0vdHY

WORKSHOP AGENDA

Monday, August 12			
Time	**Topic**	**Location**	**Presenter**
7:30 a.m. – 8:00 a.m.	**Badging** Required for all visiting attendees	**Pacific Northwest National Laboratory Badging Office** 650 Horn Rapid Rd, Richland, Wa 99354	
8:00 a.m. – 8:30 a.m.	**Check-in and Networking** Refreshments will be provided	**Environmental Molecular Sciences Laboratory (EMSL)** 3335 innovation Bldg, Richland, WA 99354	
8:30 a.m. – 8:35 a.m.	**Opening remarks**	**EMSL Auditorium**	**Arunima Bhattachrjee** PNNL **Tamas Varga** PNNL
8:35 a.m. – 9:00 a.m.	**Challenges and Vision for Integrated Chemical Imaging**	**EMSL Auditorium**	**Tama Varga** PNNL

9:00 a.m. – 9:30 a.m.	**Investigating the Molecular Processes Controlling Potassium Translocation by Fungi**	**EMSL Auditorium**	**Jocelyn Richardson** SLAC; Stanford University
9:30 a.m. – 10:00 a.m.	**Synchrotron Hard X-ray Techniques for Mul8scale Imaging of Biological and Environmental Systems**	**EMSL Auditorium**	**Zou Finfrock** APS; ANL
10:00 a.m. – 10:15 a.m.	**Morning break and Networking** Refreshments will be provided	**EMSL Lobby**	
10:15 a.m. – 10:45 a.m.	**Angstroms to acres: scaling insights from nanoscale chemical imaging to soil ecosystem processes**	**EMSL Auditorium**	**Angela Possinger** Virginia Tech
10:45 a.m. – 11:05 a.m.	**Multimodal 2D and 3D Geochemical and Physical Characterization of Soil Structures**	**EMSL Auditorium**	**Odeta Qafoku** PNNL
11:05 a.m. – 11:25 a.m.	**Matrix-assisted laser desorption/ionization (MALDI) mass spectrometry (MS) imaging for spatial metabolomics in environmental research**	**EMSL Auditorium**	**Dusan Velickovic** PNNL
11:25 a.m. – 11:45 a.m.	**Multimodal chemical imaging of atmospheric particles**	**EMSL Auditorium**	**Swarup China** PNNL
11:45 a.m. – 1:15 p.m.	**Discussion of integration of imaging modalities** Working lunch	**EMSL 1075 - 1077**	**All**
1:15 p.m. – 1:45 p.m.	**Combining synchrotron X-ray fluorescence imaging with conventional microscopies to obtain multi-modal dataset for the Earth Sciences**	**EMSL Auditorium**	**Sam Webb** SLAC

1:45 p.m. – 2:05 p.m.	**Covered Affairs: Multimodal Predictions with Confidence**	**EMSL Auditorium**	**Peter Zwart** LBNL
2:05 p.m. – 2:25 p.m.	**SoilTwin: AI-enabled model-data-experiment workflow for upscaling soil datasets for PFLOTRAN**	**EMSL Auditorium**	**Maruti Mudunuru** PNNL
2:25 p.m. – 2:45 p.m.	**Integrating multimodal imaging to enable chemically informed segmentation of x-ray computed tomography data.**	**EMSL Auditorium**	**Devin Rippner** USDA-ARS
2:45 p.m. – 3:00 p.m.	**Afternoon Break and Networking** Refreshments will be provided	**EMSL Lobby**	
3:00 p.m. – 4:00 p.m.	**Round table discussion of challenges and future directions**	**EMSL Auditorium**	**All**
4:00 p.m. – 4:30 p.m.	**Day Recap and Closeout Remarks**	**EMSL Auditorium**	**Arunima Bhattachrjee** PNNL **Tamas Varga** PNNL

Tuesday, August 13			
Time	**Topic**	**Location**	**Presenter**
8:30 a.m. – 8:40 a.m.	**Opening remarks**	**EMSL Auditorium**	**Arunima Bhattachrjee** PNNL **Tamas Varga** PNNL

8:40 a.m. – 10:30 a.m.	**Hands-on demonstration and tutorial for data analysis of multi-modal datasets with the MicroAnalysis Toolkit**	**EMSL Auditorium**	**Sam Webb** SLAC
10:30 a.m. – 10:45 a.m.	**Morning Break and Networking**	**EMSL Lobby**	
10:45 a.m. – 11:15 a.m.	**Deciphering plant-soil interactions driving biological invasion through multiplatform metabolomics**	**EMSL Auditorium**	**Malak Tfaily** University of Arizona
11:15 a.m. – 11:35 a.m.	**Future of Data Integration at EMSL**	**EMSL Auditorium**	**Satish Karra** PNNL **Kelly Stratton** PNNL
11:35 a.m. – 12:00 p.m.	**A Visual Omics platform for measuring biomolecular processes across scales**	**EMSL Auditorium**	**Chris Anderton** PNNL
12:00 p.m. – 12:30 p.m.	**Closing Remarks**	**EMAL Auditorium**	**Arunima Bhattachrjee** PNNL **Tamas Varga** PNNL

Planning committee

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In Case of Emergency Dial (509)375-2400