

2021 Organic Materials Chemistry virtual Program Review (vPR)

Dr. Kenneth Caster | June 14-16, 2021 | Virtual

Agenda Day One – Monday, June 14, 2021

TIME	TOPIC	SPEAKER
8:30–9:00	Login Period	
9:00-9:10	Welcome and Overview Comments	Ken Caster Air Force Office of Scientific Research
9:10-9:35	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
9:35-10:00	Organics at High Energy: Achieving High Performance Under the Most Adverse Conditions	Steve Forrest University of Michigan
10:00-10:25	(YIP) Nanoscale Exciton-Mechanical Systems (NEXMS)	Parag Deotare University of Michigan
10:25-10:40	BREAK	
10:40-11:05	Narrow Bandgap Conjugated Polymers with Strong Correlations and Open-Shell Electronic Structures	Jason Azoulay University of Southern Mississippi
11:05-11:30	Materials for Nonlinear Chiral Polymer Photonics: Multi-scale-modeling-guided Design and Development	Paras Prasad University of Buffalo
11:30-11:55	Low Bandgap, Highly Polarizable, and Intrinsically Conductive Polymers	Tim Swager Massachusetts Institute of Technology
11:55-12:55	LUNCH	
12:55-13:20	(YIP) Photocontrolled Synthesis and Properties of π -Conjugated Polymers	Julia Kawlow Northwestern University
13:20-13:45	(YIP) Hybrid Bottlebrush Block Polymer/Inorganic Nanostructures with Turnable Nonlinear Optical and Photonic Band Gap Properties	Rob Hickey Pennsylvania State University
13:45-14:10	Soft Semiconductor Structures and Metastructures for Optoelectronics	Michael Durstock Materials & Manufacturing Directorate
14:10-14:25	BREAK	
14:25-14:50	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
14:50-15:15	Structural Dimensionality Control of Organic-Inorganic Metal Halide Hybrids	Biwu Ma; Theo Siegrist Florida State University
15:15-15:50	High Contrast Black Electrochromic Polymers; Computational Design of Oligomers for use in High Contrast Black Electrochromic Polymers	John Reynolds; Aime'e Tomlinson Georgia Tech; Univ of North Georgia
15:50	ADJOURN FOR THE DAY	

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Agenda Day Two – Tuesday, June 15, 2021

TIME	TOPIC	SPEAKER
8:30–9:00	Login Period and Poster Session Testing	
9:00-9:10	Welcome and Overview Comments	Ken Caster Air Force Office of Scientific Research
9:10-9:35	Atomically-Thin, Hybrid Nanoparticles (ATHyNs) with Engineered Optical Response: Polymer-Grafted Transition Metal Dichalcogenides (TMDs)	Rich Vaia Materials & Manufacturing Directorate
9:35-10:00	(SOARD) Nonlinear Photonics in NbX ₂ (X=S, Se, Te) based Hybrid Layered Transition Metal Dichalcogenides (LTMDs)	Anderson Gomes UFPE - Universidade Federal of Pernambuco_PUC Rio
10:00-10:25	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
10:25-10:40	BREAK	
10:40-11:05	Gold Organometallics: Game Changers for Non-Linear Optical Materials	Thomas Gray Case Western Reserve University
11:05-11:30	Compositionally Tunable Stimuli-Responsive Nanoparticles Having Uniform Sizes, Shapes, and Core-Shell Architectures	T. Randall Lee University of Houston
11:30-11:55	Defect Engineering of Low-dimensional Materials using E-beam Chemistry and Their Device Applications	Rahul Rao Materials & Manufacturing Directorate
11:55-12:55	LUNCH	
12:55-13:20	The Design, Synthesis and Conversion of Pre-ceramic Polymers using Modular Chemistry	Tim Pruyn; Matt Dickerson Materials & Manufacturing Directorate
13:20-13:45	(YIP) Regioselective, C-H Xanthylation as a Platform Technology Polyolefin Functionalization	Frank Leibfarth University of North Carolina, Chapel Hill
13:45-14:10	(YIP) Processing Particle Assemblies into Functional Thin Films: Elucidating Mechanisms of Defect Formation	Laura Bradley University of Massachusetts, Amherst
14:10-14:25	BREAK	
14:25-14:50	Hybrid Semiconducting Polymer/Carbon Nanotube Superstructures for Optical, Electro-optic, and Spintronic Applications	Michael Therien Duke University
14:50-15:15	Soft Sensors with 2D Material/Polymer Heterostructures	Nick Glavin; Luke Baldwin Materials & Manufacturing Directorate
15:15-15:40	(HBCU-MI) Theory of Light-induced Structural Changes in Optoelectronic Organic Materials	David Strubbe University of California, Merced
15:40	MEETING ADJOURNED FOR THE DAY	

