Enhancing the World Through Photochemistry: From Basic Science to Applications

July 23 - 28, 2017

Chairs
Claudia Turro and Daniel E. Falvey

Vice Chairs
Dirk M. Guldi and Igor V. Alabugin

Bates College
2 Andrews Road
Lewiston, ME, US

Conference Description

The 2017 Gordon Research Conference on Photochemistry will focus on bringing together scientists working on fundamental problems in photochemistry with those who engage in more applied research. The conference will provide a forum for dynamic interactions between these two groups of researchers, leading to new collaborations and ideas at the cutting-edge of the fields of photochemistry and photophysics. There will be sessions on photochemical dynamics, mechanisms, and theory, as well as on solar energy conversion, environmental photochemistry and sustainability, light switches and motors, and on medical imaging and therapeutics. Internationally-recognized speakers will be invited from academia, industry, and government-sponsored laboratories. Graduate students who participate in the Gordon Research Seminar (GRS) on Photochemistry will have the opportunity to attend the GRC, and two poster presenters from the GRS will be chosen to present short talks at the GRC. The GRC format, which includes lectures with ample time for formal and informal discussions, along with poster presentations, provides an ideal venue for students and post-doctoral fellows to interact with leaders in the field.

Related Meeting

This GRC will be held in conjunction with the "Photochemistry (GRS)" Gordon Research Seminar (GRS). Those interested in attending both meetings must submit an application for the GRS in addition to an application for the GRC. Refer to the associated GRS program page for more information.

Conference Program

Sunday	
2:00 pm - 9:00 pm	Arrival and Check-in
6:00 pm - 7:00 pm	Dinner
7:30 pm - 7:40 pm	Introductory Comments by GRC Site Staff / Welcome from the GRC Chair
7:40 pm - 9:30 pm	**Solar Energy** Discussion Leader: **James McCusker** (Michigan State University, USA)
7:40 pm - 8:05 pm	**Yiying Wu** (Ohio State University, USA) "How to Make Dye-Sensitized Solar Cells Cool Again"
8:05 pm - 8:15 pm	Discussion
8:15 pm - 8:40 pm	**Kenneth Hanson** (Florida State University, USA) "Harnessing Molecular Photon Upconversion Using Self-Assembled Multilayers on Metal Oxide Surfaces"
8:40 pm - 8:50 pm	Discussion
8:50 pm - 9:15 pm	**Daniel Nocera** (Harvard University, USA) "Photochemical Production of Food and Fuel from Water and Air"
9:15 pm - 9:30 pm	Discussion
Monday	
7:30 am - 8:30 am	Breakfast
8:30 am - 9:00 am	Group Photo

9:00 am - 12:30 pm	**Photochemical Mechanisms and Dynamics** Discussion Leader: **Anna Gudmundsdottir** (University of Cincinnati, USA)
9:00 am - 9:30 am	**Robert McMahon** (University of Wisconsin-Madison, USA) "Electronic Spectroscopy and Photochemistry of Carbenes"
9:30 am - 9:45 am	Discussion
9:45 am - 10:15 am	**Lin Chen** (Argonne National Laboratory / Northwestern University, USA) "Ultrafast Electronic and Nuclear Structural Dynamics of Transition Metal Centers in Small Complexes and in Protein Matrix"
10:15 am - 10:30 am	Discussion
10:30 am - 11:00 am	Coffee Break
11:00 am - 11:30 am	**Niels Damrauer** (University of Colorado Boulder, USA) "Explorations of a New Paradigm for MLCT: Using Structure and Spin to Extend Charge-Transfer Lifetimes in Iron(II) Polypyridyl Complexes"
11:30 am - 11:45 am	Discussion
11:45 am - 12:15 pm	**Jeffrey Rack** (University of New Mexico, USA) "Ultrafast Isomerization in Sulfoxide Compounds"
12:15 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
3:00 pm - 4:00 pm	**Power Hour** *The GRC Power Hour is an optional informal gathering open to all meeting participants. It is designed to help address the challenges women face in science and support the professional growth of women in our communities by providing an open forum for discussion and mentoring.* Organizers: **Cornelia Bohne** (University of Victoria, Canada) and **Amanda Morris** (Virginia Tech, USA)
4:00 pm - 6:00 pm	**Poster Session**

