

**Gaurav Giri**  
**Assistant Professor, Department of Chemical Engineering**  
**University of Virginia,**  
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**Email: Gg3qd@virginia.edu**

**Education:** **Stanford University** **September 2008 - August 2013**  
**Ph.D. Chemical Engineering**  
**Advisor: Zhenan Bao**  
**Thesis: *Understanding and Tuning Organic Semiconductor Packing during Solution Processing***

**California Institute of Technology (Caltech)** **September 2004 - June 2008**  
**B.S. Chemical Engineering**

### **Awards and Honors:**

2019 – ACS PMSE Young Investigator Award  
2019 – Robert A. Moore, Jr. Award in Chemical Engineering  
2018 – UVA Center for Global Inquiry and Innovation Global Program of Distinction  
2017 – Jeffress Trust Award in Interdisciplinary Research Award  
2017 – Virginia Space Grant Consortium New Investigator Award  
2015 – Cornell High Energy Synchrotron Source – Graduate Student Award  
2013 – SLAC National Accelerator Laboratory – Melvin P. Klein Scientific Development Award  
2012 – Taiwan Semiconductor Manufacturing Company – 6<sup>th</sup> Outstanding Student Research Gold Award  
2012 – American Chemical Society (ACS) Akzonobel Student Award Finalist  
2012 – Materials Research Society (MRS) Gold Graduate Student Award  
2008 – Graduated with Honors from Caltech.  
2007 – William N. Lacey SURF Scholar  
2006, 07 – Dale Austin Scholarship

### **Professional Experience:**

**Founder, Chief Technical Officer: Hava Inc.** Sep.18 - Current

- Metal organic framework thin films for low cost air filters for developing countries.
- Human centered design of mask and filters to increase awareness and utilization.

**Assistant Professor: University of Virginia, Department of Chemical Engineering** Jan.16 - Current

- Research Areas: Organic molecule crystallization for pharmaceutical applications and organic electronics, metal organic frameworks for catalysis, in-situ crystallization techniques.

### **Postdoctoral Research Experience:**

**Mass. Inst. Of Tech. (MIT): Jensen Research Group, Chemical Engineering** Sep.13 – Jan.16

- Investigated handling solid formation in microreactor flow synthesis and extended reactor lifetime through controlled crystal growth.
- Studied organic crystal nucleation and growth in microfluidic systems.
- Investigated use of 3-D additive printing for microreactor formations through use of novel materials.

### **Doctoral Research Experience:**

**Stanford: Bao Research Group, Chemical Engineering** Mar.09 – Aug.13

- Tuned the lattice spacing of small molecular organic semiconductor (OSC) thin film crystals using solution processing methods, and improved the electronic properties of the OSC.
- Extended the concept of OSC lattice strain to polymeric organic semiconductors. Used electrical characterization, spectroscopic and X-ray diffraction methods to study the effect of lattice strain.
- Built an in-situ solution shearing machine at the Cornell High Energy Synchrotron Source (CHESS) and assisted building similar model at SLAC National Accelerator Laboratory.
- Performed in situ study of crystallization in kinetic regimes using grazing incidence X-ray diffraction (GIXD). Explained the importance of confinement for lattice strained OSC growth.
- Elucidated design rules for the crystallization conditions necessary to observe lattice strain.
- Patterned organic semiconductors to impart positional and orientation control through physical and chemical means.

### Undergraduate Research Experience:

**Caltech: Kornfield Research Group, Chemical Engineering** Jun.07 – Sep.08

- Created engineering designs for solar concentration using polydicyclopentadiene (pDCPD) polymer.
- Researched conformal microfluidic channels of pDCPD polymer.

**Boston Biomedical Research Company** Dec. 2006, 2007  
64 Grove St. Watertown, MA 02472

Summer 2005  
Jan.–Sep. 2004  
Summer 2003

- Acquired knowledge of biochemical laboratory skills such as Mass Spectrometry, PAGE, kinetics, PCR.
- Experimented *in vitro* with kinetic behavior of mutant CPI-17 protein.

### Teaching Experience:

**University of Virginia: ChE5561: Crystallization Processes in Chemical Engineering** Aug.17 – Current

- Made new class on crystallization in chemical engineering
- Class covering fundamentals of nucleation and growth to applications in pharmaceuticals, organic electronics and perovskites.

