Division of Physical Chemistry
American Chemical Society

Closing the Gap between Light and Matter: Advances in Plasmonics and Beyond

Dayne Swearer
Stephan Link
Wei-Shun Chang
Organizers

Walter E. Washington Convention Center
Room 151A

18-20 August 2025

PHYS Programs also available online:

MONDAY MORNING

D. Swearer, *Presiding*

8:00 AM. Opening Remarks.

8:05 AM. Plasmonics for enhancing molecular adsorbate photochemistry. **E. Sprague Klein**

8:25 AM. Plasmonic charge localization and C-H activation at single-atom sites in dilute copper platinum alloys. **E. Newmeyer**, Y. Wang

8:40 AM. Incorporating electron-electron scattering relaxation in real-time dynamics. **Y. Wu**, G.C. Schatz

8:55 AM. Revisiting thermal and non-thermal effects in hybrid plasmonic antenna reactor photocatalysts. **S. Chavez**

9:20 AM. Enabling sustainable chemical manufacturing with plasmon catalysis, optimized from the atomic to the reactor scale. **J. Dionne**

9:45 AM. Intermission.

10:05 AM. Elucidating the photocatalytic properties of hot carriers in metal nanoparticles via plasmon-driven nanomaterials synthesis. **J. DuChene**

10:25 AM. Investigating a CuPt dilute plasmonic alloy for visible-light-enhanced propane dehydroaromatization. **Y. Wang**, M. Kar, E. Newmeyer, Z. Long, J.D. North, M. Hershey, A. Shi, G. Lu, S. Alayoglu, G.C. Schatz, D. Swearer

10:40 AM. Transition dipole mediated highly efficient energy transfer: From gaseous collisions to photosensitized nanomaterials. **H. Dai**

11:05 AM. Ultrafast transient dynamics of excited electrons and holes of gold nanoparticles. **S. Adhikari**, R. Khan, E. Gomez, S. Lee, S. Link

MONDAY AFTERNOON

S, Chavez, *Presiding*

2:00 PM. Machine learning-enhanced surface-enhanced spectroscopies for the detection of toxic environmental contaminants. **N.J. Halas**

2:25 PM. Theory of optical pump and electron probe measurements of plasmonic nanostructures. **D.J. Masiello**

2:50 PM. Investigating plasmon-mediated deposition of multivalent, catalytically active metals onto gold nanorods using liquid phase transmission electron microscopy. **A. Chen**, J. Boltersdorf, T. Woehl

3:05 PM. Time-resolved SERS study of plasmon induced hot electron dynamics and selective excitation of adsorbate vibration modes. K. Chen, S. Wu, **T. Lian**

3:30 PM. Quantum emission from confined excitons in a 2D semiconductor–MOF heterostructure. **T. Kempa**

3:50 PM. Intermission.

4:10 PM. Super-resolution imaging uncovers long-range enhancement of molecular adsorption within single metal-semiconductor heterostructures. **P. Chen**

4:35 PM. Engineering thermally robust bimetallic nanocrystals for high performance SERS and anticounterfeit applications. **A. Aggarwal**, N. Kar, S.E. Skrabalak

4:50 PM. What can single-particle plasmonics and super-resolution microscopy tell us about the living world? **J.S. Biteen**

5:15 PM. Next generation optical nanotweezers for comprehensive characterization of nanoplastics. **J. Ndukaife**

TUESDAY MORNING

S. King, *Presiding*

8:00 AM. Boosting water oxidation through modal strong coupling: A kinetic study of quantum coherence effects. **H. Misawa**

8:25 AM. Optical and chiroptical linear response properties of materials. **M. Caricato**

8:45 AM. Analytic rate theory of polariton relaxation explains long-living exciton-polaritons in optical cavities. **Y. Lai**

9:00 AM. Advancing quantum polaritonic sensing in strongly coupled nanophotonic systems. **P. Zheng**, I. Barman

9:15 AM. ***2025 Young Investigator Awardee*** Overcoming disorder to unlock energy transfer in vibrational polaritons. **T. Liu**, G. Yin, L. Zhang, T. Sheng, H. Mao, W. Xiong

9:40 AM. Intermission.

9:55 AM. Analyzing photocurrent in plasmonic metals. **M.T. Sheldon**

10:20 AM. Ultrafast spectroscopy reveals (Dis)order-driven polariton dynamics. **A.M. George**

10:35 AM. Quantum electron dynamics towards polaritonic chemistry. J. Weidman, B. Peyton, Z. Stewart, **A.K. Wilson**

11:00 AM. Biomolecules-templated plasmonic supramolecular assembly and emergent chiroptical response. **M. Sun**, H. Shen, J. Shen, O. Gang, D. Baker, D.S. Ginger

11:15 AM. Computational exploration of plasmon-modified exciton transport in extended molecular systems. **W. Ding**, L. Hsu, S. Weng, J. Yi, D. Pearce

11:35 AM. Hot carrier generation and transfer in low carrier concentration plasmonic nanomaterials. **M. Crane**

WEDNESDAY AFTERNOON

W. Chang, *Presiding*

2:00 PM. Exciton coupling and energy transfer in plasmonic nanostructures. **G.V. Hartland**

2:25 PM. Interferometric scattering (iSCAT) spectroscopy of plasmonic nanoparticles. **K.A. Willets**

2:50 PM. Imaging plasmon induced energy transfer in single nanoparticle-polymer hybrids. **C.F. Landes**

3:15 PM. Exploring plasmonic materials and hybrid systems using extreme pressures. **X. Zhou**, K. Johnson, K. Mikolaichik

3:35 PM. Toward nanometer-resolved imaging of photoexcited electrons and holes. **S.K. Cushing**

4:00 PM. Intermission.

4:20 PM. Illuminating the dynamics of chemical and material interfaces: from polarons to plasmons. **S. King**

4:45 PM. Revealing enhanced size uniformity of electrochemically deposited palladium nanoparticles via single-particle dark-field scattering imaging. **T.N. Nguyen**, P. Cappillino, W. Chang

5:00 PM. Directly measuring temperature produced by metal nanoparticles using wavefront microscopy. **C.A. West**, S. Link

5:15 PM. Resolving relaxation dynamics in metal nanoparticles using ultrafast multi-dimensional spectroscopy. **K.L. Knappenberger**, D. Heintzelman, N. Smith, N. Miller, W.R. Jeffries

5:40 PM. Photoelectrically- and electrically driven hot electron up conversion in Mn-doped quantum dots on light-emitting diode platform. **I.M. Murray**, E. Zhai, Y. Lin

5:55 PM. Closing Remarks.

The organizers acknowledge the following sponsors for their generous support: