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CURRENT SPONSORED RESEARCH

Processing-structure-function relationships of molecular semiconductors and conducting polymers • soft lithography and printing for plastic electronics • self-powered dynamic windows • self-assembled monolayers • structurally precise graphene nanoribbons • organic-inorganic hybrid metal-halide perovskites • techno-economic analyses for non-traditional liquid fuels production

APPOINTMENTS HELD

At Princeton University

2020 – **Associate Editor, *Nanoletters***
2017 – **Co-founder, Andluca Technologies, LLC**
2016 – **Director, Andlinger Center for Energy and the Environment**
Spring 2016 **Acting Vice Dean, School of Engineering and Applied Science**
2013 – **Theodora D. '78 & William H. Walton III '74 Professor in Engineering**
2011 – **Professor of Chemical and Biological Engineering**
2011 – 2015 **Associate Director for External Partnerships, Andlinger Center for Energy and the Environment; cofounded and led Princeton E-affiliates Partnership**
2012 – 2013 **Fellow, NewWorld Capital Group, LLC**
2007 – 2011 **Associate Professor of Chemical Engineering**
Fall 2009 **Visiting Scientist in Residence in Chemistry, Columbia University**

At University of Texas at Austin

2004 – 2007 **General Dynamics Endowed Faculty Fellow in Engineering**
2002 – 2007 **Assistant Professor of Chemical Engineering**

At Bell Laboratories, Lucent Technologies

2001 – 2002 **Post-doctoral Member of Technical Staff**

EDUCATION

2017 **Executive Education, Global Leadership and Public Policy for the 21st Century, Harvard Kennedy School**
2001 **PhD in Chemical Engineering, Princeton University**

1998 MA in Chemical Engineering, Princeton University
1996 BSE in Materials Science and Engineering, University of Pennsylvania
1996 BSE in Chemical Engineering, University of Pennsylvania

HONORS & AWARDS

2020 Fellow, Materials Research Society
2019 Member, Defense Science Study Group, Institute for Defense Analyses
2018 Vanguard Series: Leader in Higher Education, NJBiz
2018 Julian C. Smith Lecturer, Robert Frederick Smith School of Chemical Engineering, Cornell University
2018 Covestro Distinguished Lecturer, School of Polymers and High Performance Materials, University of Southern Mississippi
2017 – 2018 Thousand Talent Award for Foreign Academics, Ministry of Education, China
2017 Alumni's Distinguished Lecturer, Chemical Engineering, University of Massachusetts, Amherst
2017 Frontiers of Chemistry Lecturer, Chemistry, Case Western Reserve University
2016 Peng Chen Scholar, Peking University Shenzhen Graduate School
2015 – 2017 Distinguished Visiting Professor, Peking University Shenzhen Graduate School
2015 Visiting Professor, Nanjing Technological University
2015, 2016 Finalist, Blavatnik National Awards for Young Scientists
2013 Fellow, American Physical Society
2012 – 2018 Young Global Leader, World Economic Forum
2012 Owens-Corning Award, American Institute of Chemical Engineers
2011 Member, Global Young Academy
2010 John H. Dillon Medal, American Physical Society
2010 U.S. Young Scientist Delegate, World Economic Forum
2008 Camille and Henry Dreyfus Award in Environmental Chemistry
2008 Alfred Sloan Fellowship in Chemistry
2007 Thiele Lecturer, Chemical & Biomolecular Engineering, University of Notre Dame
2006 Alan P. Colburn Award, American Institute of Chemical Engineers
2006 Peter and Edith O'Donnell Award in Engineering, the Academy of Medicine, Engineering and Science of Texas
2006 One of Ten Emerging Scholars in *Diverse: Issues in Higher Education*
2005 Arnold and Mabel Beckman Young Investigator Award
2004 World's Top 100 Young Innovators, MIT's *Technology Review*
2004 American Chemical Society PROGRESS/Dreyfus Lectureship
2004 CAREER Award, National Science Foundation

2003	DuPont Young Professor Award
2002	Camille and Henry Dreyfus New Faculty Award
2001	Porter Ogden Jacobus Fellowship, Princeton University
2000	Frank J. Padden Jr. Award, Division of Polymers, American Physical Society

PUBLICATIONS

Articles in peer-reviewed journals

Number of papers published or accepted: 187
 Google Scholar (updated February 2020): *h*-index 57; *i10*-index 155; total citations 13,000

2020 (2; 4 submitted)

X. Zhao, T. Liu, **Y.-L. Loo**, “Accessing Highly Oriented Two-Dimensional Perovskite Films via Solvent-Vapor Annealing for Efficient and Stable Solar Cells” submitted.

C. Yao, Y. Zhu, K. Gu, J. Zhao, J. Ning, D.F. Perepichka, **Y.-L. Loo**, H. Meng, “The Effects of Trifluoromethylation on the Optoelectronic Properties of a Benzodithiophene-based Polymer Donor” submitted.

Q.C. Burlingame, **Y.-L. Loo**, “The Future of Organic Solar Cells Hinges on Reliability,” submitted.

M. Reyes-Martinez, P. Tan, A. Kakekhani, S. Banerjee, A. Zhumeckenov, W. Peng, O. Bakr, A. Rappe, **Y.-L. Loo**, “Unraveling the Elastic Properties of (Quasi)2D Hybrid Perovskites: A Joint Experimental and Theoretical Study,” submitted.

M.V. Khenkin, E.A. Katz, A. Abate, G. Bardizza, J.J. Berry, C.J. Brabec, F. Brunetti, V. Bulovic, Q. Burlingame, A.D. Carlo, R. Cheancharoen, Y.-B. Cheng, A. Colmann, S. Cros, K. Domanski, M. Dusza, C.J. Fell, S.R. Forrest, Y. Galagan, D.D. Girolamo, M. Graetzel, A. Hagfeldt, E. von Hauff, H. Hoppe, J. Kettle, H. Koebler, M.S. Leite, S. Liu, **Y.-L. Loo**, J.M. Luther, C.-Q. Ma, M. Madsen, M. Manceau, M. Matheron, M. McGehee, R. Meitzner, M.K. Nazeeruddin, A.F. Nogueira, C. Odabasi, A. Osherov, N.-G. Park, M.O. Reese, F. De Rossi, M. Saliba, U.S. Schubert, H.J. Snaith, S.D. Stranks, W. Tress, P.A. Troshin, V. Turkovic, S. Veenstra, I. Visoly-Fisher, A. Walsh, T. Watson, H. Xie, R. Yildirim, S.M. Zakeeruddin, K. Zhu, M. Lira-Cantu, “Consensus Statement for Stability Assessment and Reporting on Perovskite Photovoltaics based on ISOS Procedures” [Nature Energy 5, 35, 2020.](#)

K. Gu, J. Onorato, C.K. Luscombe, **Y.-L. Loo**, “The Role of Tie Chains on the Mechano-Electrical Properties of Semiconducting Polymer Films” [Advanced Electronic Materials online article 1901070, 2020.](#)

2019 (10)

N.C. Davy, M. Koch, G.O. Ngongang Ndjawa, X. Lin, G.J. Man, Y.-H. L. Lin, J.C. Sorli, B.P. Rand, A. Kahn, G.D. Scholes, **Y.-L. Loo**, “High-Voltage Photogeneration Exclusively via Aggregation-Induced Triplet States in a Heavy-Atom-Free Nonplanar Organic Semiconductor” [Advanced Energy Materials 9, 1901649, 2019.](#)

G.E. Purdum, X.A. Chen, N.G. Telesz, S.M. Ryno, N. Sengar, T. Gessner, C. Risko, P. Clancy, R.T. Weitz, and **Y.-L. Loo**, “Solvent-Molecule Interactions Govern Crystal Habit Selection in Naphthalene Tetracarboxylic Diimides” [Chemistry of Materials 31, 9691, 2019.](#)

A.J. Petty II, Q. Ai, J.C. Sorli, H.F. Haneef, G.E. Purdum, A. Boehm, D.B. Granger, K. Gu, C.P.L. Rubinger, S.R. Parkin, K.R. Graham, O.D. Jurchescy, **Y.-L. Loo**, C. Risko, J.E. Anthony, "Computationally Aided Design of a High-Performance Organic Semiconductor: the Development of a Universal Crystal Engineering Core" early view, [Chemical Science 10, 10543, 2019.](#)

X. Zhao, C. Yao, T. Liu, J.C. Hamill, Jr., G.O. Ngongang Ndjawa, G. Cheng, N. Yao, H. Meng, **Y.-L. Loo**, "Extending the Photovoltaic Response of Perovskite Solar Cells into the Near-Infrared with a Narrow Bandgap Organic Semiconductor" [Advanced Materials 31, 1904494, 2019.](#)

K. Gu, **Y.-L. Loo**, "The Polymer Physics of Multiscale Charge Transport in Conjugated Systems" early view, [Journal of Polymer Science B: Polymer Physics 57, 1559, 2019.](#)

Y. Wang, K. Gu, X. Monnier, H. Jeong, M. Chowdhury, D. Cangialosi, **Y.-L. Loo**, R. Priestley, "Tunable Properties of MAPLE-Deposited Thin Films in the Presence of Suppressed Segmental Dynamics" [ACS Macroletters 8, 1115, 2019.](#)

