

## 8<sup>TH</sup> SYNCHROTRON ENVIRONMENTAL SCIENCE SYMPOSIUM (SES-2025) PROGRAM

### MONDAY, SEPTEMBER 29

8:30 AM – 9:00 AM

#### Registration and Coffee

9:00 AM – 9:15 AM

#### Welcome and Announcements

9:15 AM – 12:00 PM

### MONDAY MORNING SESSION: SES-2025

**Convener:** Ryan Tappero (BNL)

9:15 AM      [Shining Light on Soil Health: Soft X-ray Spectroscopic Studies of Soils](#)

**Keynote Speaker:** Prof. Derek Peak (U. Saskatchewan)

10:00 AM      [How X-ray Absorption Spectroscopy Has Illuminated Widescale Halogenation of Natural Organic Matter](#)

**Speaker:** Alessandra Leri (Marymount Manhattan College)

#### Morning Coffee Break (10:20 AM – 10:40 AM)

10:40 AM      [The Formation, Loss, and Speciation of Reduced Organic Sulfur](#)

**Speaker:** Brett Poulin (UC Davis)

11:00 AM      [Elucidating Biogeochemical Mechanisms for Woody Biomass Decomposition in Aquatic Environments with Multi-Modal Synchrotron Techniques](#)

**Speaker:** Matthew Reid (Cornell U.)

11:20 AM      [Using X-ray computed tomography to examine the recovery in soil aggregate pore structure during prairie restoration](#)

**Speaker:** James O'Sullivan (ANL)

11:40 AM      [Carbon Mineralization of Sulfate Wastes Containing Pb: Synchrotron Pb M3-Edge XANES Analysis of Simultaneous Heavy Metal and Carbon Sequestration](#)

**Speaker:** Jun Hu (Princeton U.)

**Lunch Break** (12:00 PM – 1:20 PM)

1:20 PM – 4:20 PM

**MONDAY AFTERNOON SESSION: SES-2025**

**Conveners:** Ajith Pattammattell (BNL) and Ryan Tappero (BNL)

1:20 PM      [ALS \(Advanced Light Source\)](#)

**Speaker:** David Shapiro (LBNL)

1:40 PM      [SSRL \(Stanford Synchrotron Light Source\)](#)

**Speaker:** Sam Webb (SLAC)

2:00 PM      [Pb<sup>2+</sup> Sorption at the Barite \(001\)–Water Interface under Hydrothermal Conditions](#)

**Speaker:** Peng Yang (BNL)

2:20 PM      [Advances in Tender-Energy Microspectroscopy for Synchrotron Environmental Science](#)

**Speaker:** Paul Northrup (Stony Brook University)

**Afternoon Coffee Break** (2:40 PM – 3:00 PM)

3:00 PM      [Exploring phosphorus and sulfur speciation in Martian and lunar regolith simulants via synchrotron-based microspectroscopy](#)

**Speaker:** India Reddell (Texas A&M)

3:20 PM      [Wildland fire ash chemistry and the effects on post-fire nutrient cycling](#)

**Speaker:** Rixiang Huang (U. New York Albany)

3:40 PM      [Redox and Phase Transformations of Metal\(loid\)s in Wildland Urban Inter-face Fir Ash and Heated Soils](#)

**Speaker:** Mohammed Baalousha (U. South Carolina)

4:00 PM      [Novel imaging reveals nanoparticulate hydrothermal iron is available for ex-port to iron-poor open ocean waters](#)

**Speaker:** Sarick Matzen (U. Illinois Chicago)

4:20 PM – 6:20 PM

**POSTER AND VENDOR SESSION RECEPTION: SES-2025**

**Sponsor:** Quantum Detectors

**TUESDAY, SEPTEMBER 30**

8:30 AM – 9:00 AM

**Registration and Coffee**

9:00 AM – 9:15 AM

**Welcome and Announcements**

9:15 AM – 12:00 PM

## **TUESDAY MORNING SESSION: SES-2025**

**Conveners:** Ken Kemner (ANL) and Ryan Tappero (BNL)

9:15 AM      [The lab-field discrepancy in weathering rates: why we need to study the critical zone](#)

**Keynote Speaker:** Prof. Susan Brantley (Penn State U.)

10:00 AM      [Waste mining: Challenges and opportunities for rare earth element recovery](#)

**Speaker:** Yuanzhi Tang (Georgia Institute of Technology)

### **Morning Coffee Break** (10:20 AM – 10:40 AM)

10:40 AM      [Geochemical Redox Fractionation of Rare Earth Elements in Acid Mine Drainage Treatment Solids: Implications for Recovery](#)

**Speaker:** Colleen Hoffman (NETL)

11:00 AM      [XAS studies of the transformation of soil minerals in estuarine wetlands](#)

**Speaker:** Evert 'Eef' Elzinga (Rutgers U.)

11:20 AM      [Laboratory for Observing \(An\)oxic Microsites in Soils \(LOAMS\)](#)

**Speaker:** Vincent Noel (SLAC)

11:40 AM      [Nutrient accumulation and cycling in wetlands impacted by animal agriculture in the Southern High Plains of the US](#)

**Speaker:** Matthew Siebecker (Texas Tech U.)

**Group Photo** (12:00 PM – 12:20 PM)

**Lunch Break** (12:20 PM – 1:20 PM)

1:20 PM – 4:40 PM

**TUESDAY AFTERNOON SESSION: SES-2025**

**Conveners:** Juergen Theime (U. Goettingen) and Ryan Tappero (BNL)

1:20 PM      [CAMD \(Center for Advanced Microstructures and Devices\)](#)

**Speaker:** Amitava Roy (Louisiana State U.)

1:40 PM      [NSLS-II \(Stanford Synchrotron Light Source\)](#)