**University of Virginia: ChE2216: Modelling and Simulations in Chemical Engineering** Jan.16 – Current

- Taught modeling and simulations relevant to chemical engineers using Matlab.
- Taught numerical analysis methods.

**Stanford: CHE110: Introduction to Thermodynamics Teaching Assistant** Jan.11 – Mar.11  
Jan.12 – Mar.12

- Taught undergraduate thermodynamics through lecturing during discussion sections and weekly office hours, and held midterm and final reviews.
- Created and grade quizzes, midterm exams and final exams.

**Caltech: BE201b: Physiology for Bioengineering Teaching Assistant** Jan. - Mar. 2008  
**BE201a: Physiology for Bioengineering Teaching Assistant** Sep. - Dec. 2007

- Taught students about the different biomedical and bioengineering techniques used in research.

### Educational Conferences:

**American Society for Engineering Education: Chemical Engineering Summer School** July 2017  
**UVA Center for Teaching Excellence: Ignite Program** June 2016

### Mentoring Experience:

**University of Virginia:**

**Doctoral:**

- Stephanie M. Guthrie – Qualifications Exam Completed – Sept. 2016 Jan.16 – Current
  - Winner of Virginia Space Grant Consortium Graduate Fellowship 2016
- Luke Huelsenbeck– Qualifications Exam Completed – Sept. 2017 Sep.16 – Current
  - Winner of Virginia Space Grant Consortium Graduate Fellowship 2018
  - Honorable Mention, NSF GRFP 2018
- Ashley Conley - Qualifications Exam Completed – Sept. 2018 Sep.17 – Current
- Sangeun Jung- Qualifications Exam Completed – Dec. 2018 Sep.17 – Current
- Prince Kumar Verma Sep.18 – Current
- Natalie Smith Sep.18 – Current

**Master of Science:**

- Nan Yang – Graduated Aug. 2017, Currently ME in UVA ECE Jan.16 – Sep.17  
Master's Thesis: *Controlling Thin Film Morphology and Polymorphism of Electro-Active Molecules Using Solution Process*

**Undergraduate Students Advised:**

- Elizabeth Tonneslan May 16 – May 18
- Priya Shankar May 16 – May 18
  - Winner of Canty Research Award 2016
- Lauren Hornsby May.16 – Current
- Zijie 'Max' Pan Jan. 17 – May 17
- Jeongwon 'John' Choi May 17 – Current
- Nicholar Blackwell III May 17 – Current
  - Winner of Canty Research Award 2017
- Rachel Ho Aug. 17 – Current
  - Winner of Canty Research Award 2018
- Karl Westendorff Aug.17 – Current
  - Winner of Harrison Research Award 2018
- Clayton Burress May 18 – Current
- Jillian Dane May 18 – Current
- Craig Doody May 18 – Current
- Emily Beyer Sept 18 – Current

**Postdoctoral Scholar Advised:**

- Arian Ghorbanpour Aug. 16 – Feb. 18

**Visiting Scholar Advised:**

- Xiaohan Yu Jul. 18 – Aug. 18

**Massachusetts Institute of Technology:**

- Mentoring undergraduate student in 3D additive printing. Aug.14 – Sep.15

**Stanford University:**

- Mentored 3 undergraduates and a graduate student in X-ray diffraction and organic semiconductor crystal growth and deposition. Sep.10 – Dec.12
  - One undergraduate student coauthored an invited paper on his work as my mentee, and is now a Ph.D. candidate at MIT.
  - One undergraduate student is a Ph.D. candidate at Georgia Institute of Technology.

**California Institute of Technology:**

- Mentored undergraduate student in solar cell design and manufacturing Mar.08 – Sep.08
  - Student is a Ph.D. candidate at University of Pittsburgh.

## Service:

### University of Virginia:

- Department of Chemical Engineering Graduate Admission Committee Sep.17 – Current
  - Coordinate graduate student application, admission and visit.
- Department of Chemical Engineering Undergraduate Involvement Committee Sep.17 – Current
  - Lead and coordinate ideas to help undergraduate students manage stress.
- Engineering, Diversity, and Engagement Committee (EDEC) Feb.17 – Current
- Department of Chemical Engineering Open House Coordinator Jan.16 – Current
  - Full day annual showcase of Chemical Engineering Department to prospective undergraduate students and families.
- Department of Chemical Engineering Safety Committee Jan.16 – Current
  - Safety related contact, safety inspections for department, coordinate with EHS