J. Sorli, Q. Ai, D. Granger, K. Gu, S. Parkin, K. Jarolimek, N. Telesz, J. Anthony, C. Risko, **Y.-L. Loo**, "The Impact of Atomistic Substitution on Thin-Film Structure and Charge Transport in a Germanyl-Ethynyl Functionalized Pentacene" [Chemistry of Materials 31, 6615, 2019.](#)

M. Sezen-Edmonds, Y.-W. Yeh, N. Yao, **Y.-L. Loo**, "Humidity and Strain Rate Determine the Extent of Phase Shift in the Piezoresistive Response of PEDOT:PSS" [ACS Applied Materials and Interfaces 11, 16888, 2019.](#)

J.C. Hamill, J.C. Sorli, I. Pelczer, J. Schwartz, **Y.-L. Loo**, "Acid-Catalyzed Reactions Activate DMSO as a Reagent in Perovskite Precursor Inks" [Chemistry of Materials 31, 2114, 2019.](#)

K.J. Hong, S.T. Tan, K.-K. Chong, C.C. Yap, **Y.-L. Loo**, M.H.H. Jumali "Numerical Analysis with Experimental Verification to Predict Outdoor Power Conversion Efficiency of Inverted Organic Solar Devices" [Renewable Energy 135, 589, 2019.](#)

2018 (13)

K.C. Gu, C.R. Snyder, J. Onorato, C.K. Luscombe, A.W. Bosse, **Y.-L. Loo**, "Assessing the Huang-Brown Description of Tie Chains for Charge Transport in Conjugated Polymers" [ACS Macro Letters 7, 1333, 2018.](#)

P.P. Khlyabich, J.C. Hamill, **Y.-L. Loo**, "Precursor Solution Annealing Kinetically Traps Cubic $\text{CH}_3\text{NH}_3\text{PbI}_3$ and Improves Humidity Resistance of Solar Cells" [Advanced Functional Materials 28, 1801508, 2018.](#)

Z.-P. Fan, Z.-Y. Li, G.E. Purdum, C.-X. Hu, X. Fei, Z.-F. Shi, C.-L. Sun, Z. Shao, **Y.-L. Loo**, H.-L. Zhang, "Interlocked 2D Cross-Stacking Enhances Charge Transport and Thermal Stability of Organic Field-Effect Transistors" [Chemistry of Materials 30, 11, 2018.](#)

L. Zhao, N. Rolston, K.M. Lee, X. Zhao, M.A. Reyes-Martinez, W. Meng, N.L. Tran, Y.-W. Yeh, N. Yao, G.D. Scholes, Y. Yan, **Y.-L. Loo**, A. Selloni, R.H. Dauskardt, B.P. Rand, "Influence of Bulky Organo-ammonium Halide Additive Choice on the Flexibility and Efficiency of Perovskite Light Emitting Devices" [Advanced Functional Materials 28, 1802060, 2018.](#)

F.S. Omar, A. Numan, S. Bashir, N. Duraisamy, R. Vikneswaran, **Y.-L. Loo**, K. Ramesh, S. Ramesh, "Enhancing Rate Capability of Amorphous Nickel Phosphate Supercapattery Electrode via Composition with Crystalline Silver Phosphate" [Electrochimica Acta, 278, 72, 2018.](#)

G.E. Purdum, N.G. Telesz, K. Jarolimek, S.M. Ryno, T. Gessner, N.C. Davy, A.J. Petty II, Y. Zhen, Y. Shu, G.E. Collis, W. Hu, C. Wu, J.E. Anthony, R.T. Weitz, C. Risko, **Y.-L. Loo**, "The Presence of Short Intermolecular Contacts Screens for Kinetic Stability of Packing Polymorphs" [*Journal of the American Chemical Society*, 140, 7519, 2018.](#)

A.M. Hiszpanski, C. Dsilva, Y. Kevrekidis, **Y.-L. Loo**, "Data Mining for Parameters Affecting Polymorph Selection in Contorted Hexabenzocoronene Derivatives" [*Chemistry of Materials* 30, 3330, 2018.](#)

R.D. Pensack, A.J. Tilley, C. Grieco, E.E. Ostroumov, G.E. Purdum, D.B. Granger, D.G. Oblinsky, J.C. Dean, J.B. Ashbury, **Y.-L. Loo**, D.S. Seferos, J.E. Anthony, G.D. Scholes, "Striking the Right Balance of Intermolecular Coupling for High Efficiency Singlet Fission" [*Chemical Science* 9, 6240, 2018.](#)

V. Derenskyi, W. Gomulya, J. Gao, S. Zulkarnaen Bisri, M. Pasini, **Y.-L. Loo**, M.A. Loi, "Semiconducting SWNTs Sorted by Polymer Wrapping - How Pure are They?" [*Applied Physics Letters* 112, 072106, 2018.](#)

K.C. Gu, J. Onorato, S. Xiao, C. Luscombe, **Y.-L. Loo**, "Determination of the Molecular Weight of Conjugated Polymers with Diffusion-Ordered NMR Spectroscopy" [*Chemistry of Materials* 30, 570, 2018.](#)

H. Jeong, M. Chowdhury, Y. Wang, M. Sezen-Edmonds, **Y.-L. Loo**, R.A. Register, C.B. Arnold, R.D. Priestley, "Tuning Morphology and Melting Temperature in Polyethylene Films by MAPLE" [*Macromolecules* 51, 512, 2018.](#)

M.A. Fusella, A.N. Bergeman, M. Welborn, G.E. Purdum, R.D. Schaller, Y.H.L. Lin, R.A. Kerner, **Y.-L. Loo**, T.V. Voorhis, N.C. Giebink, B.P. Rand, "Band-Like Charge Photogeneration in Organic Solar Cells" [*Advanced Energy Materials* 8, 1701494, 2018.](#)

J.C. Hamill, J. Schwartz, **Y.-L. Loo**, "The Influence of Solvent Coordination on Hybrid Organic-Inorganic Perovskite Formation" [*ACS Energy Letters* 3, 92, 2018.](#)

2017 (15)

N.C. Davy, M. Sezen-Edmonds, J. Gao, X. Lin, A. Liu, N. Yao, A. Kahn, **Y.-L. Loo**, "Pairing of Near-Ultraviolet Solar Cells with Electrochromic Windows for Smart Management of the Solar Spectrum" [*Nature Energy* 2, 17104, 2017.](#)

X. Xu, D. Hu, L. Yan, C. Shen, **Y.-L. Loo**, O. Goto, Y. Lin, H. Meng, W. Huang, "Polar-Electrode-Bridged Electroluminescent Displays: 2D Sensors Remotely Communicating Optically" [*Advanced Materials* 29, 17104, 2017.](#)

M. Sezen-Edmonds, **Y.-L. Loo**, "Beyond Doping and Charge Balancing: How Polymer Acid Templates Impact the Properties of Conducting Polymer Complexes" [*Journal of Physical Chemistry Letters* 8, 4530, 2017.](#)

P.P. Khlyabich, M. Sezen-Edmonds, J.B. Howard, B.C. Thompson, **Y.-L. Loo**, "The Formation of Organic Alloys in Ternary-Blend Solar Cells with Two Acceptors Having Energy-Level Offsets Exceeding 0.4 V" [*ACS Energy Letters* 2, 2149, 2017.](#)

R.D. Pensack, C. Grieco, G.E. Purdum, S. Mazza, A.J. Tilley, E.E. Ostroumov, D.S. Seferos, **Y.-L. Loo**, J.B. Ashbury, J.E. Anthony, G.D. Scholes, "Solution-Processable, Crystalline Materials for Quantitative Singlet Fission" [*Materials Horizon* 4, 915, 2017.](#)

M. Sezen-Edmonds, P.P. Khlyabich, **Y.-L. Loo**, "Tuning the Magnitude and the Polarity of Polyaniline's Piezoresistive Response through Structural Control" [*ACS Applied Materials and Interfaces* **9**, 12766, 2017.](#)

T. Gu, J. Gao, E.E. Ostroumov, H. Jeong, F. Wu, R. Fardel, N. Yao, R.D. Priestley, G.D. Scholes, **Y.-L. Loo**, C.B. Arnold, "Photoluminescence of Functionalized Germanium Nanocrystals Embedded in Arsenic Sulfide Glass" [*ACS Applied Materials and Interfaces* **9**, 18911, 2017.](#)

A.M. Hiszpanski, A. Woll, B.J. Kim, C. Nuckolls, **Y.-L. Loo**, "Altering the Polymorphic Accessibility of Polycyclic Aromatic Hydrocarbons with Fluorination" [*Chemistry of Materials* **28**, 4311, 2017.](#)

X. Yin, K. Liu, Y. Ren, R.A. Lalancette, **Y.-L. Loo**, F. Jaekle, "Pyridalthiadiazole Acceptor-Functionalized Triarylboranes with Switchable, Multi-Responsive Optoelectronic Characteristics" [*Chemical Science* **8**, 5497, 2017.](#)

A.K. Hailey, A.J. Petty II, J. Washbourne, K.J. Thorley, S.R. Parkin, J.E. Anthony, **Y.-L. Loo**, "Understanding the Crystal Packing and Organic Thin-Film Transistor Performance in Isomeric Guest-Host Systems" [*Advanced Materials* **29**, 1700048, 2017.](#)

