Brian Akira Collins **February 12th, 2024**
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Education:

- Ph.D. Physics, University of North Carolina, Chapel Hill, NC (August 2009)
- M.S. Physics, University of North Carolina, Chapel Hill, NC (December 2005)
- B.A. Physics, minor in music, magna cum laude, Gustavus Adolphus College, MN (May 2003)

Professional Employment & Experience:

- Associate Professor (2020 – present)
  Department of Physics and Astronomy, MSEP, Affiliate Chemistry, Washington State University
- Assistant Professor (2014 – 2020)
  Department of Physics and Astronomy, MSEP, Affiliate Chemistry, Washington State University
- NRC Postdoctoral Fellow (2012 – 2014)
  Adviser: Dean Delongchamp, Materials Science and Engineering Division
  National Institute of Standards and Technology, Gaithersburg
  Development of polarized resonant x-ray scattering & microscopy on organic materials and devices
- Postdoctoral Associate (2009 – 2012)
  Adviser: Harald Ade, Department of Physics, North Carolina State University
  X-ray spectromicroscopy & resonant scattering on organic materials and organic device fabrication & characterization
- Graduate Research Assistant (2005-2009)
  Adviser: Frank Tsui, Physics, University of North Carolina, Chapel Hill, NC; *Thesis: Synchrotron X-ray studies of structural and chemical ordering in group IV-based magnetic epitaxial films*
- Teaching Assistant (2003-2005)
  Department of Physics and Astronomy, University of North Carolina, Chapel Hill, NC

Fellowships and Recognition:

- Department of Energy, Office of Science, Early Career Research Award (2017)
  - >700 total applications only 37 university awards
- Associated Students of WSU 2018 Award for Exceptional Usage of Open Educational Resources
- Berkeley National Laboratory and Advanced Light Source Science Highlights
  - March 2013: The importance of domain size and purity in high-efficiency organic solar cells
  - October 2012: Polarized X-rays Reveal Molecular Alignment in Printed Electronics
  - April 2011: New Morphological Paradigm Uncovered in Organic Solar Cells
- National Research Council RAP Fellowship at NIST, Gaithersburg, MD (2012-2014)
- University of North Carolina Graduate School Dissertation Completion Fellowship (2008-2009)
- Outstanding Paper Award, 24th North American Conference on Molecular Beam Epitaxy, (2006)
- National School on Neutron and X-ray Scattering, Training Fellowship, Argonne National Laboratory, IL (Aug. 2006)
- University of North Carolina Board of Governors Fellowship (2003-2004)

Extramural Support:

1. Completed: *MRI Consortium: Development of Environmental Control for Resonant X-ray Scattering in Organic Samples*, National Science Foundation, **$509,929**, 09/01/16-08/31/19.
2. Completed: *Spectroscopic Ellipsometer for optical properties and molecular orientation in organic photovoltaics*, Joint Center for Deployment and Research in Earth Abundant Materials, **$25,000**, 01/01/2020-06/01/2020.

3. Completed: *Connecting Junction Molecular Orientation to Excited State Structure and Dynamics in Organic Devices*, National Science Foundation, **$499,737**, 07/01/19-06/30/22.
4. Completed: *CAREER: Polarized Resonant X-ray Scattering to Measure Molecular Orientation and Conformation in Organic Nanostructures*, Department of Energy, **$800,000**, 09/01/17-08/31/23.
5. Underway: *REU Site: The Physics of Waves from the Nanoscale to the Cosmic Scale*, National Science Foundation, **$411,113**, 03/01/2021-2/28/2025.
6. Underway: *PMU: Acquiring an in-house small angle X-ray scattering (SAXS) system for WSU*, Murdock Charitable Trust, **$450,389**, 05/01/2021-04/30/2024
7. Underway: *Revealing the Nanomorphology and Excited State Dynamics Behind the Ternary Advantage in Organic Photovoltaics*, **$521,971**, 07/05/2023-07/31/2026
8. Underway: *REU Site: The Physics of Waves from the Nanoscale to the Cosmic Scale*, National Science Foundation, **$465,000**, 03/01/2024-02/28/2027

Service Activities:

- Departmental Service: Graduate Academic Adviser for Physics and Astronomy PhD Program (F2017-present), Graduate Recruitment Committee Chair, Graduate Studies Committee, Attended *Building Thriving Undergraduate Physics Programs* Workshop (2018) and develop recommendations for increasing student retention in major, Physics and Astronomy Colloquium Organizer (2015-2016)
- University Service: Major Research Instrumentation WSU Internal Competition Review Panel (2017, 2018, 2019); WSU Counseling and Psychological Services Postdoc Search Committee (2019), WSU Open Education Resources Workshop (2016), WSU Technology Forum (2016).
- National Committee Service:
  - **X-ray Scattering Proposal Review Panel, National Synchrotron Light Source II (NSLS-II), Brookhaven National Laboratory (2019-present)**
  - NSF Panelist for the Electronic and Photonic Materials (DMR) 2020, Major Research Instrumentation program 2018
  - User Executive Committee, Advanced Light Source, Berkeley National Lab (2014-2016).
- Member: American Physical Society (APS, 2006 – present), Materials Research Society (MRS, 2009 – present) American Crystallographic Association (ACA, 2015-2017)
- Meeting Organizer:
  - MRS Spring/Fall 2020 Meeting Symposium "Organic electronics: Multimodal characterization and computation driving materials design and performance"
  - ALS 2018 User Meeting All-Invited Workshop "Progress and challenges toward in situ/operando resonant soft X-ray scattering"
  - APS 2017 March Meeting All-Invited Session "Flexible and Stretchable Organic Electronics"
  - Advanced Light Source Annual Users' Meeting Organizer 2014, 2015, & 2016
- Session Chair:
  - MRS Spring/Fall 2020 Meeting
  - APS March Meeting (2019, 2018, two sessions in 2017, two in 2014, one in 2013) – also abstract sorter (Fall 2012 & 2013)
  - ALS User Meeting 2016
  - 12th Symposium on Functional-Pi Electron Systems (2015, Seattle)
- Proposal Reviewer: National Science Foundation, Department of Energy Basic Energy Sciences, Stanford Synchrotron Radiation Lightsource, Advanced Light Source, National Synchrotron Light Source II
- Manuscript Reviewer: NIST Washington Editorial Board Review, Physical Review Letters, Nature Communications, Science Advances, Advanced Materials, Joule, Energy & Environmental Science, Journal of Physical Chemistry Letters, ACS Nano, Macromolecules, Journal of Polymer Science, Scientific Reports, Journal of Materials Chemistry

- Research Tools: Development and dissemination of analysis tools for X-ray science: (1) Resonant Soft X-ray Scattering (RSoXS) data processing and analysis software for use during data acquisition; (2) Near Edge X-ray Absorption Fine Structure (NEXAFS) spectral analysis software for molecular composition analysis and optical constants calculations; and (3) software to convert Scanning Transmission X-ray Microscopy (STXM) data into quantitative molecular composition maps.
- STEM Outreach:
  - K-5 Solar Car Activity (Franklin Science Fair 2017, 2018, 2019; Palouse Family Fair 2019)
  - High school student for WSU Upward Bound (4-weeks in July 2016, 2017, 2018, 2019)
  - Pullman high school student for senior thesis project (2015-2016).
  - Summer Undergraduate Research Fellowship program at NIST (2013)
  - Mini-term course at the North Carolina School of Science and Mathematics (2011)

Teaching Activities:

- WSU Courses Taught:
  - PHYS 511 (Graduate) Advanced X-ray Characterization (S2023)
  - PHYS 206 (Undergrad Honors) Physics for Scientist & Engineers II – Honors (F2020)
  - MATSE 571 (Graduate) Microscopic Analysis of Solid Surfaces (S2016-2022)
  - PHYS 410 (Undergrad Major) Electronics and Instrumentation (2014-2022)
  - PHYS 101 (Undergrad Non-Major) General Physics (F2016-2019, 2021-2023)
- Graduate Students Supervised: Qun Lu (MS Physics 2016), Obaid Alqahtani (MS Physics 2016), Michael Pope (MS Physics 2016), David Buckley (MS Physics 2017), Thomas Ferron (PhD Physics 2019), Victor Murcia (PhD MSE 2022), Tamanna Kahn (PhD MSE 2022), Awwad Alotaibi (PhD MSE 2022), Obaid Alqahtani (PhD MSE 2023), Acacia Patterson (MS Physics 2023), Devin Grabner (PhD Physics 2025*), Acacia Patterson (PhD MSE 2026*), Harlan Heilman (PhD Physics 2027*), Tanner Melody (PhD Physics 2028*) *Anticipated
- Postdocs Supervised: Prabodh Dhakal (2017-2019), Terry McAfee (2018-2020)
- Graduate Committees Served: Sheng-Ting Hung (PhD Physics, Prof Kuzyk 2015), Christopher Leishman (PhD Chemistry, Prof McHale 2016), Sean Mossman (PhD Physics, Kuzyk 2017), Elizabeth Bernhardt (PhD Physics, Prof Kuzyk 2018), Liangliang Yang (PhD Physics, Prof Gu 2018), Nathan Turner (PhD Physics, Prof Dexheimer 2019), Mohammad Taufique (PhD MSE, Prof Banerjee 2019), Jason Leicht (PhD MSE, Prof Dexheimer 2019), Sarah Kim (PhD MSE Dexheimer 2021), Matthew Gabel (PhD Physics, Prof Gu 2021), Zoya Ghorbanishiadeh (PhD Physics, Prof Kuzyk 2022), Windy Olsen (PhD Physics, Prof G. Collins 2023), Zahra Armanfard (PhD Physics, Prof Saam 2023), Jacob Parker (PhD Physics, Prof Gu 2023)

