

2020 Organic Materials Chemistry Virtual Program Review (vPR)

Dr. Kenneth Caster | July 13-16, 2020 | Virtual

0900 on Monday, July 13 through 1700 on Wednesday, July 15, 2020

Subarea	Topic	Speaker
Photonic Materials	Submillisecond-response Liquid Crystal Spatial Light Modulators	Shin-Tson Wu University of Central Florida
Photonic Materials	Solution-Processed Infrared Polymer Photodetectors	Xiong Gong University of Akron
Photonic Materials	Exploration of Carbon-Based Hybrid Nanoarchitectures as a Unique Platform for Managing Excited State Energies and Processes	Ya-Ping Sun Clemson University
Photonic Materials	Femtosecond Laser Induced Macro-Molecular Self-Assembly	Aleks Rebane Montana State University Bozeman
Photonic Materials	High Detectivity Organic Photodetectors with Ultrabroadband Spectral Response	Bernard Kippelen Georgia Tech
Photonic Materials	Grain and Interface Engineering for High Efficiency Hybrid Perovskite Solar Cells	Jinsong Huang University of North Carolina, Chapel Hill
Photonic Materials	(YIP) Nanoscale Exciton-Mechanical Systems (NEXMS)	Parag Deotare University of Michigan
Photonic Materials	(YIP) Structure-Photophysics-Function Relationship of Perovskite Materials	He Wang University of Miami
Photonic Materials	Modular Conjugated Polymers for Mid-Infrared Photonic Applications	Jason Azoulay University of Southern Mississippi
Photonic Materials	Molecular Engineering Hybrid Perovskite Quantum Wells for Nanophotonics	Xiaodong Xu, Alex Jen University of Washington
Photonic Materials	Effects of Redox, Molecular, and Ionic Dopants on the Structure and Electronic Behavior of Haloplumbate Perovskites	Seth Marder; Henry Snaith Georgia Tech ; University of Oxford
Photonic Materials	Structural Dimensionality Control of Organic-Inorganic Metal Halide Hybrids	Biwu Ma; Theo Siegrist Florida State University
Photonic Materials	Excited State Engineering in Organic and Hybrid Organic/Inorganic Heterojunctions	Steve Forrest University of Michigan
Photonic Materials	Gold Organometallics as Non-Linear Optical Materials	Thomas Gray Case Western Reserve University
Photonic Materials	Toward Electrically-Pumped Lasing in Organic-Inorganic Hybrid Perovskite Semiconductors	Chris Giebink; Barry Rand Pennsylvania State University; Princeton University

Photonic Materials	Semiconductor Nanocrystals as Triplet Sensitizers	Phil Castellano North Carolina State University
Photonic Materials	Polymer Nanocomposite Luminescent Spectrum Convertors For Photovoltaic Energy Harvesting	Abdalla Darwish Dillard University
Photonic Materials	(YIP) Hybrid Bottlebrush Block Polymer/Inorganic Nanostructures with Tunable Nonlinear Optical and Photonic Band Gap Properties	Rob Hickey Pennsylvania State University
Photonic Materials	Optimizing SOH and PSOH Chip-scale Integrated Electronic/Photonic Technology for Multiple Defense Applications by Nano-Engineering New OEO Materials	Larry Dalton; Bruce Robinson University of Washington
Photonic Materials	(Lab Task) Ceramic Nanolaminates for Electromagnetic Shielding: Understanding the RF Response of MXene-based Heterostructures	Josh Kennedy; Dhriti Nepal AFRL Materials & Manufacturing Directorate
Photonic Materials	(Lab Task) Novel Solid Nonlinear Materials	Joy Haley AFRL Materials & Manufacturing Directorate
Photonic Materials	Theory of Light-induced Structural Changes in Optoelectronic Organic Materials	David Strubbe University of California, Merced
Photonic Materials	Interactions of Light and Acoustic Waves in Statically and Dynamically Structured Liquid Crystalline Materials	Hengky Chandralalim Air Force Institute of Technology (AFIT)
Photonic Materials	Structural Chirality Derived from Polymer Stabilized Networks in Hierarchically Organized Liquid Crystal Phases	Tim White University of Colorado, Boulder
Photonic Materials	Materials for Nonlinear Chiral Polymer Photonics: Multi-scale-modeling-guided Design and Development	Paras Prasad University at Buffalo, SUNY
Photonic Materials	Control of Organic Matter with Strong Coupling	Mikhail Noginov Norfolk State University
Electronic Materials	Magnetic Field Effects on Temporal and Spatial Dynamics of Functional Nanostructures	Dongho Kim Yonsei University
Electronic Materials	Polymeric and Molecular Materials for Advanced Organic Electronics	Tobin Marks; Antonio Facchetti Northwestern University
Electronic Materials	Stretchable Polymer Semiconductors	Zhenan Bao Stanford University
Electronic Materials	Manipulating the Spatial, Charge Transfer, and Energetic Interactions of Open-Shell Moieties in Multifunctional, Low Glass Transition Temperature Radical Polymers	Bryan Boudouris; Brett Savoie Purdue University
Electronic Materials	(Lab Task) Enabling Soft Electronics	Michael Durstock AFRL Materials & Manufacturing Directorate
Electronic Materials	Effects of Ionizing Radiation Exposure in Organic Solar Cells: Insights from Frequency-Domain Vibrational and Electrical Spectroscopies and Imaging	John Grey University of New Mexico
Electronic Materials	Molecular Engineering for Mechanically Resilient and Stretchable Electronic Polymers and Composites	Darren Lipomi University of California, San Diego