A.N. Brigeman, M.A. Fusella, Y. Yan, G.E. Purdum, **Y.-L. Loo**, B.P. Rand, N.C. Giebink, "Revealing the Full Charge Transfer State Absorption Spectrum of Organic Solar Cells" [*Advanced Energy Materials* **6**, 1601001, 2017.](#)

M.A. Reyes-Martinez, A.L. Abdelhady, M.I. Saidaminov, D.Y. Chung, O.M. Bakr, M.G. Kanatzidis, W.O. Soboyejo, **Y.-L. Loo**, "Time-Dependent Mechanical Response APbX₃ (A = Cs, CH₃NH₃; X = I, Br) Single Crystals" [*Advanced Materials* **29**, 1606556, 2017.](#)

L. Zhao, J. Y.L. Lin, Y.-W. Yeh, K.M. Lee, N. Yao, **Y.-L. Loo**, B.P. Rand, "Electrical Stress Influences the Efficiency of CH₃NH₃PbI₃ Perovskite Light-Emitting Devices" [*Advanced Materials* **29**, 1605317, 2017.](#)

J. Gao, N. Sengar, Y. Wu, S. Jokusch, C. Nuckolls, P. Clancy, **Y.-L. Loo**, "Contorted Octabenzocirculbyphenyl Sorts Semiconducting Single-Walled Carbon Nanotubes with Structural Specificity" [*Chemistry of Materials* **29**, 595, 2017.](#)

J.M. Stevenson, B. Sorenson, V.H. Subramaniam, J. Raiford, P.P. Khlyabich, **Y.-L. Loo**, P. Clancy, "Mayer Bond Order as a Metric of Complexation Effectiveness in Lead Halide Perovskite Precursor Solutions" [*Chemistry of Materials* **29**, 2435, 2017.](#)

2016 (18)

P.P. Khlyabich, **Y.-L. Loo**, "Crystalline Intermediates and Their Transformation Kinetics During the Formation of Methylammonium Lead Halide Perovskite Thin Films" [*Chemistry of Materials* **28**, 9041, 2016.](#)

B. Dong, J. Amonoo, G.E. Purdum, **Y.-L. Loo**, P.F. Green, "Enhancing Carrier Mobilities in Organic Thin-Film Transistors through Morphological Changes at the Semiconductor/Dielectric Interface Using Supercritical Carbon Dioxide Processing" [*ACS Applied Materials and Interfaces* **8**, 31144, 2016.](#)

S.J. Oh, J.B. Kim, J.M. Mativetsky, **Y.-L. Loo**, C.R. Kagan "Mapping the Competition between Exciton Dissociation and Charge Transport in Organic Solar Cells" [*ACS Applied Materials and Interfaces* **8**, 28743, 2016.](#)

- Y. Ren, A.K. Hailey, J. Gao, T. Baumgartner, **Y.-L. Loo**, "Cooperative-Assembly of Phosphole-Lipids and Single-Walled Carbon Nanotubes" [*Chemistry of Materials* 28, 8407, 2016.](#)
- A.K. Hailey, J.C. Meerman, E.D. Larson, **Y.-L. Loo**, "Low-Carbon "Drop-In Replacement" Transportation Fuels from Non-Food Biomass and Natural Gas" [*Applied Energy* 183, 1722, 2016.](#)
- X. Lin, G.E. Purdum, Y. Zhang, S. Barlow, S. Marder, **Y.-L. Loo**, A. Kahn, "Impact of a Low Concentration of Dopants on the Distribution of Gap States in a Molecular Semiconductor" [*Chemistry of Materials* 28, 2677, 2016.](#)
- S. Obuchovsky, H. Frankenstein, J. Vinokur, A.K. Hailey, **Y.-L. Loo**, G. Frey, "The Mechanism of Metal Oxide Deposition from ALD Inside Non-Reactive Polymer Matrices: Effects of Polymer Crystallinity and Temperature" [*Chemistry of Materials* 28, 2668, 2016.](#)
- A.N. Brigeman, M.A. Fusella, Y. Yan, G.E. Purdum, **Y.-L. Loo**, B.P. Rand, "Revealing the Full Charge Transfer State Absorption Spectrum of Organic Solar Cells" [*Advanced Energy Materials* 6, 1601001, 2016.](#)
- K.K. Chong, P.P. Khlyabich, M. Reyes-Martinez, B.P. Rand, **Y.-L. Loo**, "Comprehensive Method for Analyzing the Power-Conversion Efficiencies of Organic Solar Cells Under Different Spectral Irradiances Considering Both Photonic and Electrical Characteristics" [*Applied Energy* 180, 516, 2016.](#)
- Y. He, M. Sezen, D. Zhang, A. Li, L. Yan, H. Yu, C. He, O. Goto, **Y.-L. Loo**, H. Meng "High Performance OTFTs Fabricated Using a Calamitic Liquid Crystalline Material of 2-(4-Dodecyl Phenyl)[1]Benzothieno[3,2-b][1] Benzothiophene" [*Advanced Electronic Materials* 2, 1600179, 2016.](#)
- F. Wu, W. Cai, J. Gao, **Y.-L. Loo**, N. Yao, "Nanoscale Electrical Properties of Epitaxial Cu₃Ge Films" [*Scientific Reports* 6, 28818, 2016.](#)
- Y. Ren, M. Sezen, F. Guo, F. Jaekle, **Y.-L. Loo**, "[d]-Carbon-Carbon Double Bond Engineering in Diazaphosphepines: Modulating the Electronic Structures of Heteropines" [*Chemical Science* 7, 4211, 2016.](#)
- M. Sezen, J.T. Register, Y. Yao, B. Glisic, **Y.-L. Loo**, "Eliminating Piezoresistivity in Flexible Conducting Polymers for Accurate Temperature Sensing Under Dynamic Mechanical Deformation" [*Small* 12, 2832, 2016.](#)
- L. Yan, Y. Zhao, H. Yu, Y. He, O. Goto, C. Yan, T. Chen, R.F. Chen, **Y.-L. Loo**, D. Perepichka, H. Meng, W. Huang "Effects of Heteroatoms on the Charge Mobility of Anthracene Derivatives" [*Journal of Materials Chemistry C* 4, 3517, 2016.](#)
- J. Gao, F.J. Uribe-Romo, J.D. Saathoff, H. Arslan, C.R. Crick, S.J. Hein, B. Itin, P. Clancy, W.R. Dichtel, **Y.-L. Loo**, "Ambipolar Charge Transport in Solution-Synthesized Graphene Nanoribbons" [*ACS Nano* 10, 4847, 2016.](#)
- H. Jeong, K.B. Shepard, G.E. Purdum, Y. Guo, **Y.-L. Loo**, C.B. Arnold, R.D. Priestley, "Additive Growth and Crystallization of Polymer Films" [*Macromolecules* 49, 2860, 2016.](#)
- G.E. Purdum, N. Yao, A. Woll, T. Gessner, R.T. Weitz, **Y.-L. Loo**, "Understanding Polymorph Transformations in Core-Chlorinated Naphthalene Diimides and Its Impact on Thin-Film Transistor Performance" [*Advanced Functional Materials* 26, 2395, 2016.](#)

N.C. Davy, G. Man, R. Kerner, M. Fusella, G.E. Purdum, M. Sezen, B.P. Rand, A. Kahn, **Y.-L. Loo**, "Contorted Hexabenzocoronenes with Extended Heterocyclic Moieties Improve Visible-Light Absorption and Performance in Organic Solar Cells" [*Chemistry of Materials* 28, 673, 2016.](#)

2015 (14)

J.A. Amonoo, A. Li, G.E. Purdum, M.E. Sykes, B. Huang, E.F. Palermo, A.J. McNeil, M. Shtein, **Y. -L. Loo**, P.F. Green, "Controlling Morphology and Enhancing Thermal Stability of Polymer Solar Cells using All-Conjugated Gradient Copolymers" [*Journal of Materials Chemistry C* 3, 20174, 2015.](#)

R. Hallani, K. Thorley, A.K. Hailey, S. Parkin, **Y.-L. Loo**, J.E. Anthony, "The Effect on Isomer Purity on the Crystal Packing and Device Performance of Desymmetrized Anthradithiophenes" [*Journal of Materials Chemistry C* 3, 8956, 2015.](#)

Y. Zhong, M.T. Trinh, R. Chen, G.E. Purdum, P.P. Khlyabich, M. Sezen, S. Oh, H. Zhu, B. Fowler, B. Zhang, W. Wang, C.-Y. Nam, M.Y. Sfeir, C. Black, M.L. Steigerwald, **Y.-L. Loo**, H. Li, S. Xiao, F. Ng, X.-Y. Zhu, C. Nuckolls, "Graphene Nanoribbons as Electron Acceptors in High Performance, Bulk-Heterojunction Solar Cells" [*Nature Communications*, 6, 8242, 2015.](#)

P.P. Khlyabich, A.E. Rudenko, B.C. Thompson, **Y.-L. Loo**, "Structural Origins for Tunable Open-Circuit Voltage in Ternary-Blend Solar Cells" [*Advanced Functional Materials*, 25, 5557, 2015.](#)

