

# LTP Centers and User Facilities 2021 Annual Meeting

**Zoom password: LTP2021**

| Thursday, September 23, 2021   |                   |                         |   |                  |
|--|-------------------|-------------------------|---|------------------|
|  | Time<br>(Eastern) | Speaker                 | Title   | Mode             |
| <b>8:00 – 10:00 am</b> <i><b>Oral Session I: PICI</b></i> (White Oak room)<br><i>Moderator: Jingkai Jiang</i>      |                   |                         |   | <b>In person</b> |
| 1  | 8:00 –<br>8:20    | Mark Kushner            | Introduction to the LTP Centers and Facilities Annual Meeting 2021  | In person        |
| 2  | 8:20 –<br>8:40    | Bryan Goldsmith         | Atomistic Modeling of Plasma-Assisted Catalysis: Opportunities and Challenges   | In person        |
| 3  | 8:40 –<br>9:00    | Aditya Bhan             | Interactions of Atmospheric Plasmas with Catalytic Surfaces   | In person        |
| 4  | 9:00 –<br>9:20    | Gottlieb Oehrlein       | DRIFTS and Gas Phase FTIR Characterization of Plasma-enhanced Catalysis   | In person        |
| 5  | 9:20 –<br>9:40    | Selma Mededovic-Thagard | Treatment of Aqueous Pollutants in Gas-liquid Plasma Reactors: Identification of the Key Parameters Controlling the Removal | In person        |
| 6  | 9:40 –<br>10:00   | Igor Adamovich          | N <sub>2</sub> Vibrational Excitation in Atmospheric Pressure Ns Pulse and RF Plasma Jets                                   | In person        |
| <b>10:00 – 10:20 am</b> <b>Break</b>   |                   |                         |   |                  |
| <b>10:20 am – 12:20 pm</b> <i><b>Oral Session II: PCRF</b></i> (White Oak room)<br><i>Moderator: Hongtao Zhong</i> |                   |                         |   | <b>Hybrid</b>    |
| 1  | 10:20 –<br>10:40  | Yevgeny Raitses         | Development of Plasma Sources and Diagnostics at PCRF   | Remote           |
| 2  | 10:40 –<br>11:00  | Arthur Dogariu          | Advanced Optical Diagnostics for Low Temperature Plasmas; Neutral Density Mapping and Dynamics in RF-Heated PFRC Plasma     | In person        |
| 3  | 11:00 –<br>11:20  | Sophia Gershman         | Plasma Diagnostics of Mesoporous Silica Packed Bed Reactors for Ammonia Synthesis   | Remote           |
| 4  | 11:20 –<br>11:40  | Igor Kaganovich         | PPPL Modeling Tools for Low Temperature Plasmas Available through the Princeton Collaborative Research Facility             | Remote           |
| 5  | 11:40 –<br>12:00  | Mikhail Shneider        | Coherent Thomson Scattering   | In person        |
| 6  | 12:00 –<br>12:20  | Shurik Yatom            | Characterization of Plasma in RF Jet Interacting with Water: Thomson Scattering versus Spectral Line Broadening             | Remote           |
| <b>12:20 – 1:50 pm</b> <b>Lunch</b>  |                   |                         |   |                  |
| <b>1:50 – 2:40 pm</b> <i><b>Poster Session I: PICI</b></i> (Brookside room)  |                   |                         |   | <b>In person</b> |
| <b>2:40 – 3:30 pm</b> <i><b>Poster Session II: PICI/PACC/SPRF</b></i> (Brookside)                                  |                   |                         |   | <b>In person</b> |
| <b>3:30 – 3:50 pm</b> <b>Break</b>   |                   |                         |   |                  |

| <b>Thursday, September 23, 2021 (continued)</b>   |                           |                     |  |               |
|---|---------------------------|---------------------|--|---------------|
|   | <b>Time<br/>(Eastern)</b> | <b>Speaker</b>      | <b>Title</b>   | <b>Mode</b>   |
| <b>3:50 – 5:30 pm</b> <i><b>Oral Session III: SPRF</b> (White Oak room)</i><br><i>Moderator: Joshua Morsell</i> |                           |                     |  | <b>Remote</b> |
| 1   | 3:50 – 4:10               | Shane Sickafoose    | Sandia National Laboratories Plasma Research Facility  | Remote        |
| 2   | 4:10 – 4:30               | Jonathan Frank      | Imaging of Methyl Radical in Plasmas by Photofragmentation Laser-Induced Fluorescence                            | Remote        |
| 3   | 4:30 – 4:50               | Matthew Hopkins     | Advanced Modeling Capabilities for Low-Temperature Plasma Simulation   | Remote        |
| 4   | 4:50 – 5:10               | Christopher Kliewer | Development of Hybrid Coherent Raman Imaging and E-FISH Approaches for Low Temperature Plasma Assisted Chemistry | Remote        |
| 5   | 5:10 – 5:30               | Amanda Lietz        | Simulations of Nonequilibrium Thermionic Cs Plasmas  | Remote        |
| <b>5:30 – 7:00 pm</b> <i><b>Dinner</b></i>  |                           |                     |  |               |
| <b>7:00 – 8:00 pm</b> <i><b>Poster Session III: PCRF/ SPRF/PACC</b></i>   |                           |                     |  | <b>Remote</b> |

