AGENDA

LEAF25

October 21-23, 2024

Brookhaven National Laboratory

Chemistry Division (Building 555)

Workshop Sponsors:

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DRS DAYLIGHT SOLUTIONS

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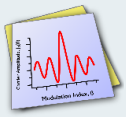

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Brookhaven National Laboratory

managed by Brookhaven Science Associates for the U.S. Department of Energy

All times in EDT time zone (UTC/GMT –4 hours)

Monday, October 21, 2024 (Tutorial Day)

6:00 am Breakfast service begins at *Home2 Suites*

7:45 am Shuttle 1 pickup from *Home2 Suites* (***non-US citizens – for badging***)

8:15 am Shuttle 2 pickup from *Home2 Suites to Bldg. 555 (US citizens)*

8:30 am Badging for non-US citizens in Bldg. 400. Walk to Chemistry Division (Bldg. 555)

9:00 am **John Gordon (Chemistry Division Chair, BNL)**
Welcoming Remarks

9:05 am **Matthew Bird (Brookhaven National Laboratory)**
Workshop Overview

Fundamentals of Pulse Radiolysis (Chair: Matthew Bird)

9:20 am **John Miller (Brookhaven National Laboratory)**
Looking Inside the Inverted Region by Pulse Radiolysis: A History

9:50 am **James Wishart (Brookhaven National Laboratory)**
Fundamentals of Pulse Radiolysis

10:20 am **David Grills (Brookhaven National Laboratory)**
Instrumentation for Pulse Radiolysis

10:50 am **BREAK (15 minutes)**

Modern Applications of Pulse Radiolysis (Chair: Lakshmy Kannadi Valloli)

11:05 am **Cody Carr (Brookhaven National Laboratory)**
Probing Mechanisms of CO_2 Reduction Catalysis with Pulse Radiolysis

11:20 am **Rupali Deokar (Brookhaven National Laboratory)**
Ultrafast Hole Capture Relevant to Used Nuclear Fuel (UNF)

11:35 am **Michele Myong (Brookhaven National Laboratory)**
Beyond Electrochemistry: Understanding Redox Potentials with Pulse Radiolysis

11:50 am **Aliaksandra Lisouskaya (University of Notre Dame)**
Some Advances in Electron Pulse Radiolysis Applications at the Notre Dame Radiation Laboratory Over the Past Decade

12:20 pm **LUNCH (1 hour 10 minutes)**

Modern Applications of Pulse Radiolysis (*cont.*) (Chair: Matthew Emerson)

1:30 pm **Mehran Mostafavi (Université Paris Saclay/CNRS)**
Contribution of Pulse Radiolysis on the Mechanism of CO_2 Reduction on the Surface of the Nanoparticles in Aqueous Solutions (virtual)

2:00 pm **Gregory Holmbeck (Idaho National Laboratory)**
Backend Nuclear Fuel Cycle Radiation Chemistry (virtual)

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2:30 pm **Tomasz Szreder (Łódź University of Technology)**
Pulse Radiolysis in Poland. Current Stage of Development and Selected Applications (virtual)

3:00 pm **BREAK (15 minutes)**

Pulse Radiolysis Collaborations at BNL (Chair: Rupali Deokar)

3:15 pm **Jacy Conrad (Idaho National Laboratory)**
Time-Resolved Pulsed Electron Radiolysis of Dodecane

3:35 pm **Tomoyasu Mani (University of Connecticut)**
Probing Electron Behaviors: From Vibrations to Spins

3:55 pm **Kazuhiro Iwamatsu (CUNY Hunter College)**
Application of Pulse Radiolysis to Molten Salt Chemistry

4:15 pm **BREAK (15 minutes)**

4:30 pm **Stephen Mezyk (California State University Long Beach)**
Understanding the Chemistry of Wastewater Recycling by Using Radiation Chemistry

4:50 pm **Dmitry Polyansky (Brookhaven National Laboratory)**
Application of Pulse Radiolysis to the Investigation of Catalytic Intermediates of CO_2 Reduction

5:10 pm **Lakshmy Kannadi Valloli (Brookhaven National Laboratory)**
Exploring Transition Metal-Based Photocatalysis using Pulse Radiolysis – BioLEC EFRC

5:30 pm Shuttle departs BNL for Home2 Suites

6:00 pm Dinner on your own

Tuesday, October 22, 2024 (Science Themes)

6:00 am Breakfast service begins at *Home2 Suites*

7:00 am Shuttle 1 pickup from *Home2 Suites* (any attendee)

7:30 am Shuttle 2 pickup from *Home2 Suites* (any attendee)