A.K. Hailey, S.-Y. Wang, Y. Chen, M.M. Payne, J.E. Anthony, V. Podzorov, **Y.-L. Loo**, "Quantifying the Energy Barriers and Elucidating the Charge Transport Mechanisms across Interspherulite Boundaries in Solution-Processed Organic Semiconductor Thin Films" [*Advanced Functional Materials*, 25, 5662, 2015.](#)

A.M. Hiszpanski, P.P. Khlyabich, **Y.-L. Loo**, "Tuning Kinetic Competitions to Traverse the Rich Structural Space of Organic Semiconductor Thin Films" [*MRS Communications* 5, 407, 2015.](#)

J. Berry, T. Bounassisi, D.A. Egger, G. Hodes, L. Kronik, **Y.-L. Loo**, I. Lubomirsky, S.R. Marder, Y. Mastai, J.S. Miller, D.B. Mitzi, Y. Paz, A.M. Rappe, I. Riess, B. Rybtchinski, O. Stafsudd, V. Stevanovic, M.F. Toney, D. Zitoun, A. Kahn, D. Gingly, D. Cahen, "Hybrid Organic Inorganic Perovskites (HOIPs): Opportunities and Challenges" [*Advanced Materials* 27, 5102, 2015.](#)

T.-W. Koh, A.M. Hiszpanski, M. Sezen, A. Naim, T. Galfsky, A. Trivedi, **Y.-L. Loo**, V. Menon, B.P. Rand, "Metal Nanocluster Light-Emitting Devices with Suppressed Parasitic Emission and Improved Efficiency: Exploring the Impact of Photophysical Properties" [*Nanoscale* 7, 9140, 2015.](#)

Y. Ren, A.M. Hiszpanski, **Y.-L. Loo**, "Self-Assembly of Axially Functionalized Subphthalocyanines in Thin Films" [*Chemistry of Materials* 27, 4008, 2015.](#)

P. Schulz, L. Whittaker-Brooks, B. MacLeod, D. Olson, **Y.-L. Loo**, A. Kahn, "Electronic Level Alignment in Inverted Organometal Perovskite Solar Cells" [*Advanced Materials Interfaces* 2, 1400532, 2015.](#)

A.Y. Fang, A.K. Hailey, A. Grosskopf, J.E. Anthony, **Y.-L. Loo**, M. Haataja, "Capillary Effects in Guided Crystallization of Organic Thin Films" [*APL Materials* 3, 036107, 2015.](#)

A.M. Hiszpanski, J. Saathoff, L. Shaw, H. Wang, L. Kraya, F. Luttich, M. Brady, M. Chabiny, A. Kahn, P. Clancy, **Y.-L. Loo**, "Halogenation of a Non-planar Molecular Semiconductor to Tune Energy Levels and Bandgaps for Electron Transport" [*Chemistry of Materials* 27, 1892, 2015.](#)

L. Whittaker-Brooks, J. Gao, A.K. Hailey, C. Thomas, N. Yao, **Y.-L. Loo**, "Bi₂S₃ Nanowire Networks as Electron Acceptor Layers in Solution-Processed Hybrid Solar Cells" [*Journal of Materials Chemistry C* **3**, 2686, 2015.](#)

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Y.-L. Loo, J.W.P. Hsu, R.L. Willett, K.W. Baldwin, K.W. West, J.A. Rogers, "High-Resolution Transfer Printing on GaAs Surfaces with Alkane Dithiol Self-Assembled Monolayers" [*Journal of Vacuum Science and Technology* 20, 2853, 2002.](#)

Y.-L. Loo, T. Someya, K.W. Baldwin, Z. Bao, P. Ho, A. Dodabalapur, H.E. Katz, J.A. Rogers, "Soft, Conformable Electrical Contacts for Organic Transistors: High-Resolution Circuits by Lamination" [*Proceedings of the National Academy of Science, USA* 99, 10252, 2002.](#)

Y.-L. Loo, R.L. Willett, K.W. Baldwin, J.A. Rogers, "Interfacial Chemistries for Nanoscale Transfer Printing" [*Journal of the American Chemical Society* 124, 7654, 2002.](#)

Y.-L. Loo, R.L. Willett, K.W. Baldwin, J.A. Rogers, "Additive, Nanoscale Patterning With a Stamp and a Surface Chemistry Mediated Transfer Process: Applications in Plastic Electronics" [*Applied Physics Letters* 80, 562, 2002.](#)

Y.-L. Loo, R.A. Register, A.J. Ryan, "Modes of Crystallization in Block Copolymer Microdomains: Breakout, Templated, and Confined" [*Macromolecules* 35, 2365, 2002.](#)

D. Bendejacq, V. Ponsinet, M. Joanicot, **Y.-L. Loo**, R.A. Register, "Well-Ordered Microdomain Structures in Polystyrene-Poly(acrylic acid) Diblock Copolymers from Controlled Radical Polymerization" [*Macromolecules* 35, 6645, 2002.](#)

2001 (2)

Y.-L. Loo, R.A. Register, A.J. Ryan, G.T. Dee, "Polymer Crystallization Confined in One, Two, and Three Dimensions" [Macromolecules 34, 8968, 2001.](#)

D.A. Vega, J.M. Sebastian, Y.-L. Loo, R.A. Register, "Phase Behavior and Viscoelastic Properties of Entangled Block Copolymer Gels" [Journal of Polymer Science Part B: Polymer Physics 39, 2183, 2001.](#)

2000 (3)

Y.-L. Loo, R.A. Register, D.H. Adamson, "Direct Imaging of Polyethylene Crystallites in Block Copolymer Microdomains" [Journal of Polymer Science Part B: Polymer Physics 38, 2564, 2000.](#)

Y.-L. Loo, R.A. Register, D.H. Adamson, "Polyethylene Crystal Orientation Induced by Block Copolymer Cylinders" [Macromolecules 33, 8361, 2000.](#)

Y.-L. Loo, R.A. Register, A.J. Ryan, "Polymer Crystallization in 25 nm Spheres" [Physical Review Letters 84, 4120, 2000.](#)

Book chapters (8)

J.D. Tarver, M. Sezen-Edmonds, J.E. Yoo, Y.-L. Loo, "Organic Electronic Devices with Water-Dispersible Conducting Polymers" in [Comprehensive Nanoscience and Technology](#), edited by John Rogers, Elsevier Publishing Company, 2019.

M. Sezen-Edmonds, Y.-L. Loo, "Processing-Structure-Function Relationships of Polymer-Acid-Templated Conducting Polymers for Solid-State Devices" in [Conjugated Polymers: Properties, Processing, and Applications](#), edited by T.A. Skotheim, J. Reynolds, B.C. Thompson, CRC Press, 2019.

J.D. Tarver, Y.-L. Loo, "Polyanilines" in [Conjugated Polymers: a Practical Guide to Synthesis](#), edited by Toshio Masuda, Klaus Mullen, John Reynolds, RSC Polymer Chemistry Series, London, 2012.

E.D. Gomez, S.S. Lee, C.S. Kim, Y.-L. Loo, "Morphological Control in Organic Electronic Devices" in [Molecular and Organic Devices](#), edited by Dinesh Agrawal, Nova Science Publishing Company, New York, 2009.

J.D. Tarver, J.E. Yoo, Y.-L. Loo, "Organic Electronic Devices with Water-Dispersible Conducting Polymers" in [Comprehensive Nanoscience and Technology](#), edited by Gary Wiederrecht, Elsevier Publishing Company, 2009.

K.C. Dickey, K.S. Lee, Y.-L. Loo, "Soft Lithography for Thin-Film Transistors" in [Organic Field-Effect Transistors](#), edited by Jason Locklin and Zhenan Bao, CRC Press, 2007.

Y.-L. Loo, "Templated Crystal Growth on a Nanoscale Using Phase Separated Block Copolymers" in [The Encyclopedia of Nanoscience and Nanotechnology](#), Marcel Dekker, Inc., 2004.

Y.-L. Loo and R.A. Register, "Crystallization in Block Copolymers" [Developments in Block Copolymer Science and Technology](#), edited by Ian Hamley, John Wiley and Sons, Ltd., 2004.

Patents, applications, and disclosures (14; four licensed by Abbott Diabetes Care; one under negotiation with Andluca Technologies)

Q.C. Burlingame, N.C. Davy, **Y.-L. Loo**, “Improved Transparency of Organic Solar Cells by Blending of Active Layer Materials” US Provisional Patent 62/878,552.

N.C. Davy, M. Sezen, **Y.-L. Loo**, “Single-Junction Organic Solar Cells Utilizing Ultraviolet Absorbing Materials and Producing Open-Circuit Voltages Above 1.4 V” European Patent Application 16876920.6-1212; US Patent 10,476,018.

Y.-L. Loo, J.B. Kim, “Lamination as a Modular Approach for Building Organic Photosensitive Devices,” US Patent 9,040,318.

G.E. Purdum, **Y.-L. Loo**, T. Weitz, “Crystalline Form of N-N’-Bis-(heptafluorobutyl)-2,6-dichloro-1,4,5,8-naphthalene Tetracarboxylic Diimide and the Use Thereof” European Patent Application 13193704.7-1462; US Provisional Patent 61/894,453.