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Agenda Day Three – Wednesday, June 16, 2021

TIME	TOPIC	SPEAKER
8:30–9:00	Login Period and Poster Session Testing	
9:00-9:10	Welcome and Overview Comments	Ken Caster Air Force Office of Scientific Research
9:10-9:35	Soft Materials for Flexible, Stretchable Hybrid Electronics	Tobin Marks; Antonio Facchetti Northwestern University
9:35-10:00	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
10:00-10:25	Processing of Organic Semiconductors from High Dielectric Media	Thuc-Quyen Nguyen; Gui Bazan University of California, Santa Barbara
10:25-10:40	BREAK	
10:40-11:05	Towards Intrinsically Stretchable Organic Semiconductors	Zhenan Bao Stanford University
11:05-11:30	Molecular Engineering for Mechanically Resilient and Stretchable Electronic Polymers and Composites	Darren Lipomi University of California, San Diego
11:30-11:55	Ultrafast Transformations for Materials Synthesis and Mechanisms of Formation	Jim Tour Rice University
11:55-12:55	LUNCH	
12:55-13:20	Portfolio Status	Ken Caster Air Force Office of Scientific Research
13:20-13:40	Poster Session Demo	Matt Bigman Basic Research Innovation Collaboration Center (BRICC)
13:40-14:55	Poster Session A	All attendees
14:55-16:10	Poster Session B	All attendees
16:10-16:20	Closing Comments, Meeting Adjourn for non-Government Attendee	Ken Caster Air Force Office of Scientific Research
16:20-17:20	US Government Only Session	AFRL, DoD, US Government Employees only
17:20	MEETING ADJOURN	

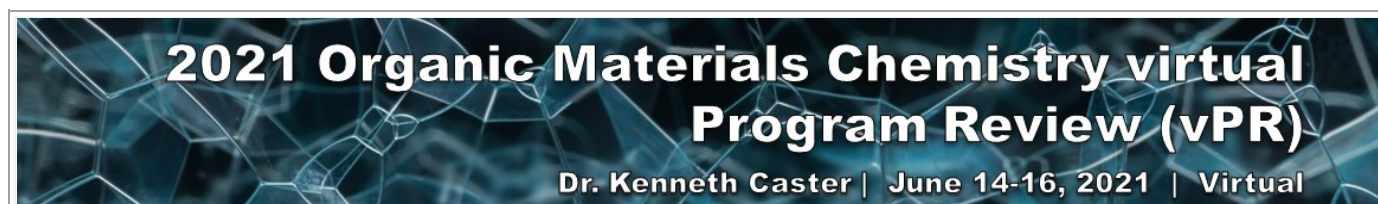
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POSTER SESSION A Agenda Day Three – Wednesday, June 16, 2021

TIME	TOPIC	SPEAKER
13:20-14:55	Poster Session A	
1	Semiconductor Nanocrystals as Triplet Sensitizers	Phil Castellano North Carolina State University
2	Structural Chirality Derived from Polymer Stabilized Networks in Hierarchically Organized Liquid Crystal Phases	Tim White University of Colorado, Boulder
3	Molecular Design of Viscoelasticity and Damping Properties in Vitrimers	Chris Evans Univ of Illinois, Urbana-Champaign
4	Materials Chemistry of Bullvalene	Will Gutekunst Georgia Tech
5	(NDSEG) Slow-release Suzuki Cross-coupling Polymerization	Nicholas Angello University of Illinois, Urbana-Champaign
6	Graphene-Polymer Multilayers for Simultaneous IR-RF Detection	Jarrett Vella Sensors Directorate
7	Enhanced Reliability in Multifunctional Aerospace Materials through New Chemical Approaches to Controlling Catalytic Activity	Rusty Blanski; Nicolas Cena; Kamran Ghiassi Propulsion Directorate
8	(MURI) Atomically-thin Systems that Unfold, Interact, and Communicate at the Cellular Scale	Jiwoong Park Cornell University
9	(EOARD) Machine-Learning Aided Screening of Organic-Inorganic Perovskites as Efficient Photoabsorbers	Gabor Csanyi; Chris Sutton University of Cambridge; University of South Carolina
10	(NDSEG) Elucidating the local Structure-function Relationships of a Model Organic Semiconductor Thin Film for Efficient Energy Transport in Devices	Jenna Tan University of California, Berkeley
11	Mechanism-guided Discovery of Photocontrolled Materials and Reactions	Eliot Woods; Julia Kalow Northwestern University
12	(HBCU-MI) Control of Organic Matter with Strong Coupling	Mikhail Noginov; Natalia Noginova Norfolk State University
13	The Design, Synthesis and Conversion of Preceramic Polymers using Modular Chemistry	Brandon Ackley; Tim Pryun; Matt Dickerson Arctos; Materials & Manufacturing Directorate
14	Deep Learning of Binary Solution Phase Behavior of Polymers	Jeffrey Ethier; Rohan Casukhela; Joshua Latimer; Matthew Jacobsen; Allen Shantz; Richard Vaia Materials and Manufacturing Directorate
15	Impact of Exfoliation Chemistry on the Vis-IR Dispersion of MoS ₂ Optical Coefficients	Robert Busch; Ali Jawaid; Peter Stevenson; Jason Streit; John Vernon; Josh Kennedy; Richard Vaia Materials and Manufacturing Directorate