**Speaker:** Ryan Tappero (BNL)

2:00 PM      [Sulfur and phosphorus interactions with iron in a coastal freshwater marsh](#)

**Speaker:** Elizabeth Herndon (ORNL)

2:20 PM      [Molecular controls on nutrient and carbon fluxes in coastal soils and sediments](#)

**Speaker:** Christian Dewey (U. of Delaware)

**Afternoon Coffee Break** (2:40 PM – 3:00 PM)

3:00 PM      [Multi-modal, micro-spectroscopic speciation of legacy phosphorus in two U.S. mid-Atlantic agricultural soils](#)

**Speaker:** Kathryn Szerlag (Texas A&M)

3:20 PM      [Salinity influences arsenic speciation and mobility in coastal soils impacted by saltwater flooding and intrusion](#)

**Speaker:** Layla Izadi (U. Texas Dallas)

3:40 PM [Impact of Fungal Manganese Oxides on Zinc Mobility](#)

**Speaker:** Wei Ren (Oklahoma State U.)

4:00 PM [Identifying Redox Reaction Zones in Shale Using Multi-Energy Micro-XRF and XANES Linear Combination Fitting](#)

**Speaker:** Qingyun Li (Stony Brook University)

4:20 PM [Using Synchrotron Microscopy and Spectroscopy to Examine the Effect of Environmental Systems Conditions on Plastic Degradation Pathway](#)

**Speaker:** Lauren Pincus (George Washington U.)

4:40 PM – 5:40 PM

**POSTER AND VENDOR SESSION: SES-2025**

Wang Center (1 hr)

5:40 PM Find ride to Old Field Club

6:00 PM – 10:00 PM

**BANQUET AT OLD FIELD CLUB: SES-2025**

6:00 PM [Vendor Reception](#)

**Sponsor:** Hitachi High-Tech

7:00 PM [SES-2025 Banquet](#)

**Sponsors:** Sigray Inc. and Stony Brook University

**WEDNESDAY, OCTOBER 1**

8:30 AM – 9:00 AM

**Registration and Coffee**

9:00 AM – 9:15 AM

**Welcome and Announcements**

9:15 AM – 12:00 PM

**WEDNESDAY MORNING SESSION: SES-2025**

**Conveners:** Roberto Colina Ruiz (U. of Chicago) and Ryan Tappero (BNL)

9:15 AM      [Synchrotron Environmental Science: Perspective from the Canadian Light Source](#)

**Keynote Speaker:** Prof. Ingrid Pickering (CLS)

10:00 AM      [Combining synchrotron spectromicroscopy with NanoSIMS to reveal the formation of soil organo-mineral associations](#)

**Speaker:** Itamar Shabtai (CT Agricultural Experiment Station)

**Morning Coffee Break** (10:20 AM – 10:40 AM)

10:40 AM      [Trace-Level Nanoscale Chemical Mapping in Complex Environmental Matrices](#)

**Speaker:** Ajith Pattammattel (BNL)

11:00 AM      [A ptychographic spectromicroscopy workflow for marine nanoparticles](#)

**Speaker:** Brandy Toner (U. Minnesota- Twin Cities)

11:20 AM      [Organic Colloid Composition in Variable-Redox Porewaters](#)

**Speaker:** Brandy Stewart (SLAC)

11:40 AM      [Soft X-Ray Spectromicroscopy of P-O-Fe Bonds in Mineral-Organic Associations](#)

**Speaker:** Juergen Thieme (U. Goettingen)

**Lunch Break** (12:00 PM – 1:20 PM)

1:20 PM – 4:20 PM

**WEDNESDAY AFTERNOON SESSION: SES-2025**

**Conveners:** Tiffany Victor (BNL) and Ryan Tappero (BNL)

1:20 PM      [CLS \(Canadian Light Source\)](#)

**Speaker:** Ingrid Pickering (U. Saskatchewan)

1:40 PM      [APS \(Advanced Photon Source\)](#)

**Speaker:** Ken Kemner (ANL)

2:00 PM      [XLEAP: a microfocus beamline under construction at the Cornell High Energy Synchrotron Source \(CHESS\)](#)

**Speaker:** Louisa Smieska (Cornell U.)

2:20 PM      [New Research Opportunities for Environmental Scientists at GSECARS post APS Upgrade](#)

**Speaker:** Antonio Lanzirotti (U. of Chicago)

**Afternoon Coffee Break** (2:40 PM – 3:00 PM)

3:00 PM      [Elucidating Novel Mechanisms Contributing to Excessive Potassium Fixation in Soils via \(Synchrotron\) X-ray Techniques](#)

**Speaker:** Akriti Sharma (Stephen F. Austin State U.)



3:20 PM      [Molecular Clues for Regional Risk: Contaminant Speciation from the Shrinking Terminal Great Salt Lake](#)

**Speaker:** Joshua LeMonte (Brigham Young U.)

3:40 PM      [Speciation of Mercury on Carbon-Based Sorbents and Iron-Bearing Swelling Clays under Reduced Conditions using HERFD-XANES](#)

**Speaker:** Danielle Jones (UC Merced)

4:00 PM      [Understanding the Toxicity of Mercury, the Most Toxic Non-Radioactive Heavy Element, using X-ray Absorption Spectroscopy](#)

**Speaker:** Graham George (U. Saskatchewan)

4:20 PM – 6:30 PM

**TOUR OF NSLS-II BEAMLINES: SES-2025**

4:30 PM      Bus to Brookhaven National Laboratory (BNL)

\*BE SURE TO CHECK OUT THE POSTERS AND COLLECTION OF ABSTRACTS LINKED TO THE “SPEAKERS, TALKS & POSTERS” TAB