J.B. Kim, P. Kim, H.A. Stone, N. Pegard, J.W. Fleischer, **Y.-L. Loo**, “Photoelectric Cells Incorporating Wrinkles and Folds to Enhance Efficiency and Bendability and Method of Making” US Patent Application 14/0251675.

Y.-L. Loo, J.E. Yoo, J.D. Tarver, “Water-Dispersible Polyaniline Films Capable of Undergoing Stable and Reversible Polyelectrochromic Transitions” US Patent 8,248,681.

Y.-L. Loo, J.E. Yoo, K.S. Lee, “Post-Processing Treatment of Conductive Polymers to Enhance Electrical Conductivity,” US Patent 8,093,098.

A. Heller, B.J. Feldman, N. Mano, **Y.-L. Loo**, “Crosslinked Adduct of Polyaniline and Polymer Acid Containing Redox Enzyme for Electrochemical Sensor,” US Patent 8,080,835; licensed to Abbott Diabetes Care, Inc.

A. Heller, B.J. Feldman, N. Mano, **Y.-L. Loo**, “Electron Conducting Crosslinked Polyaniline-based Redox Hydrogel, and Method of Making,” US Patent 9,303,279; licensed to Abbott Diabetes Care, Inc.

A. Heller, B.J. Feldman, N. Mano, **Y.-L. Loo**, “Method Comprising Co-Crosslinking Polyaniline, Polymer Acid and Redox Enzyme to Produce Polymeric Matrix” US Patent 8,703,458; licensed to Abbott Diabetes Care, Inc.

A. Heller, B.J. Feldman, N. Mano, **Y.-L. Loo**, “Method for Determining Analyte Concentration in Biological Fluid Using Electrochemical Sensor” US Patent 8,383,361; licensed to Abbott Diabetes Care, Inc.

J.W.P. Hsu, **Y.-L. Loo** and J.A. Rogers, “Forming Electrical Contacts to a Molecular Layer,” US Patent 7,229,847.

Y.-L. Loo and J.A. Rogers, “Forming Nanoscale Patterned Thin Film Metal Layers,” US Patent 6,946,332.

Z. Bao, P.K. Ho, **Y.-L. Loo**, J.A. Rogers and T. Someya, “Thin Film Transistors,” US Patent 6,596,569.

INVITED TALKS (225)

Keynote and named lectures, plenary talks (44)

2019 (3)

14th International Symposium on Functional π -Electron Systems (Berlin, Germany)

Aspen Ideas Forum (Aspen, CO)

R. Stephen Berry Lecture, Telluride Town Talk (Telluride, CO)

2018 (9)

Keynote Lecture, Dominican Electrical Industry Association Annual Forum (Santo Domingo, Dominican Republic)

Area 8E Plenary Lecture in Electronic Materials, American Institute of Chemical Engineers (Pittsburgh, PA)

Keynote Lecture, Innovation Day, Science History Institute (Philadelphia, PA)

Plenary Lecture, SPIE Optics and Photonics Conference (San Diego, CA)

Commencement Speech, Schmid College of Science and Technology, Chapman University (Orange, CA)

Julian C. Smith Lectures, Robert Frederick Smith School of Chemical Engineering, Cornell University

Covestro Distinguished Lectureship, School of Polymers and High Performance Materials, University of Southern Mississippi (Hattiesburg, MS)

Plenary Lecture, SPIE Optics and Photonics Conference (San Diego, CA)

Electronic Materials Keynote Lecture, Inaugural Bower Science Conference (Hsinchu, Taiwan)

2017 (5)

Area 8A Plenary Lecture in Polymer Science and Engineering, American Institute of Chemical Engineers (Minneapolis, MN)

Chemical Engineering Alumni Distinguished Lectureship, University of Massachusetts (Amherst, MA)

Keynote Lecture, International Conference on Materials Chemistry (Liverpool, United Kingdom)

Frontiers Lecture, Case Western Reserve University (Cleveland, OH)

Keynote Lecture, REACT @ University of Pennsylvania (Philadelphia, PA)

2016 (3)

International Smart Energy Forum (Shenzhen, China)

Area 8A Plenary Lecture, Annual Meeting of the American Institute of Chemical Engineers (San Francisco, CA)

Princeton Plasma Physics Laboratory Science on Saturday Lecture Series (Princeton, NJ)

2015 (2)

ExxonMobil Chemical Research Conference (Galveston, TX)

Keynote, Photonics West Conference, (San Francisco, CA)

2014 (2)

Area 8E Plenary Lecture, Annual Meeting of the American Institute of Chemical Engineers (Atlanta, GA)

International Conference on the Science and Technology of Synthetic Metals (Turku, Finland)

2013 (2)

Solvay Symposium Celebrating Cross-Country Journey of Solar Impulse (New York City, NY)

President's Lecture, Princeton University (Princeton, NJ)

2012 (2)

MESD Plenary Session, American Institute of Chemical Engineers Meeting (Pittsburgh, PA)

Keynote, International Colloquia Series, Innovation Lab (Ludwigshafen, Germany)

2011 (2)

Plenary, Plastic Electronics Conference (Dresden, Germany)

Technology Trailblazer, Freescale Technology Forum (San Antonio, TX)

2010 (4)

Distinctive Voices Lecture Series, Beckman Center (Irvine, CA)

IDEAS Lab, Summer Davos Meeting, World Economic Forum (Tianjin, China)

Plenary Keynote, 35th Annual Convention of the Chinese American Academic and Professional Society (New York, NY)

John H. Dillon Medal Award Lecture, American Physical Society Meeting (Portland, OR)

2009 (1)

Women in Leadership Conference, Princeton University (Princeton, NJ)

2008 (2)

Class of 2005 Beckman Young Investigator Symposium (Irvine, CA)

IDEAS Plenary Symposium, Electrochemical Society Meeting (Phoenix, AZ)

2007 (2)

Thiele Lecture, Chemical & Biomolecular Engineering, University of Notre Dame (South Bend, IN)

Distinguished Women Science and Engineering Speakers Program, University of Minnesota (Minneapolis, MN)

2006 (2)

Promising Directions Roundtable, W.M. Keck Foundation (New York, NY)

O'Donnell Award Lecture, The Academy of Medicine, Engineering, and Science of Texas (Houston, TX)

2005 (1)

Keynote, Women in Science, International Materials Research Congress (Cancun, Mexico)

2004 (2)

DuPont Young Professor Award Lecture (Wilmington, DE)

Emerging Scholars Lecture, University of California - Santa Barbara (Santa Barbara, CA)

Invited talks at national and international meetings and conferences (104)

2019 (8)

American Physical Society March Meeting (Boston, MA)

Materials Research Spring Society Meeting (Phoenix, AZ)

International Symposium on Molecular Design of Optoelectronic Materials (Beijing, China)

24th biannual International Conference on the Chemistry of the Organic Solid State (New York, NY)

Telluride Science Research Center Workshop on the Role of Assembly in Dictating the Functionality and Applications of Organic Semiconductors (Telluride, CO)

International E-Conversion Conference (Venice, Italy)

Materials Research Society Fall Meeting – Symposium on Organic Crystals (Boston, MA)

Materials Research Society Fall Meeting – Symposium on Perovskite Optoelectronics (Boston, MA)

2018 (5)

Nature Conference on the Future of Flexible Electronics (Xi'an, China)

UK-US Workshop on Extended Model of Organic Semiconductors (Princeton, NJ)

Materials for Organic Electronics: Synthesis, Spectroscopy and Theory (Heidelberg, Germany)

Symposium on Organic Electronics, Spring Materials Research Society Conference (Phoenix, AZ)

Symposium in honor of Elsa Reichmanis, Spring American Chemical Society Meeting (New Orleans, LA)

2017 (6)

9th Sino-US Joint Conference on Chemical Engineering (Beijing, China)

Workshop on Substrate-Mediated Polymorphism (Graz, Austria)

50th Anniversary of Macromolecules Symposium, American Chemical Society Meeting (Washington DC)

Telluride Science and Research Conference on Molecular Engineering (Telluride, CO)

Symposium on Hierarchical Self Assembly, American Chemical Society (San Francisco, CA)

Invited Session on Flexible and Stretchable Organic Electronics, American Physical Society (New Orleans, LA)

2016 (8)

Materials Research Society Fall Meeting (Boston, MA)

International Solvay Symposium on Organic Electronics (Brussels, Belgium)

KAUST Solar Future Symposium (Jeddah, Saudi Arabia)

International Conference on Electroluminescent and Optoelectronic Devices (Rayleigh, NC)

Joint US and Africa Materials Institute Workshop (Arusha, Tanzania)

Smart Coatings Conference (Orlando, FL)

Pacific Polymer Conference (Kauai, HI)

National and Global Conference Chinese Conference on Organic Molecules and Polymer Light-Emitting Materials and Their Optoelectronic Properties (Nanjing, China)

2015 (7)

Larson Workshop, Association of Crystallization Technology (Philadelphia, PA)

Annual Meeting of the New Champions, World Economic Forum (Dalian, China)

European Conference on Molecular Electronics (Strasbourg, France)

Blavatnik Science Symposium (New York City, NY)

Polymers Gordon Research Conference (Mount Holyoke, MA)

European Materials Research Society Spring Meeting (Lille, France)