Mechanisms of Molecular Conversion (Chair: Cody Carr)

8:00 am **Patrick Holland (Yale University)**
C–N Bond Formation from Dinitrogen (virtual)

8:30 am **Claudia Turro (The Ohio State University)**
Photocatalytic H_2 Evolution in Rh_2(II,II) Complexes with Red Light: Ligand-Centered Activity Localized on a bncn Ligand (virtual)

9:00 am **James Mayer (Yale University)**
Redox Reactions at Colloidal Nanoparticles: Protons Come with Electrons (virtual)

9:30 am **Hannah Sayre (Northeastern University)**
Photoredox Catalysis and Light-Powered Chemistry

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10:00 am **BREAK (15 mins)**

Carbon Cycle (Chair: Andressa Müller)

10:15 am **Olaya Bernardo González (University of British Columbia)**
Photo- and Electrocatalytic Approaches to Lignin Valorization (virtual)

10:45 am **Smaranda Marinescu (University of Southern California)**
Biologically Inspired Catalytic Systems for Solar-to-Fuel Technologies (virtual)

11:15 am **Suong Nguyen (Massachusetts Institute of Technology)**
Chemical Strategies for Polymer Recycling Enabled by Reaction Development and Molecular Design (virtual)

11:45 am **Jenny Yang (University of California, Irvine)**
CO_2 Capture, Concentration, and Conversion (virtual)

12:15 pm **LUNCH (1 hour 15 minutes)**

1:30 pm **Tour of LEAF, Poster Session and Discussions (1 hour 30 minutes)**

Energy Materials (Chair: Michele Myong)

3:00 pm **Amanda Morris (Virginia Tech)**
Metal-Organic Frameworks in Artificial Photosynthetic Processes (virtual)

3:30 pm **Matthew Sfeir (CUNY Graduate Center)**
Macromolecular and Nanophotonic Platforms for Photochemistry

4:00 pm **Elena Galoppini (Rutgers University - Newark)**
Functionalization of Nanostructured Semiconductor Surfaces with Chromophores: New Approaches using Linker Design (virtual)

4:30 pm **John Asbury (Pennsylvania State University)**
Reversible Photoinduced Ligand Detachment from CdSe Quantum Dots

5:00 pm Shuttle departs BNL for *Home2 Suites*

5:30 pm Dinner on your own

Wednesday, October 23, 2024 (Future Themes)

6:00 am Breakfast service begins at *Home2 Suites*

7:00 am Shuttle 1 pick-up from *Home2 Suites* (any attendee)

7:30 am Shuttle 2 pick-up from *Home2 Suites* (any attendee)

Emerging Applications (Chair: Catherine Huber)

8:00 am **Richard Monsky (Northwestern University)**
Low-Temperature Mineralization of Per- and Polyfluoroalkyl Substances

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8:30 am **James McKone (University of Pittsburgh)**
Linking Physical Properties with Practical Performance in Redox Flow Batteries (virtual)

9:00 am **Claudia Avalos (New York University)**
Spin Polarization and Quantum Sensing with Chromophore Radical Systems (virtual)

9:30 am **Christopher Arumainayagam (Wellesley College)**
The Role of Low-Energy (< 20 eV) Electrons in Astrochemistry

10:00 am **BREAK (15 minutes)**

Related Techniques Involving Radiation Chemistry & Collaboration Opportunities (Chair: Patricia Huestis)

10:15 am **Linda Young (Argonne National Laboratory)**
Attosecond Pump/Probe Studies at X-Ray Free-Electron Lasers: A New Window on Radiolysis (virtual)

10:45 am **Charlie Cooper (Fermilab)**
Electron Beam Development at Fermilab (virtual)

11:00 am **Slavica Grdanovska (Fermilab)**
Electron Beam Applications at Fermilab (virtual)

11:15 am **Frances Houle (Lawrence Berkeley National Laboratory)**
Pattern Formation in Photoresists Using 92 eV Photons: The Challenge of Controlling Chemistry Induced by Secondary Electrons (virtual)

11:45 am **Danil Dobrynin (Drexel University)**
Non-Thermal Plasmas for Biomedicine and Material Synthesis

12:15 pm **Aleida Perez (Brookhaven National Laboratory)**
Workforce Development Opportunities at Brookhaven Lab

12:30 pm **Andrew Cook (Brookhaven National Laboratory)**
Closing Remarks

12:40 pm **LUNCH (Boxes to eat at BNL, or to go)**

1:00 pm Shuttle begins roundtrips from BNL to *Home2 Suites*