| <b>Friday, September 24, 2021</b>  |                           |                 |   |                  |
|--|---------------------------|-----------------|---|------------------|
|  | <b>Time<br/>(Eastern)</b> | <b>Speaker</b>  | <b>Title</b>  | <b>Mode</b>      |
| <b>9:00 – 10:00 am</b> <i><b>Oral Session IV: PACC</b> (White Oak room)</i><br><i>Moderator: Brian Bayer</i>     |                           |                 |   | <b>Hybrid</b>    |
| 1  | 9:00 – 9:20               | Igor Adamovich  | Ns Pulse and Hybrid Plasmas for Plasma Assisted Ignition and Catalysis                        | In person        |
| 2  | 9:20 – 9:40               | Yiguang Ju      | Studies of Non-equilibrium Plasma Chemistry and Thermal-Chemical Instability                  | In person        |
| 3  | 9:40 – 10:00              | Bruce Koel      | Ammonia Synthesis and Decomposition in Plasma-assisted Catalysis                              | Remote           |
| <b>10:00 – 10:20 am</b> <i><b>Break</b></i>  |                           |                 |   |                  |
| <b>10:20 – 11:40 am</b> <i><b>Oral Session V: PICI</b> (White Oak room)</i><br><i>Moderator: Mackenzie Meyer</i> |                           |                 |   | <b>In Person</b> |
| 1  | 10:20 – 10:40             | Ali Mesbah      | Machine Learning and Artificial Intelligence for Low-temperature Plasmas: A Tutorial Overview | In person        |
| 2  | 10:40 – 11:00             | Steven Shannon  | Accurate Reproducible Power delivery across Multiple Plasma Sources                           | In person        |
| 3  | 11:00 – 11:20             | Peter Bruggeman | Plasma-Surface Interactions: Boundary Layer Effects and Self-organization                     | In person        |
| 4  | 11:20 – 11:40             | Mark Kushner    | Plasma Interactions with non-Planar, Wet and Reactive Surfaces                                | In person        |
| <b>11:40 am – 12:40 pm</b> <i><b>Discussion: All</b> (White Oak room)</i>  |                           |                 |   | <b>Hybrid</b>    |

*Poster Session I. Thursday, September 23, 1:50 – 2:40 pm*

|    | <b>Presenter</b>         | <b>Title</b>  | <b>Mode</b> |
|----|--------------------------|---|-------------|
| 1  | Joshua Morsell           | <u>Open Channel Microfluidic Substrate for Investigation of Multi-phase Surface Interactions with Atmospheric Pressure Plasmas</u>  | In person   |
| 2  | Brian Bayer              | <u>Design and Operation of an Experimental Setup Used to Study Plasma Catalysis</u>   | In person   |
| 3  | Francis Doherty          | <u>The Influence of Plasma-Induced Surface Charging on Single-Atom Catalysis for CO<sub>2</sub> Reduction</u>   | In person   |
| 4  | Michael Hinshelwood      | <u>DRIFTS and Gas Phase FTIR Characterization of Plasma-enhanced Catalysis for NO<sub>x</sub> Production</u>  | In person   |
| 5  | Osakpolo Faith Isowamwen | <u>Efficient Defluorination of Perfluorobutane Sulfonate (PFBS) by Plasma with the Aid of a Surfactant</u>  | In person   |
| 6  | Jingkai Jiang            | <u>Control of Reactive Species Fluxes to Substrate and Absolute Density Measurement of Ions and Vibrationally Excited N<sub>2</sub> by Molecular Beam Mass Spectrometry</u> | In person   |
| 7  | Kseniia Konina           | <u>Surface Ionization Wave Interactions with Dielectric Porous Surfaces</u>   | In person   |
| 8  | Yudong Li                | <u>Study of Plasma-catalytic Oxidation of Methane: Role of Atomic Oxygen and Surface Species</u>  | In person   |
| 9  | Mackenzie Meyer          | <u>Sheath Dynamics around a Water Droplet in an Atmospheric Pressure Glow Discharge</u>   | In person   |
| 10 | Victor Miller            | <u>Green Fertilizer: Can Cold Plasmas Enrich Biowaste and Reduce Nitrogen Loss?</u>   | In person   |
| 11 | Keegan Orr               | <u>Laser Induced Fluorescence Measurements of Vibrationally Excited Oxygen Produced by Recombination of O Atoms</u>   | In person   |
| 12 | Xin Yang                 | <u>Measurements of Atoms and Metastable Species in N<sub>2</sub> and H<sub>2</sub>-N<sub>2</sub> Ns Pulse Plasmas</u>   | In person   |
| 13 | Caleb Richards           | <u>Time-resolved CO<sub>2</sub>, CO, and N<sub>2</sub> Vibrational Populations in Ns Pulse Discharge Plasmas</u>  | In person   |