High Polymer Research Group (Pott Shrigley, United Kingdom)

2014 (4)

Materials Research Society Fall Meeting (Boston, MA)

American Institute of Chemical Engineers Annual Meeting (Atlanta, GA)

Annual SPIE Optics and Photonics Meeting (San Diego, CA)

European Materials Research Society Meeting (Lille, France)

2013 (4)

Annual Meeting of the New Champions, World Economic Forum (Dalian, China)

European Conference on Molecular Electronics (London, United Kingdom)

International Conference on Flexible Electronics (Erlangen, Germany)

American Physical Society March Meeting (Baltimore, MD)

2012 (8)

Materials Research Society Fall Meeting (Boston, MA)

Global Organic Photovoltaics Conference (Suzhou, China)

American Chemical Society Fall Meeting (Philadelphia, PA)

SPIE Optics and Photonics Meeting (San Diego, CA)

International Conference on the Science and Technology of Synthetic Metals (Atlanta, GA)

IEEE Photovoltaics Specialists Conference (Austin, TX)

Spring Materials Research Society Meeting (San Francisco, CA)

American Physical Society Meeting (Boston, MA)

2011 (6)

American Institute of Chemical Engineers Annual Meeting (Minneapolis, MN)

ESPMI Conference (Karlsruhe, Germany)

International Workshop of Organic Composites (Hangzhou, China)

Summer School on Organic Electronics (Hono, Sweden)

Spring Materials Research Society Meeting (San Francisco, CA)

General Assembly of the Global Young Academy (Berlin, Germany)

2010 (6)

Fall Materials Research Society Meeting (Boston, MA)

International Conference on Electroluminescence and Organic Optoelectronics (Ann Arbor, MI)

SPIE Optics and Photonics Meeting (San Diego, CA)

Polymer Physics Gordon Research Conference (Mount Holyoke, MA)

Functional-Pi-09 Conference (Atlanta, GA)

Organic Field Effect Transistors Conference (Les Diablerets, Switzerland)

2009 (8)

US-China Science Workshop (Beijing, China)

Electrochemical Society Meeting (Vienna, Austria)

Kavli Frontiers of Science Meeting (Kunming, China)

Synchrotron Radiation in Polymer Science Meeting (Maastricht, Netherlands)

Fall American Chemical Society Meeting (Washington, DC)

Organic Electronics Workshop (San Francisco, CA)

American Physical Society Meeting (Pittsburgh, PA)

Smart Coatings Conference (Orlando, FL)

2008 (7)

MacroMex Meeting (Los Cabos, MX)

US-Korea Conference (San Diego, CA)

Fall American Chemical Society Meeting (Philadelphia, PA)

Transatlantic Frontiers of Chemistry Symposium (Cheshire, United Kingdom)

Spring Materials Research Society Meeting (San Francisco, CA)

Spring American Chemical Society Meeting (New Orleans, LA)

Gordon Research Conference on Colloidal, Macromolecular, and Polyelectrolyte Solutions (Ventura, CA)

2007 (9)

American Institute of Chemical Engineers Annual Meeting (Salt Lake City, UT)

Plastic Electronics Conference (Frankfurt, Germany)

SPIE Optics and Photonics Meeting (San Diego, CA)

International Conference on Materials for Advanced Technologies (Singapore)

Spring Materials Research Society Meeting (San Francisco, CA)

The Best Little Nano Conference in Texas (Austin, TX)

Nano-Giga Challenges in Electronics and Photonics (Phoenix, AZ)

Polymers West Gordon Research Conference (Ventura, CA)

Taiwan-US Workshop on Soft Materials (Taipei, Taiwan)

2006 (6)

American Institute of Chemical Engineers Annual Meeting (San Francisco, CA)

Gordon Research Conference on Electronic Processes in Organic Materials (Mount Holyoke, MA)

Organic Electronics Workshop (Toronto, Canada)

Electronic Materials Conference (University Park, PA)

North American Thermal Analysis Society Annual Meeting (Dallas, TX)

American Physical Society Meeting (Baltimore, MD)

2005 (4)

Fall American Chemical Society Meeting (Washington, DC)

International Materials Research Congress Annual Meeting (Cancun, Mexico)

SPIE Optics and Photonics Meeting (San Diego, CA)

American Physical Society Meeting (Los Angeles, CA)

2004 (2)

Fall American Chemical Society Meeting (Philadelphia, PA)

Spring Materials Research Society Meeting (San Francisco, CA)

2003 (5)

Fall Materials Research Society Meeting (Boston, MA)

American Chemical Society Regional Meeting (Rochester, NY)

Fall American Chemical Society Meeting (New York, NY)

Workshop on Photonic Materials Synthesis and Processing at the Interface (Rochester, NY)

Workshop on Technological Challenges for Flexible, Lightweight, Low-cost and Scalable Organic Electronics and Photonics (Arlington, VA)

2002 (1)

Workshop at the Nanoelectronics Conference and Expo (New York, NY)

Departmental seminars and industrial colloquia (81)

2019 (4)

McKetta Department of Chemical Engineering, University of Texas (Austin, TX)

Chemical Engineering, University of Illinois (Urbana Champaign, IL)

Chemical Engineering, University of Chicago (Chicago, IL)

Arkema (King of Prussia, PA)

2018 (3)

Chemical Engineering, Pennsylvania State University (State College, PA)

Molecular Engineering Seminar Series, University of Washington (Seattle, WA)

Institute of Molecular Engineering, Argonne National Laboratory (Chicago, IL)

2017 (3)

Symposium Celebrating Don Paul, University of Texas at Austin (Austin, TX)

Chemical Engineering, University of Delaware (Newark, DE)

Laboratory for Surface Modification, Rutgers University (New Brunswick, NJ)

2016 (5)

School of Materials Science, Peking University Graduate School at Shenzhen (Shenzhen, China)

Chemical Engineering, University of Michigan (Ann Arbor, MI)

Corporate Research, ExxonMobil (Clinton, NJ)

Electronics and Electrical Engineering, Universiti Tunku Abdul Rahman, (Kuala Lumpur, Malaysia)

Chemistry, University of Florida (Gainesville, FL)

2015 (6)

Chemistry, Nanjing Technological University (Nanjing, China)

Chemistry and Chemical Engineering, South University of Science and Technology of China (Shenzhen, China)

School of Materials Science, Peking University, Shenzhen Graduate School (Shenzhen, China)

Physics, St. John's University, New York (New York, NY)

Chemical Engineering, University of Wisconsin (Madison, WI)

Chemical Engineering, Rutgers University, Newark Campus (Newark, NJ)

2014 (6)

Chemical Engineering, Massachusetts Institute of Technology (Boston, MA)

Chemical Engineering, Purdue University (Lafayette, IN)

Materials Science, Johns Hopkins University (Baltimore, MD)

Chemical Engineering, Rice University (Houston, TX)

Chemical Engineering, University of Houston (Houston, TX)

Chemical Engineering, City College of New York (New York City, NY)

2013 (5)

Chemical Engineering, Georgia Institute of Technology (Atlanta, GA)

Chemistry, University of North Carolina (Chapel Hill, NC)

Chemical Engineering, University of Colorado (Boulder, CO)

Chemical Engineering, Texas A&M University (College Station, TX)

Chemical Engineering, California Institute of Technology (Pasadena, CA)

2012 (5)

Materials Science, Rutgers University (New Brunswick, NJ)

Polymer Science and Engineering, University of Connecticut (Harford, CT)

Chemistry, University of Kentucky (Lexington, KY)

Chemical Engineering, Stanford University (Palo Alto, CA)

Organic Electronics Division, BASF (Ludwigshafen, Germany)

2011 (6)

Materials Science, University of Delaware (Newark, DE)

Chemical Engineering, Chalmers University (Gothenberg, Sweden)

Chemistry, Ecole Polytechnique Federale de Lausanne (Lausanne, Switzerland)

Chemical Engineering, Drexel University (Philadelphia, PA)

Polymers Division, National Institute of Standards and Technology (Gaithersburg, MD)

Chemistry, Carnegie Mellon University (Pittsburgh, PA)

2010 (4)

Chemical Engineering, Tufts University (Medford, MA)

Arkema (King of Prussia, PA)

Corporate Research, ExxonMobil (Clinton, NJ)

Chemistry, University of Wisconsin (Madison, WI)

2009 (3)

IGERT Student Sponsored Seminar, Cornell University (Ithaca, NY)

Chemistry, New York University (New York, NY)

Brockhouse Institute of Materials Research, McMaster University (Canada)

2008 (6)

Chemistry, University of North Carolina (Chapel Hill, NC)

Chemical Engineering, University of California (Berkeley, CA)

General Electric (Albany, NY)

Chemical Engineering, Auburn University (Auburn, AL)

Institute National de la Recherche Scientifique, Universite de Quebec (Montreal, Canada)

Ecole Polytechnique de Montreal (Montreal, Canada)

2007 (5)

Chemistry, Rensselaer Polytechnic Institute (Troy, NY)

Chemical Engineering, University of Rochester (Rochester, NY)

Chemical Engineering, North Carolina State University (Rayleigh, NC)

Chemistry, Georgia Institute of Technology (Atlanta, GA)

IGERT Student Sponsored Symposium, University of Texas at Austin (Austin, TX)