6:00 pm - 7:00 pm	Dinner
7:30 pm - 9:30 pm	**Light-Driven Motors, Switches, and Triggers** Discussion Leader: **Andrei Kutateladze** (University of Denver, USA)
7:30 pm - 8:00 pm	**Ivan Aprahamian** (Dartmouth College, USA) "Hydrazone-Based Photochromic Compound"
8:00 pm - 8:15 pm	Discussion
8:15 pm - 8:25 pm	**Sofia Garakyaraghi** (North Carolina State University, USA) "Supramolecular Strategies Enabling Directional Energy Flow from Quantum Dots"
8:25 pm - 8:30 pm	Discussion
8:30 pm - 8:40 pm	**Yang Zhou** (Kent State University, USA) "Development of Photoactivatable Nitroxyl Donors Using (Hydroxynaphthalenyl)methyl Phototriggers"
8:40 pm - 8:45 pm	Discussion
8:45 pm - 9:15 pm	**Arthur Winter** (Iowa State University, USA) "New Strategies to Achieve Photoactivation Using Visible Light"
9:15 pm - 9:30 pm	Discussion
Tuesday	
7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	**Photocatalysis** Discussion Leader: **Ksenija Glusac** (Bowling Green State University, USA)
9:00 am - 9:30 am	**Yujie Sun** (Utah State University, USA) "Electrocatalytic and Photocatalytic Hydrogen Evolution and Organic Transformation: From Water Splitting to Biomass Valorization"
9:30 am - 9:45 am	Discussion

9:45 am - 10:15 am	**Garret Miyake** (University of Colorado Boulder, USA) "Design Principles of Photoredox Catalysts for Organocatalyzed Atom Transfer Radical Polymerization"
10:15 am - 10:30 am	Discussion
10:30 am - 11:00 am	Coffee Break
11:00 am - 11:30 am	**Alfredo Angeles-Boza** (University of Connecticut, USA) "Differences in Carbon Isotope Discrimination During Photocatalytic CO_2 Reduction Reactions"
11:30 am - 11:45 am	Discussion
11:45 am - 12:15 pm	**Tito Scaiano** (University of Ottawa, Canada) "Heterogeneous Photocatalysis with Metal and Metal-Oxide Nanostructures"
12:15 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	**Poster Session**
6:00 pm - 7:00 pm	Dinner
7:30 pm - 9:30 pm	**Multiphoton Methods** Discussion Leader: **Michael Therien** (Duke University, USA)
7:30 pm - 8:00 pm	**Robert Baker** (The Ohio State University, USA) "Investigating Surface Carrier Dynamics in Metal Oxide Catalysts Showing High Selectivity for CO_2 Reduction"
8:00 pm - 8:15 pm	Discussion
8:15 pm - 8:35 pm	**A. Jean-Luc Ayitou** (Illinois Institute of Technology, USA) "Photon Upconversion Using Anti-Aromatic Naphtho-p-Quinodimethane as a Light Harvesting Sensitizer"
8:35 pm - 8:45 pm	Discussion

8:45 pm - 9:15 pm	**John Fourkas** (University of Maryland, USA) "Multicolor Photochemistry: Breathing New Life into Moore's Law"
9:15 pm - 9:30 pm	Discussion
Wednesday	
7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	**Sensors and Diagnostic Tools** Discussion Leader: **Cassandra Fraser** (University of Virginia, USA)
9:00 am - 9:30 am	**Francisco M. Raymo** (University of Miami, USA) "Activatable Fluorophores"
9:30 am - 9:45 am	Discussion
9:45 am - 10:15 am	**Stefan Bossmann** (Kansas State University, USA) "Liquid Biopsies for Solid Tumors"
10:15 am - 10:30 am	Discussion
10:30 am - 11:00 am	Coffee Break
11:00 am - 11:30 am	**Elizabeth Harbron** (College of William and Mary, USA) "Accelerated Photochemical Reactions in Dye-Doped Conjugated Polymer Nanoparticles"
11:30 am - 11:45 am	Discussion
11:45 am - 12:15 pm	**Thomas Meade** (Northwestern University, USA) "Coordination Chemistry and Molecular Imaging: A Marriage Made *In Vivo*"
12:15 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	**Poster Session**
6:00 pm - 7:00 pm	Dinner