## Professional Activities:

2009 – Present: Active member of the Materials Research Society (MRS)

2010 – Present: Active member of the American Institute of Chemical Engineers (AIChE)

2012 – Present: Active member of the American Chemical Society (ACS)

2018 – Present: Active member of the American Society for Engineering Education (ASEE)

2016 – Co-Chair: Reaction Engineering of Pharmaceuticals and Fine Chemicals (AIChE)

2016 – Chair: Organic and Polymeric Electronics (AIChE)

2017 – Chair: Amorphous and Crystalline Particle Engineering in Pharmaceuticals and Other Novel Materials (AIChE)

2017 – Co-Chair: Reaction Engineering of Pharmaceuticals and Fine Chemicals (AIChE)

2018 – Co-Chair: Reaction Engineering of Pharmaceuticals and Fine Chemicals (AIChE)

2019 – Co-Chair: Reaction Engineering of Pharmaceuticals and Fine Chemicals (AIChE)

2019 – Co-Chair: Solid Form Selection: Cocrystals, Salts, Solvates, Polymorphs, and Beyond I (AIChE)

Panel Reviewer: National Science Foundation, ETH Grants

Reviewer for Journal of American Chemical Society, Nano Letters, Organic Process Research & Development, Journal of Physical Chemistry, Composite Interfaces, Crystal Growth and Design, Chemical Science, Material Science in Semiconductor Processing, Analytica Chimica Acta, Nature Communications, Chemistry of Materials.

## Publications (H-index: 18, cumulative citation count: 2900):

1. Navarro-Brull, F.J., Teixeira, A.R., **Giri, G.**, and Gómez, R. (2019) “Enabling Low Power Acoustics for Capillary Sonoreactors.” *Ultrasonics Sonochemistry*.
2. Chen, A.Z., Shiu, M., Deng, X., Mahmoud, M., Zhang, D., Foley, B.J., Lee, S-H, **Giri, G.**, and Choi, J.J. (2019) “Understanding the Formation of Vertical Orientation in Two-dimensional Metal Halide Perovskite Thin Films” **Chem. Mater.**, 31 (4):1336–1343.
3. Huelsenbeck, L., Westendorff, K., Gu, Y., Marino, S., Jung, S., Epling, W., and **Giri, G.** (2019) “Modulating and Orienting an Anisotropic Zn-Based Metal Organic Framework for Selective CH<sub>4</sub>/CO<sub>2</sub> Gas Separation.” **Crystals** 9: 20. *Invited paper*.
4. **Giri, G.**, Yang, L., Mo, Y., and Jensen, K.F. (2018) “Adding Crystals to Minimize Clogging in Continuous Flow Synthesis.” **Crystal Growth & Design** 19: 98-105.
5. Foley, B.J., Cuthriell, S., Yazdi, S., Chen, A.Z., Guthrie, S.M., Deng, X., **Giri, G.**, Lee, S-H., Xiao, K., Doughty, B., Ma, Y-Z., and Choi, J.J. (2018) “Impact of Crystallographic Orientation Disorders on Electronic Heterogeneities in Metal Halide Perovskite Thin Films.” **Nano Letters**. 18 (10): 6271-6278.
6. Ghorbanpour, A., Huelsenbeck, L.D., Smilgies D.M., and **Giri, G.** (2018) “Oriented UiO-66 Thin Films through Solution Shearing.” **CrystEngComm**. 20: 294-300.