2006 (9)

Chemical Engineering, University of Washington (Seattle, WA)

Chemical Engineering, California Institute of Technology (Pasadena, CA)

Chemical Engineering, Columbia University (New York, NY)

Air Products (Allentown, PA)

Centro de Investigacion en Quimica (Saltillo, MX)

Polymer Science and Engineering, University of Massachusetts (Amherst, MA)

Materials Science and Engineering, Cornell University (Ithaca, NY)

Chemical Engineering, Northwestern University (Evanston, IL)

Sandia National Laboratories (Albuquerque, NM)

2005 (4)

Chemical Engineering, Princeton University (Princeton, NJ)

Materials Science and Engineering, University of Pennsylvania (Philadelphia, PA)

International Sematech (Austin, TX)

Chemical and Biomolecular Engineering, University of Pennsylvania (Philadelphia, PA)

2004 (2)

Princeton Institute for the Science and Technology on Materials, Princeton University (Princeton, NJ)

3M (Austin, TX)

2003 (3)

Palo Alto Research Center (Palo Alto, CA)

Ricoh Innovations (Menlo Park, CA)

Physics, Southwest Texas State University (San Marcos, TX)

2002 (2)

Chemical Engineering, Texas Tech University (Lubbock, TX)

Chemistry, Rutgers University (Piscataway, NJ)

EXTERNAL GRANTS & CONTRACTS FOR RESEARCH

Total external funds raised approx. \$11.8 MM

YLL portion approx. \$5.8 MM

Excludes funding from large center proposals

2018

“Identifying the Impact of Process, Precursors and Defects in Metal Halide Perovskite Solar Cells”
EERE DoE; \$625,000

Co-PI with Barry Rand, Antoine Kahn (both electrical engineering), Jeff Schwartz (chemistry), Joseph Berry (NREL)

“The Impact of Mechanical Stress and Strains on Organic Semiconductor Thin Films for Flexible Electronic Applications” NSF-MEP; \$431,000

2016

“Processing-Structure-Property Relationships of Heterogeneous Polymer Semiconductors”
ExxonMobil; \$300,000

“Collaborative Research: Organic Semiconductors by Computationally-Aided Refinement”
NSF DMREF Initiative; \$1,080,000

University of Kentucky is lead; co-PI with John Anthony, Chad Risko (University of Kentucky), and Oana Jureschu (Wake Forest University)

“Collaborative Research: Designing Functional Materials with Optimal Learning”
NSF DEMS Initiative; \$750,000

Cornell is lead; co-PI with Paulette Clancy and Peter Frazier

2015

“EAGER: Structural Development of Organometallic Halide Perovskites for Thin-Film Photovoltaics”
NSF EAGER Initiative; \$100,000

2012

“Enabling Young Global Leader Initiatives”
Clermont Charitable Trust; \$200,000

“Crystallization of Solution-Processed Organic Semiconductors”
BASF, Germany; \$300,000

2011

“Ultimate Electronic Device Scaling Using Structurally Precise Graphene Nanoribbons”
NSF Nanoelectronics for 2020 and Beyond; \$1,631,000

Cornell is lead; co-PI with Paulette Clancy and William Dichtel

“Development of New Solution-Processable Electron Acceptors for Organic Photovoltaics”
ONR Photovoltaics Program; \$780,000

Co-PI with John Anthony (University of Kentucky)

2010

“Highly Crystalline Bulk-Heterojunction Organic Solar Cells”

NSF Solar Initiative; \$925,000

University of Kentucky is lead; co-PI with John Anthony, Chi-Sing Man, Michel Jabbour

2009

“Engineering Hybrid Nanoparticle-Polymer Photovoltaics with Enhanced Charge Transport and Collection via Self Assembly”

ONR Photovoltaics Program; \$540,000

Co-PI with Rachel Segalman, Jeff Urban (University of California, Berkeley)

2008

“Low-Cost, Stable and Efficient Organic Solar Cells via the Development of Well-Defined Chemically-Modified Organic-Organic and Organic-Metal Interfaces”

Dreyfus Foundation, Environmental Chemistry Program; \$120,000

“PIRE: Polymer Education and Research Partnership between US and Korea”

NSF PIRE Program; \$2,500,000

Co-PI with Chang Ryu (lead; Rensselaer Polytechnic Institute), Alfred Crosby (University of Massachusetts – Amherst), Venkat Ganesan (University of Texas at Austin), Jan Genzer (North Carolina State University)

“Self Assembly of Conjugated Molecules for Molecular Junctions”

Sloan Foundation, Science Fellowship Program; \$50,000

2006

“Solution-Processable Organic Semiconductors: Viable Materials for Functional Thin-Film Electronics”

Texas Higher Education Coordinating Board, ARP Program; \$90,647

2005

“Nanoscale Templates for Zinc Oxide Growth”

Sandia National Laboratories, Laboratory Directed Research Program; \$50,000

“Water Dispersible, Directly Patternable Polyaniline”

Beckman Foundation, Fellows Program; \$264,000

2004

“Controlling the Macroscopic Properties of Organic Electrically-Active Materials by the Rational Engineering of Molecular Interactions and Structural Hierarchies”

W.M. Keck Foundation; \$800,000

Co-PI with Paul Barbara, Ananth Dodabalapur (University of Texas at Austin)

“An Integrated Research and Education Program for Engineering Functional Block Copolymers”

NSF CAREER Program; \$400,000

2003

“Laser Ablation of Organic Semiconductors”
DuPont, Young Professor Program; \$75,000

“Developing a Soft Lithography and Printing Facility for Research and Education in Electrically-Active Organic Materials”
NSF Instrumentation for Materials Research Program; \$129,738

2002

“Polymeric Materials for Photonic and Opto-Electronic Devices”
Dreyfus Foundation, New Faculty Program; \$40,000

EXTERNAL PROFESSIONAL SERVICE & ACTIVITIES

Membership in professional societies

American Association for the Advancement of Science (AAAS)
American Chemical Society (ACS)
American Institute of Chemical Engineers (AIChE)
American Physical Society (APS)
Materials Research Society (MRS)
Global Young Academy
Young Global Leader Network, World Economic Forum

Professional and governmental committees

2017	Panel Co-Chair, Department of Energy Basic Energy Research Energy-Water Nexus Workshop
2016 – 2018	Member-at-Large, Division of Polymers, American Physical Society
2015	Co-organizer, MRS Rump Session on Organic-Inorganic Hybrid Perovskites
2013	Session Organizer, Frontiers of Engineering, National Academy of Engineering
2013	Program Chair, Division of Polymers, APS
2012	US Delegate, Chemical Sciences and Society Summit
2012	Organizing Committee, Organic Field Effect Transistors Conference
2011 – 2015	Institute Awards Committee, American Institute of Chemical Engineers
2011	Program Chair, US-China Kavli Frontiers of Science Conference
2010	Co-founder, Young Scientist Ambassador Program
2010	Organizing Committee, US-China Kavli Frontiers of Science Conference
2009 – 2011	Chair, Materials Engineering and Science Division, AIChE
2008	Organizing Committee, MacroMex Conference
2006	Organizer, “Polymers in Existing and Emerging Patterning Techniques” Short Course, APS
2005	Topical Conference Technical Program Chair, Society of Plastic Engineers

- 2004 – 2006 Education Committee, Division of Polymers, APS
- 2003 – 2005 Associate, Younger Chemist Committee, ACS
- 2002 – 2005 Technical Programming Committee, Device Research Conference, IEEE

Editorial and advisory boards

- 2020 – Chemical and Biological Engineering External Advisory Board, New York University
- 2019 – Editorial Advisory Board, Cell Reports Physical Sciences
- 2018 Renewable and Sustainable Energy Institute, University of Colorado, Boulder and National Renewable Energy Laboratory
- 2018 – Argonne Board on Materials and Chemistry, Argonne National Laboratory
- 2018 – Science Advisory Committee, Center for Functional Nanomaterials, Brookhaven National Laboratory
- 2018 – Scientific Advisory Board, Mesomaterial, LLC
- 2017 – Advisory Board, Steam Capital
- 2017 – Circle of Friends, Druid Collective
- 2016 – Friends of Fitz Gate Ventures
- 2016 – Advisory Committee, REACT @ University of Pennsylvania
- 2015 External Reviewer, School of Chemistry and Chemical Engineering, Shanghai Jiao Tong University
- 2015 – Advisory Board, Slavin Foundation
- 2015 – 2018 External Advisor, University of Tunku Abdul Rahman, Kuala Lumpur, Malaysia
- 2014 External Examiner for Tenure and Promotion, Tufts University
- 2014 – 2016 Governing Board of Directors, Association for Princeton Graduate Alumni
- 2013 – Strategic Advisory Board, NewWorld Capital Group, LLC
- 2013 – Editorial Board, *Advanced Materials*
- 2013 – Editorial Advisory Board, *Materials Horizon*
- 2013 International Advisory Board, International Conference on the Science and Technology of Synthetic Metals
- 2012 International Advisory Board, Plastic Electronics Foundation
- 2012 – 2015 Advisory Committee, Chemical Engineering Department, Rutgers University
- 2012 – Scientific Advisory Board for Summer School, National Renewable Energy Laboratories
- 2011 International Advisory Committee, Synchrotron Radiation in Polymer Science
- 2011 International Advisory Board, International Conference on Synthetic Metals
- 2010 – Editorial Advisory Board, *Journal of Polymer Science B: Polymer Physics*
- 2010 Advisory Board, International Functional-Pi-09 Conference