Electronic Materials	Processing of Organic Semiconductors from High Dielectric Media	Thuc-Quyen Nguyen; Gui Bazan University of California, Santa Barbara
Electronic Materials	Optical Control of Charge and Energy Transfer in Molecular Wires	Kirk Schanze University of Texas, San Antonio
Novel Materials	Revealing Key Polarization, Spin, and Energy Parameters in Controlling Deeper Photovoltaic Processes in Perovskite Solar Cells By Using Unique Magneto-Optical Measurements (and Lasing)	Bin Hu University of Tennessee
Novel Materials	Exploring Topological Insulators for Flexible/Conformal Power Harvesters	David Carroll Wake Forest University
Novel Materials	Responsive Block Copolymers: Transformations in the Solid State	Thomas Russell; Javid Rzayev University of Massachusetts, Amherst; University at Buffalo, SUNY
Novel Materials	Polymer-grafted Nanoparticles (PGN) and PGN Arrays with Tailored Canopy Interactions	Chris Ober Cornell University
Novel Materials	Computational Design of Oligomers for use in High Contrast Black Electrochromic Polymers	Aime'e Tomlinson University of North Georgia
Novel Materials	(YIP) Photocontrolled Synthesis and Properties of π -Conjugated Polymers	Julia Kalow Northwestern University
Novel Materials	(YIP) Regioselective, C-H Xanthylation as a Platform Technology Polyolefin Functionalization	Frank Leibfarth University of North Carolina, Chapel Hill
Novel Materials	Low Bandgap, Highly Polarizable, and Intrinsically Conductive Polymers	Tim Swager Massachusetts Institute of Technology
Novel Materials	High Contrast Black Electrochromic Polymers	John Reynolds Georgia Tech
Novel Materials	(Lab Task) Enhanced Reliability in Multifunctional Aerospace Materials through New Chemical Approaches to Controlling Catalytic Activity	Kamran Ghiassi AFRL Propulsion Directorate – Edwards AFB
Novel Materials	(Lab Task) Defect Engineering of Low-dimensional Materials using E-beam Chemistry and Their Device Applications	Benji Maruyama AFRL Materials & Manufacturing Directorate
Novel Materials	Compositionally Tunable Stimuli-Responsive Nanoparticles Having Uniform Sizes, Shapes, and Core-Shell Architectures	T. Randall Lee University of Houston
Novel Materials	Molecular Design of Viscoelasticity and Damping Properties in Vitrimers	Chris Evans University of Illinois, Urbana-Champaign
Novel Materials	Materials Chemistry of Bullvalene	Will Gutekunst Georgia Tech
Novel Materials	(Lab Task) Atomically-Thin, Hybrid Nanoparticles (ATHyNs) with Engineered Optical Response: Polymer-Grafted Transition Metal Dichalcogenides	Rich Vaia AFRL Materials & Manufacturing Directorate
Novel Materials	Soft Sensors with 2D Material/Polymer Heterostructures	Nick Glavin; Luke Baldwin

		AFRL Materials & Manufacturing Directorate
Novel Materials	The Design, Synthesis and Conversion of Preceramic Polymers using Modular Chemistry	Tim Pruyn; Matt Dickerson AFRL Materials & Manufacturing Directorate
Nanoscience	(MURI) Atomically-thin Systems that Unfold, Interact, and Communicate at the Cellular Scale	Jiwoong Park University of Chicago
Nanoscience	(MURI) Foldable and Adaptive Two-Dimensional Electronics	Tomas Palacios Massachusetts Institute of Technology
Nanoscience	Hybrid Semiconducting Polymer/Carbon Nanotube Superstructures for Optical, Electro-optic, and Spintronic Applications	Michael Therien Duke University
Nanoscience	(Lab Task) Aromatic Functionalization and Macromolecular Chemistry	Loon Seng Tan AFRL Materials & Manufacturing Directorate
Nanoscience	Multifunctional Organic-Inorganic Nanocomposites with Unprecedented Control Over Dimensions, Compositions and Architectures as well as Tailored Properties	Zhiqin Lin Georgia Tech
Nanoscience	Marriage of Top-Down Lithography to Bottom-Up Chemistry Edge Control in Graphene	Jim Tour Rice University
Nanoscience	(YIP) Processing Particle Assemblies into Functional Thin Films: Elucidating Mechanisms of Defect Formation	Laura Bradley University of Massachusetts, Amherst

See next page for ZoomGov agenda on July 16, 2020.

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0900 – 1530 on Thursday, July 16, 2020

Time	Topic	Discussion Leader
0830-0900	Zoom Login (must register on APAN for meeting prior to start)	
0900-0915	Welcome and Introductory Remarks	Ken Caster Air Force Office of Scientific Research (AFOSR)
0915-1015	Photonics Materials – presentations and forum	Paras Prasad University at Buffalo, SUNY
1015-1030	BREAK	
1030-1130	Electronic Materials – presentations and forum	Darren Lipomi University of California, San Diego
1130-1200	Organic Materials Chemistry – Q & A	Ken Caster Air Force Office of Scientific Research (AFOSR)
1200-1300	LUNCH	
1300-1400	Novel Materials and Properties – presentations and forum	Julia Kalow Northwestern University
1400-1415	BREAK	
1415-1500	Nanoscience – presentations and forum	Jim Tour Rice University
1500-1510	Discussion Forum – OMC Teams	Ken Caster Air Force Office of Scientific Research (AFOSR)
1510-1520	Discussion Forum – Special Topics Sessions	Ken Caster Air Force Office of Scientific Research (AFOSR)
1520-1530	Concluding Remarks	Ken Caster Air Force Office of Scientific Research (AFOSR)
1530	MEETING ADJOURN	