7. Guthrie, S.M., Smilgies D.M., and **Giri, G.** (2018) "Controlling Polymorphism in Pharmaceutical Compounds Using Solution Shearing." **Crystal Growth and Design**. 18 (2): 602-606.
8. Reinspach, J.A., Diao, Y., **Giri, G.**, Sachse, T., England, K., Zhou, Y., Tassone, C., Worfolk, B. J., Presselt, M., Toney, M.F., Mannsfeld, S., and Bao, Z. (2016) "Tuning the Morphology of Solution-Sheared P3HT:PCBM Films." **Applied Materials and Interfaces** 8 (3): 1742-1751.
9. **Giri, G.**<sup>1</sup>, Park, S.<sup>1</sup>, Pitner, G., Shaw, L., Ha, J., Koo, J., Park, J., Nam, J., Hong, Y., and Bao, Z. (2015) "Large Area Formation of Self-Aligned Crystalline Domains of Organic Semiconductors on Transistor Channels using CONNECT." **Proceedings of the National Academy of Sciences** 112 (18): 5561-5566.
10. Park, S., Pitner, G., **Giri, G.**, Koo, J.H., Park, J., Kim, K., Wang, H., Sinclair, R., Wong, H.S.P., and Bao, Z. (2015) "Large-Area Assembly of Densely Aligned Single-Walled Carbon Nanotubes Using Solution Shearing and Their Application to Field-Effect Transistors." **Advanced Materials**. 27 (16): 2656-2662.
11. **Giri, G.**, DeLongchamp, D. M., Reinspach, J., Fischer, D. A., Richter, L.J., Xu, J., Benight, S., Ayzner, A., Fang, L., Xue, G., Toney, M. F., and Bao, Z. (2015) "Effect of Solution Shearing Method on Packing and Disorder of Organic Semiconductor Polymers." **Chemistry of Materials** 27 (7): 2350-2359.
12. Lee, W.Y., **Giri, G.**, Diao, Y., Tassone, C.J., Matthews, J.R., Sorensen, M.L., Mannsfeld, S.C.B., Chan, W.C., Fong, H.H., Tok, J.B.H., Toney, M.F., He, M. and Bao, Z. (2014) "Effect of Non-Chlorinated Mixed Solvents on Charge Transport and Morphology of Solution Processed Polymer Field-Effect Transistors." **Advanced Functional Materials**, 24 (23): 3524-3534.
13. **Giri, G.**, Li, R., Smilgies, D.M., Li, E.Q., Diao, Y., Lenn, K.M., Chiu, M., Lin, D.W., Allen, R., Reinspach, J., Mannsfeld, S.C.B., Thoroddsen, S.T., Clancy, P., Bao, Z. and Amassian, A. (2014) "One-Dimensional Self-Confinement Promotes Polymorph Selection in Large Area Organic Semiconductor Thin Films." **Nature Communications**. 5, 3573. *Online View*.
  - Featured in Technology.org, Epoch Times, Cornell Chronicle, Phys.org, Nanowerk Nanotechnology News, Scicasts, Science Daily
14. Yuan, Y., **Giri, G.**, Ayzner, A., Zoombelt, A.P., Mannsfeld, S.C.B., Chen, J., Huang, J. and Bao, Z. (2014) "Ultra-high Mobility Transparent Organic Thin Film Transistors Grown by an Off-centre Spin-coating Method." **Nature Communications**, 5, 3005. *Online View*.
  - Featured in Nanowerk Nanotechnology News, The Engineer, IEEE Spectrum, Business Standard, Times of India, Science World Report
15. Xu, J., Diao, Y., Zhou, D., Mao, Y., **Giri, G.**, Chen, W., Liu, N., Mannsfeld, S.C.B., Xue, G. and Bao, Z. (2014) "Probing the Interfacial Molecular Packing in TIPS-pentacene Organic Semiconductors by Surface Enhanced Raman Scattering." **Journal of Materials Chemistry**, 2 (16): 2985-2991.
16. Kim, D.H., Mei, J., Ayzner, A.L., Schmidt, K., **Giri, G.**, Appleton, A.L., Toney, M.F. and Bao, Z. (2014) "Sequentially Solution-processed, Nanostructured Polymer Photovoltaics using Selective Solvents." **Energy and Environmental Science**, 7 (3): 1103-1109.
17. **Giri, G.**<sup>1</sup>, Park, S.<sup>1</sup>, Vosgueritchian, M., Shulaker, M.M. and Bao, Z. (2013) "High Mobility, Aligned, Crystalline Domains of TIPS-pentacene with Metastable Polymorphs through Lateral Confinement of Crystal Growth." **Advanced Materials** 26 (3): 487-493.
18. Diao, Y., Tee, B.C.K., **Giri, G.**, Xu, J., Becerril, H.A., Stoltenberg, R.S., Lee, T.H., Xue, G., Mannsfeld, S.C.B. and Bao, Z. (2013) "Solution Coating of Large-area Organic Semiconductor Thin Films with Aligned Single-crystalline Domains." **Nature Materials**, 12 : 665-671.
  - Highlighted in Nature Materials Front Cover
  - Featured in Nature Materials News and Views (nmat/journal/v12/n7/full/nmat3686.html)
  - Featured in Nanowerk Nanotechnology News, Innovations Report, EurekaAlert!, Phys.org, ScienceDaily

19. Smilgies, D.-M., Li, R., **Giri, G.**, Chou, K. W., Diao, Y., Bao, Z. and Amassian, A. (2013). "Look Fast: Crystallization of Conjugated Molecules during Solution Shearing Probed *in-situ* and in Real Time by X-ray Scattering." **Phys. Status Solidi RRL**, 7 (3): 177–179.