- 2007 – 2010 Editorial Board, *Chemistry of Materials*
- 2007 Guest Editor, *MRS Bulletin*, Special Issue on Organic Electronics
- 2007 Guest Editor, Special Issue of *Journal of Polymer Science B: Polymer Physics*
- 2003 – 2005 Advisory Committee, Electron Devices Society, IEEE
- 2003 Editorial Board, *Journal of Physics D*

Chaired and organized sessions and symposia at national and international meetings and conferences; avid reviewer of manuscripts and proposals

PERSONNEL

Post-doctoral advisor

Prof. John A. Rogers
Bell Laboratories, Lucent Technologies, Materials Science and Engineering, University of Illinois, Urbana-Champaign and Chemistry, now Materials Science and Engineering, Northwestern University

Thesis advisor

Prof. Richard A. Register
Chemical & Biological Engineering, Princeton University

Visitors sponsored (7)

- 2020 **Prof. Jongbok Kim**, Kumoh University, Korea
- 2020 **Mr. Dongwook Ko**, visiting student, Kumoh University, Korea
- 2020 **Mr. Yohan Ma**, visiting student, Kumoh University, Korea
- 2020 **Ms. Julia Schmidt**, visiting student, Imperial College London, UK
- 2019 **Mr. Chao Yao**, visiting student, Peking Graduate School at Shenzhen, China
- 2017 **Prof. Ramesh Subramanian**, Universiti of Malaya, Malaysia
Fulbright Scholar
- 2015 **Prof. Kok-Keong Chong**, Universiti Tunku Abdul Rahman, Malaysia
Fulbright Scholar

Post-doctoral associates advised (18; 6 currently)

- 2019 – **Dr. Melissa Lynne Ball**
PhD in Chemistry, Columbia University (2019)
Presidential Postdoctoral Fellowship
- 2019 – **Dr. Quinn Burlingame**
PhD in Electrical Engineering, University of Michigan (2018)
Beckman Postdoctoral Fellowship
- 2018 – **Dr. Yu Xia**
PhD in Materials Science and Engineering, University of Pennsylvania (2016)
- 2018 – **Dr. Xiaoming Zhao**
PhD in Physics, Queen Mary University, London (2018)

- 2017 – 2019 **Dr. Guy Olivier Ngongang**
PhD in Materials Science, King Abdullah University, Saudi Arabia (2016)
- 2017 – **Dr. Sara Thomas**
PhD in Geochemistry, Northwestern University (2016)
Jointly supervised with Prof. Satish Myneni (GEO) and Dr. Sarah-Jane White (USGS)
- 2015 – 2018 **Dr. Marcos Reyes-Martinez**
PhD in Polymer Science, University of Massachusetts, Amherst (2015)
Intelligence Community Post-doctoral Fellow
Presently NIST-NRC Post-doctoral Fellow
- 2014 – 2018 **Dr. Petr Khlyabich**
PhD in Chemistry, University of Southern California (2014)
Presently senior researcher, Nike, Portland, OR
- 2012 – 2017 **Dr. Jia Gao**
PhD in Physics, University of Groningen, Netherlands (2011)
NOW Rubicon Fellow
Presently senior engineer, Enembrace, Fresno, CA
- 2012 – 2016 **Dr. Yi Ren**
PhD in Chemistry, University of Calgary, Canada (2012)
MRSEC-PCCM Post-doctoral Fellow
Presently assistant professor, Chemistry, Shanghai Technical University, China
- 2011 – 2014 **Dr. Luisa Whittaker-Brooks**
PhD in Chemistry, State University of New York, Buffalo (2011)
L'Oreal Women in Science Fellow
Presently assistant professor, Chemistry, University of Utah
- 2010 – 2012 **Dr. Jeffrey Mativetsky**
PhD in Physics, McGill University, Canada (2007)
Dreyfus Post-doctoral Fellow in Environmental Chemistry
Presently assistant professor, Physics, State University of New York, Binghamton
- 2010 – 2011 **Dr. Eleni Pavlopoulou**
PhD in Materials Science, University of Crete, Greece (2010)
Presently assistant professor, University of Strasbourg, France
- 2008 – 2011 **Dr. Jongbok Kim**
PhD in Materials Science, Yonsei University, Korea (2008)
Presently Assistant professor, Kumoh Institute of Science and Technology, Korea
- 2008 – 2010 **Dr. Wei Tang**
PhD in Chemistry, Carnegie Mellon University (2008)
Presently senior specialist developer, BNY Mellon, New York
- 2008 – 2010 **Dr. Enrique Gomez**
PhD in Chemical Engineering, University of California, Berkeley (2008)
Presently Professor, Chemical Engineering, Pennsylvania State University
- 2005 – 2006 **Dr. Sally Li Peng**
PhD in Polymer Chemistry, Peking University, China (2002)
- 2003 – 2005 **Dr. Quinn A. Smith**
PhD in Polymer Chemistry, University of Southern Mississippi (2003)

Graduate students advised (23; 9 currently)

- 2020 – **Marko Ivancevic**
BSE in Chemical Engineering, University of Illinois, Urbana Champaign (2019)
- 2020 – **Adam Berry**
BSE in Chemical Engineering, Cornell University (2018)
NSF Fellow
- 2019 – **Alan Kaplan**
BSE in Materials Science and Engineering, University of Maryland (2018)
NSF Fellow
- 2019 – **Yannick Eatmon**
BSE in Chemical Engineering, Massachusetts Institute of Technology (2018)
- 2018 – **Tianran Liu**
BSE in Electrical Engineering, Purdue University (2017)
- 2015 – **Jeni Sorli**
BSE in Chemical Engineering, University of Colorado (2015)
- 2015 – **Kaichen Gu**
BSE in Chemical Engineering, Cambridge University, United Kingdom (2015)
ExxonMobil Emerging Technology Fellow
- 2015 – **J. Clay Hamill**
BSE in Chemical Engineering, North Carolina State University (2015)
NDSEG Fellow
- 2012 – **Nicholas Davy**
BSE in Chemical Engineering, University of Texas at Austin (2012)
NSF Fellow
Co-founder, Andluca Technologies LLC
- 2012 – 2018 **Dr. Melda Sezen-Edmonds**
BSE in Chemical Engineering, Koc University, Turkey (2012)
Presently engineer at Bristol-Myer Squibb
- 2012 – 2018 **Dr. Geoffrey Purdum**
BSE in Chemical Engineering, University of Massachusetts, Amherst (2012)
NDSEG Fellow
Presently engineer at Bristol-Myer Squibb
- 2011 – 2016 **Dr. Anna Hailey**
BSE in Chemical Engineering, BS in Chemistry, BA in Chinese, University of Mississippi (2011)
NSF Fellow
Presently research analyst, Institute of Defense Analysis, Washington DC
- 2009 – 2015 **Dr. Anna Hiszpanski**
BSE in Chemical Engineering, California Institute of Technology (2009)
NDSEG Fellow; Princeton/Rutgers IGERT Fellow
Presently research staff, Lawrence Livermore National Laboratory
- 2008 – 2013 **Dr. He Wang**
MS in Materials Science, Tsing Hua University, China (2008)
Presently assistant professor, Physics, University of Miami
- 2007 – 2013 **Dr. Keith Gallow**
BSE in Chemical Engineering, University of New Mexico (2007)

- Presently senior engineer, ExxonMobil
- 2007 – 2012 **Dr. Stephanie Lee**
 BSE in Chemical Engineering, Massachusetts Institute of Technology (2007)
NDSEG Fellow
 Presently assistant professor, Chemical Engineering and Materials Science,
 Stevens Institute of Technology
- 2006 – 2012 **Dr. Jacob Tarver**
 BSE in Chemical Engineering, University of Oklahoma (2006)
NSF Fellow
 Presently staff scientist, National Institute of Standards and Technology
- 2004 – 2010 **Dr. Joung Eun Yoo**
 MS in Chemical Engineering, Chung-Ang University (2004)
 Presently scientist, LG Chemicals, Korea
- 2004 – 2008 **Dr. Kyle Guice**
 BSE in Chemical Engineering, Louisiana Tech University (2004)
NSF Fellow
 Presently senior engineer, ExxonMobil
- 2003 – 2008 **Dr. Tracy Bucholz**
 BSE in Chemical Engineering, University of Florida (2003)
DHS Fellow
 Presently scientist, Arkemin
- 2003 – 2008 **Dr. Dmitry Krapchetov**
 BSE in Chemical Engineering, Texas A&M University (2003)
 Presently engineer, Dow Chemical
- 2002 – 2007 **Dr. Kwangseok Lee**
 MS in Materials Science, Seoul National University, Korea (2002)
Il-Ju Fellow
 Presently senior engineer, Intel
- 2002 – 2007 **Dr. Kimberly Dickey**
 BSE in Chemical Engineering, Cornell University (2002)
 Presently senior lecturer, Chemical Engineering, North Carolina State University

Advised >45 undergraduate research assistants and 5 high-school research interns