*Poster Session II. Thursday, September 23, 2:40 – 3:30 pm*

|    | <b>Presenter</b>           | <b>Title</b>   | <b>Mode</b> |
|----|----------------------------|--|-------------|
| 1  | Caleb Richards             | <u>N<sub>2</sub> Vibrational Excitation in Atmospheric Pressure Ns Pulse and RF Plasma Jets</u>  | In person   |
| 2  | Ketong Shao                | <u>Active Learning-guided Experiment Design for Maximizing Energy Efficiency of NO<sub>x</sub> Production Using a DC Pin-to-pin Glow Discharge</u> | In person   |
| 3  | Tanubhav Srivastava        | <u>Formation of Self-Organized Patterns at the Plasma-Liquid Interface for a Helium Glow Discharge with Solution Anode</u>                         | In person   |
| 4  | Mikhail Vasilev            | <u>The Effect of Liquid Residence Time on the Removal of Aqueous Contaminants</u>  | In person   |
| 5  | Jianan Wang                | <u>Spatially Resolved Absolute OH-LIF Measurements in a Surface Discharge Generated by an Atmospheric Pressure Plasma Jet</u>                      | In person   |
| 6  | Sai Raskar                 | <u>Spatially Enhanced Electric Field Induced Second Harmonic (SEEFISH) Generation</u>  | In person   |
| 7  | Ning Liu                   | <u>fs-UV-LAS for Measuring Temperature and OH Concentration in Low Temperature Plasmas</u>   | In person   |
| 8  | David Mignogna             | <u>N<sub>2</sub>(A<sub>3</sub>Σ<sup>u+</sup>,v) Energy Transfer Kinetics in Reacting N<sub>2</sub>-CO<sub>2</sub>-CH<sub>4</sub> Plasmas</u>       | In person   |
| 9  | Xin Yang                   | <u>Plasma-Enhanced Ammonia Synthesis over a Catalytic Surface</u>  | In person   |
| 10 | Hongtao Zhong              | <u>Kinetic Studies of Excited Singlet Oxygen Atom O(<sup>1</sup>D) Reactions with Ethanol</u>  | In person   |
| 11 | Justin Smith               | <u>VUV Spectroscopic Investigation of a Low Current Corona Source in Nitrogen</u>  | In person   |
| 12 | Foluke (Jennifer) Ganzallo | <u>Characterization and Treatment Performance of a Plasma Spinning Disc Reactor</u>  | In person   |

*Poster Session III. Thursday, September 23, 7:00 – 8:00 pm*

|   | <b>Presenter</b> | <b>Title</b>   | <b>Mode</b> |
|---|------------------|--|-------------|
| 1 | Jian Chen        | <u>Validated Two-dimensional Modeling of Short Carbon Arcs: Anode and Cathode Spots</u>  | Remote      |
| 2 | Nirbhav Chopra   | <u>Characterization of an Atmospheric Pressure Carbon Arc Plasma</u>   | Remote      |
| 3 | Harry Fetsch     | <u>Surface Charging in Disinfection by Dielectric Barrier Discharge</u>  | Remote      |
| 4 | Sophia Gershman  | <u>Plasma Disinfection by Dielectric Barrier Discharge Devices Suitable for Consumer Use</u>   | Remote      |
| 5 | Haomin Sun       | <u>Analytical Model for Estimating Plasma Parameters in a Planar Diode</u>   | Remote      |
| 6 | Lucas Beving     | <u>Simulations of Ion Heating in the Presheath Due to Ion-acoustic Instabilities</u>   | Remote      |
| 7 | Timothy Chen     | <u>Time-resolved Electric Fields and Electron Properties Measured by Burst Laser pUlse EFISH (BLUEFISH) and Thomson Scattering in CH<sub>4</sub>/Ar Nanosecond Pulsed Discharges</u> | Remote      |
| 8 | Surabhi Jaiswal  | <u>Observation of O(<sup>1</sup>S) Metastable Transition in Atmospheric Pressure Plasma</u>  | Remote      |