7:00 pm - 7:30 pm	**Business Meeting** *Nominations for the Next Vice Chair; Fill in Conference Evaluation Forms; Discuss Future Site and Scheduling Preferences; Election of the Next Vice Chair*
7:30 pm - 9:30 pm	**Supramolecular Photochemistry and Synthesis** Discussion Leader: **Sivaguru Jayaraman** (North Dakota State University, USA)
7:30 pm - 8:00 pm	**Yi Liao** (Florida Institute of Technology, USA) "Reversible Control of Proton Concentration Using Metastable-State Photoacids"
8:00 pm - 8:15 pm	Discussion
8:15 pm - 8:35 pm	**Alexander Spokoyny** (University of California, Los Angeles, USA) "Boron Cluster Chromophores and Photosensitizers"
8:35 pm - 8:45 pm	Discussion
8:45 pm - 9:15 pm	**Cornelia Bohne** (University of Victoria, Canada) "Relocation of a Small Molecule in a Biocompatible Supramolecular Gel Probed by Fluorescence"
9:15 pm - 9:30 pm	Discussion
Thursday	
7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	**Photo-Pharmacology and Photo-Medicine** Discussion Leader: **Peter Ford** (University of California, Santa Barbara, USA)
9:00 am - 9:30 am	**Gilles Gasser** (Chimie ParisTech, France) "Towards the Use of Ru(II) Polypyridyl Complexes as Photosensitizers in One-Photon and Two-Photon Photodynamic Therapy"
9:30 am - 9:45 am	Discussion
9:45 am - 10:15 am	**Jeremy Kodanko** (Wayne State University, USA) "Applying Ruthenium Photocaging Towards Therapeutic Targets"

10:15 am - 10:30 am	Discussion
10:30 am - 11:00 am	Coffee Break
11:00 am - 11:30 am	**Vladimir Popik** (University of Georgia, USA) "Cyclopropenone Photochemistry in the Development of Novel Biomedical Tools"
11:30 am - 11:45 am	Discussion
11:45 am - 12:15 pm	**Eszter Borbas** (Uppsala University, Sweden) "Spectroscopic Investigation of a Library of Luminescent Lanthanide Emitters. Identification of Sensitization and Quenching Pathways relevant for Emitter Design"
12:15 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	**Poster Session**
6:00 pm - 7:00 pm	Dinner
7:30 pm - 9:30 pm	**Environmental Chemistry and Sustainability** Discussion Leader: **Ana Moore** (Arizona State University, USA)
7:30 pm - 8:00 pm	**Amanda Morris** (Virginia Tech, USA) "Structural Implications for Efficient Energy Transfer in MOFs"
8:00 pm - 8:10 pm	Discussion
8:10 pm - 8:25 pm	**Justin Caram** (Massachusetts Institute of Technology, USA) "Exploring Transport and Superradiance in Pathologically Coherent Molecular Networks"
8:25 pm - 8:30 pm	Discussion
8:30 pm - 8:45 pm	**Gary Moore** (Arizona State University, USA) "Polymeric Surface Coatings for Applications in Photoelectrochemical Fuel Production"
8:45 pm - 8:50 pm	Discussion

8:50 pm - 9:20 pm	**Clifford Kubiak** (University of California, San Diego, USA) "Studies of Ultrafast Electron Transfer by 1D and 2D Infrared Spectroscopy"
9:20 pm - 9:30 pm	Discussion
Friday	
7:30 am - 8:30 am	Breakfast
9:00 am	Departure

Contributors

Gordon Research Conferences	Carl Storm Underrepresented Minority Fellowship	Carl Storm International Diversity Fellowship
Predominantly Undergraduate Institution Fund (PUI)	ACS OMEGA	ELSEVIER Photochemistry and Photobiology
Princeton Instruments	EDINBURGH INSTRUMENTS	ACS DIVISION OF INORGANIC CHEMISTRY
The Ohio State University	BGSU Bowling Green State University	University of Maryland