- Highlighted in PSS-RRL Back Cover.
- Featured in Materials Views

20. Lee, T.H., Lüssem, B., Kim, K. **Giri, G.**, Nishi, Y., and Bao, Z. (2013) "p-Channel Field-Effect Transistors Based on C60 Doped with Molybdenum Trioxide." **ACS Applied Materials & Interfaces**, 5 (7): 2337-2341.

21. Fang, L., Liu, P., Sveinbjornson, B.R., Atahan-Evernk, S., Vandewal, K., Silvia, O., Jimenez-Oses, G., Shrestha, S., **Giri, G.** Wei, P., Salleo, A., Aspuru-Guzik, A., Grubbs, R.H., Houk, K.N. and Bao, Z. (2013) "Confined Crystallization of Fullerene Units along High Polymer Chains." **Journal of Materials Chemistry: C** 1 (36): 5747-5755.

22. Matthews, J.R., Niu, W., Tandia, A., Wallace, A. L., Hu, J., Lee, W.Y., **Giri, G.**, Mannsfeld, S.C.B., Xie, Y., Cai, S., Fong, H.H., Bao, Z. and He, M. (2013). "Scalable Synthesis of Fused Thiophene-Diketopyrrolopyrrole Semiconducting Polymers Processed from Nonchlorinated Solvents into High Performance Thin Film Transistors." **Chemistry of Materials**. 25 (5): 782–789.

23. Lundin, P., **Giri, G.** Bao, Z. (2013). "A Comparison of the Properties of Two Structurally Equivalent but Regiochemically Different Mono-alkylated Polybithiophenes Prepared through AABB-type Stille Polycondensation." **Journal of Polymer Science Part A: Polymer Chemistry**. 51 (4): 908-915.

24. Li, H. Tee, B. C-K, **Giri, G.**, Bao, Z. (2012) "High-performance Transistors and Complimentary Inverters based on Solution-grown Aligned Organic Single-crystals." **Advanced Materials** 24 (19): 2588-2591.

25. **Giri, G.**, Verploegen, E., Mannsfeld, S.C.B., Atahan-Evernk, S., Kim, D.H., Lee, S.Y., Becerril, H.A., Aspuru-Guzik, A., Toney, M.F. and Bao, Z. (2011). "Tuning Charge Transport in Solution-sheared Organic Semiconductors using Lattice Strain." **Nature** 480 (7378): 504-508.

- Highlighted in Nature Table of Contents
- Featured in SLAC Today, IEEE Spectrum, Stanford Report, Dec 2011, Nanowerk Nanotechnology News, MRS-S Outlook

26. Kim, D.H., Lee, J., Park, J-I., Chung, J.W., Lee, W.H., **Giri, G.**, Yoo, B., Koo, B., Kim, J.Y., Jin, Y.W., Cho, K., Lee, B-L., Lee, S. (2011). "Molecular Weight-Induced Structural Transition of Liquid-Crystalline Polymer Semiconductor for High-Stability Organic Transistor." **Advanced Functional Materials** 21(23): 4442-4447.

### Invited Publications:

27. **Giri, G.**<sup>1</sup>, Miller, E.<sup>1</sup>, and Bao, Z. (2014) "Selective Solution Shearing Deposition of High Performance TIPS-Pentacene Polymorphs Through Chemical Patterning." **Journal of Material Research**. 29 (22): 2615-2624.

- Invited through presentation at MRS Fall 2013.

28. **Giri, G.**<sup>1</sup>, Li, H.<sup>1</sup>, Tok, J. and Bao, Z. (2013) "Toward High-Mobility Organic Field-Effect Transistors: Control of Molecular Packing and Large-Area Fabrication of Single-Crystal Based Devices." **MRS Bulletin**. 38 (01): 34-42. 2013. *Invited Review*.