16	The ABCs of Faraday Rotation in Phthalocyanine and Metallocene-Containing Thin Films	Leo Delage-Laurin; Zachary Nelson; Timothy Swager Massachusetts Institute of Technology
17:20	MEETING ADJOURN	



POSTER SESSION B Agenda Day Three – Wednesday, June 16, 2021		
TIME	TOPIC	SPEAKER
14:55-16:10	Poster Session B	
1	Toward Electrically-Pumped Lasing in Organic-Inorganic Hybrid Perovskite Semiconductors	Noel Giebink; Barry Rand Pennsylvania State University; Princeton University
2	Molecular Engineering Hybrid Perovskite Quantum Wells for Nanophotonics	Xiaodong Xu; Alex Jen University of Washington
3	(HBCU-MI) Polymer Nanocomposite Luminescent Spectrum Convertors For Photovoltaic Energy Harvesting	Abdulla Darwish Dillard University
4	Responsive Block Copolymers: Transformations in the Solid State	Thomas Russell; Javid Rzayev University of Massachusetts, Amherst; University at Buffalo, SUNY
5	(AOARD) Polymers Incorporating Low-Valent/Low Coordination Number Main Group Centres	Cameron Jones Monash University
6	(NDSEG) Mechanophore Structure-reactivity Relationships Explored by Single Molecule Force Spectroscopy, Computation, and Ultrathin Film Mechanics	Matias Horst Stanford University
7	(MURI) Foldable and Adaptive Two-Dimensional Electronics	Tomas Palacios Massachusetts Institute of Technology
8	Interactions of Light and Acoustic Waves in Statically and Dynamically Structured Liquid Crystalline Materials	Hengky Chandralalim Air Force Institute of Technology
9	(YIP) Polarization-Specific Photocatalysis for Materials Chemistry	Zachariah Page University of Texas, Austin
10	(HBCU-MI) Optical Control of Charge and Energy Transfer in Molecular Wires	Kirk Schanze University of Texas, San Antonio
11	Polymer-Ligated Monodisperse Nanocrystals Enabled by Rationally Designed Nonlinear Block Copolymers	Zhiqun Lin Georgia Tech
12	Soft Electronic Materials Modeling in the Savoie Group	Ying Tan; Qiyuan Zhao; Brett Savoie Purdue University
13	Processing Organic Semiconductors from Green Solvents	Zhifang Du; Ziyue Zhu; Sangcheol Yoon; Thuc-Quyen Nguyen University of California, Santa Barbara

14	Exploring Continuous Flow Chemistry as a Synthesis Platform	Jordan Kaiser; Luke A. Baldwin Materials & Manufacturing Directorate
15	Direct Chemical Functionalization of Group V and Group VI Layered Transition Metal Dichalcogenides	Ali Jawaaid; Asra Hassan; Allyson Ritter; Shannon Becks; Richard Vaia Materials and Manufacturing Directorate
16	Commercialization of Transformative Organic Electro-Optic Materials	Stephanie Benight; Delwin Elder; Scott Hammond; Kevin O'Malley; Lewis Johnson Nonlinear Materials Corporation, University of Washington
17:20	MEETING ADJOURN	