### Manuscripts Submitted/Under Review:

29. Huelsenbeck, L., Hooe, S.L., Ghorbanpour, A., Heinrich, H., Machan, C.W., **Giri, G.** "Metal-Organic Frameworks as Porous Templates for Enhanced Cobalt Oxide Electrocatalyst Performance." *Under Revision*.

30. Guthrie, S.M., Huelsenbeck, L., Salahi, A., Varhue, W., Yu, X., Yoon, L.U., Choi, J.J., Swami, N., and **Giri, G.** "Ultra-high aspect ratio crystals of metal organic frameworks through nanofluidic crystallization control." *Submitted*.

### Patents:

1. **Giri, G.**, Swami, N., 2018 “Ultra-High Aspect Ratio Crystals of Metal Organic Frameworks Through Nanofluidic Crystallization Control.” Provisional Patent Application 62/752,422. Filed October 30, 2018.
2. **Giri, G.**, Huelsenbeck, L., 2018 “Textiles Creating MOF-fabric Heterostructures Rapidly for PM2.5 and VOC Filtration”. U.S. Provisional Patent Application 62/700,576. Filed July 19, 2018.
3. Bao, Z., **Giri, G.**, Lee, S.Y. and Mannsfeld, S.C.B. 2012. “Method of Manufacturing an Organic Semiconductor Thin Film.” US Patent 20,140,256,085. Filed Oct. 2, 2012.
4. Yuan, Y., **Giri, G.**, Zoombelt, A.P., Mannsfeld, S.C.B., Huang, J. and Bao, Z “High Performance Organic Field-effect Transistors with Metastable Channel Layer.” 2012.S12-504. Filed Dec. 23, 2013.

### **Selected Presentations:**

1. Oral Presentation “Controlling Metal Organic Framework Thin Film Crystallization.” Materials Research Society – MOF 2018.
2. Oral Presentation “Controlling Metal Organic Framework Thin Film Crystallization Using Dynamic Processes.” American Institute of Chemical Engineers (AIChE), Annual Meeting 2018.
3. Oral Presentation “In-Situ Optical Imaging and X-Ray Diffraction Techniques to Probe Thin Film Crystallization.” American Institute of Chemical Engineers (AIChE), Annual Meeting 2018.
4. Oral Presentation “Crystallizing Metal Organic Framework Thin Films: Similar to Pharmaceuticals?” Association of Crystallization Technologies, 2018.
5. Invited Presentation. “Understanding the Crystallization and Growth of Metal Organic Frameworks.” Department of Materials Science and Engineering, University of Virginia, 2018.
6. Invited Presentation “Understanding and Controlling Organic Molecule and Metal Organic Framework Crystallization.” American Institute of Chemical Engineers (AIChE), Annual Meeting 2017.
7. Invited Presentation. “Crystallization Control with Fluid Dynamics.” University of Virginia, Department of Physics. 2017.
8. Oral Presentation “Printing Organic Circuits with Low Patterning Errors and Variability using CONNECT.” Materials Research Society (MRS) Fall 2015 Meeting.
9. Oral Presentation “Additive 3D Printing for Microreactor Applications and Continuous Flow Chemistry.” American Institute of Chemical Engineers (AIChE), Annual Meeting 2015.
10. Invited Presentation. “Additive 3D Printing for Microreactor Applications and Continuous Flow Chemistry.” The Pittsburgh Conference (Pittcon) 2015 Meeting.
11. Oral Presentation “Understanding Organic Semiconductor Polymorphism using High Speed in-situ Optical and X-ray Diffraction Methods.” Materials Research Society (MRS) Fall 2014 Meeting.
12. Oral Presentation “Printing Organic Semiconductors for Logic Circuits with Low Patterning Errors and Electrical Variability.” Materials Research Society (MRS) Fall 2014 Meeting.
13. Oral Presentation “In situ Optical Characterization of Crystal Growth in Continuous Flow Chemical Synthesis of Pharmaceutical Compounds.” Materials Research Society (MRS) Fall 2014 Meeting.
14. Poster Presentation “Understanding Organic Semiconductor Polymorphism using High Speed in-situ Optical and X-ray Diffraction Methods.” American Institute of Chemical Engineers (AIChE), Annual Meeting 2014.
15. Meet the Faculty Candidate Poster Presentation “Crystal Polymorphism and Texture Control During Solution Growth For Organic Electronics and Pharmaceutical Flow Chemistry” American Institute of Chemical Engineers (AIChE), Annual Meeting 2014.

16. Oral Presentation “Controlling Solid Handling to Extend Microreactor Lifetimes for Continuous Flow Chemistry.” American Institute of Chemical Engineers (AIChE), Annual Meeting 2014.
17. Oral Presentation “Large Scale Solution Shearing Combining Organic Semiconductor Polymorphism and Patterning.” Materials Research Society (MRS) Fall 2013 Meeting.
18. Oral Presentation “Studying Organic Semiconductor Polymorphism and Microstructure Evolution Using High Speed In Situ Optical and X-ray Diffraction Methods.” Materials Research Society (MRS) Fall 2013 Meeting.
19. Poster Presentation. “Tuning Polymer Molecular Packing Through Solution Processing Methods and Their Characterization.” American Institute of Chemical Engineers (AIChE), Annual Meeting 2013.
20. Oral Presentation. “Controlling Charge Transport in Patterned Organic Thin Film Transistors Through Solution Shearing and Lattice Strain.” American Institute of Chemical Engineers (AIChE), Annual Meeting 2013.
21. Invited Presentation. “Using Non-equilibrium Polymorphism as an Avenue to High Performance Organic Semiconductors.” SSRL/LCLS User’s Conference 2013.
22. Oral Presentation. “Studying Organic Semiconductor Polymorphism and Microstructure Evolution using High Speed in-situ Optical and X-ray Diffraction Methods.” Materials Research Society, Spring 2013 Meeting.
23. Oral Presentation. “Controlling and Generalizing Lattice Strain and Polymorph Formation in Organic Semiconductors.” Materials Research Society, Spring 2013 Meeting.
24. Oral Presentation. “Controlling Charge Transport in Patterned Organic Thin Film Transistors through Solution Shearing and Lattice Strain.” Materials Research Society, Spring 2013 Meeting.
25. Meet the Faculty Poster Presentation. “Tuning the Molecular Packing of Organic Semiconductors for High Performance Using Metastable Crystallization.” American Institute of Chemical Engineers (AIChE), Annual Meeting 2012.
26. Oral Presentation. “Tuning Charge Transport of Solution Sheared Organic Semiconductors using Lattice Strain.” American Institute of Chemical Engineers (AIChE), Annual Meeting 2012.
27. Invited Presentation. “Tuning Charge Transport of Organic Semiconductors Through Metastable Crystallization and Lattice Strain.” SSRL/LCLS User’s Conference 2012.
28. Oral Presentation. “Tuning Charge Transport of Solution Sheared Organic Semiconductors using Lattice Strain.” TSMC – 6<sup>th</sup> OSR presentation.
29. Oral Presentation. “Tuning Charge Transport of Solution Sheared Organic Semiconductors using Lattice Strain.” American Chemical Society (ACS) 244<sup>th</sup> National Meeting. Annual Meeting 2012.
30. Oral Presentation. “Tuning Molecular Packing by Using Solution Processing Conditions for High Mobility Organic Thin Film Transistors (OTFTs).” Materials Research Society, Spring 2012 Meeting.
31. Oral Presentation. “In situ Optical and X-ray Diffraction Study Organic Semiconductors Crystal Growth During Solution Shearing.” Materials Research Society, Spring 2012 Meeting.
32. Oral Presentation. “Strained Molecular Packing of TIPS-Pentacene with Enhanced Charge Transport Using Solution Shearing.” American Institute of Chemical Engineers, Annual Meeting, 2011.
33. Invited Presentation. “Influencing Molecular Packing and Alignment of Small Molecular Organic Semiconductors (OSCs).” Lawrence Berkeley National Laboratory, Molecular Foundry User Meeting, 2011.
34. Oral Presentation. “Tuning Molecular Packing by Changing Solution Processing Conditions for High Mobility Organic Thin Film Transistors (OTFTs).” Organic Microelectronics & Optoelectronics Workshop VII, 2011.
35. Oral Presentation. “Origin of High Mobility Organic Thin Film Transistors (OTFTs) From Solution Shearing.” Materials Research Society. Spring 2011 Meeting.



36. Oral Presentation. “High Mobility TIPS-Pentacene Field Effect Transistors (FETs) Fabricated using Solution Shearing.”  
Materials Research Society. Fall 2010 Meeting.
37. Poster Presentation. “Investigating Organic Semiconductor (OSC) Morphology using Solution Shearing Method.”  
Materials Research Society. Spring 2010 Meeting.