Successful National Laboratory User Proposals:

- National Synchrotron Light Source – II (2020-present)
- Molecular Foundry, Lawrence Berkeley National Laboratory
  - Proposal #6137 2019-2020
  - Proposal #5456 2018-2019
  - Proposal #4434 2017-2018
- Australian Synchrotron Proposal M12640 (Fall 2017)
- Advanced Light Source, Lawrence Berkeley National Laboratory.
  - *Approved Program ALS-11400 beamlines 5.3.2.2, 7.3.3, 11.0.1.2 (2021-2024).*
  - ALS-10629 beamlines 7.3.1 & 8.0.1 2019-2020
  - Approved Program ALS-09752 beamlines 5.3.2.2, 6.3.2, 7.3.3, 11.0.1.2 (2018 – 2020).
  - Approved Program ALS-06821 beamlines 5.3.2, 6.3.2, 7.3.3, 11.0.1.2, (2014 – 2017).
  - ALS-05599 beamlines 7.3.3, 11.0.1.2, and 11.0.2, Jan. 2013 – Dec. 2014.
  - ALS-04131 beamline 7.3.3, Jan. 2011 – Dec. 2012.

International Collaborations (active projects since 2018):

- Prof Zhipeng Kan, Chinese Academy of Sciences, China
- Prof Wei Ma, Xi'an Jiaotong University, China
- Prof Frederic Laquai & Julien Gorenflot, King Abdullah University of Science and Technology, Saudi Arabia
- Prof Safa Shoaee, Potsdam University, Germany
- Prof Dieter Neher, Potsdam University, Germany
- Prof Nicholas Bedford, University of New South Wales, Australia

Invited Talks:

1. MRS Spring Meeting, Seattle, to be given April 2024
2. ACS Spring Meeting, New Orleans, to be given March 2024
3. University of Washington Physical Chemistry Seminar "Merging resonant X-rays with novel molecular nanostructures and devices" November 2022.
4. ALS Annual User Meeting "Resonant X-rays for spatiochemical analyses of aquesous polymer micelle nanostructure and dynamics in-situ." August 2022
5. Polymer Physics Gordon Research Conference "Resonant X-rays for label-free spatiochemical analyses of polymer nanostructures and devices." July 2022
6. University of Idaho Physics Colloquium "Resonant X-rays as spatiochemical nanoprobes within organic structures and devices," October 2021.
7. Materials Research Society Spring Meeting, Seattle, WA (virtual) April 2021.
8. Materials Research Society Spring Meeting, Phoenix, AZ (virtual), December 2020.
9. NSLS Experimental Tools – II Workshop, Brookhaven NL, (virtual) March 19 2020.
10. Conference on Undergraduate Women in Physics – Physics Slam, January 18th, 2020.
11. ALS Annual Users Meeting, October 3rd, 2019.
12. North Carolina State University ORaCEL Seminar, to be given June 14, 2019.
13. Walla Walla University Physics Colloquium, April 30th, 2019.
14. APS March Meeting, Advanced Morphological Characterization in Polymeric Materials, Boston, MA, March 2019.
15. PI Meeting for the DOE BES X-ray Scattering Program, Dec. 6, 2018
16. WSU Common Reading Program "Organic Electronics: Printable, Flexible & Biocompatible", November, 26th 2018.
17. ALS Annual Users Meeting, Light Sources 101: X-ray Scattering, Berkeley, CA, October 4th 2018
18. Jiaotong University MSE Seminar, Xi'an, China June 15th 2018
19. 13th International Conference on Polymer Physics, Xi'an, China, June 12th 2018
20. University of Vermont Physics Colloquium, Burlington, VT, January 2018
21. ALS Soft Matter Research Program Review, Berkeley, CA, January 2018
22. NSLS-II Annual User Meeting, Brookhaven, NY, May 2017
23. Air Force Research Laboratory, Dayton, OH, March 2017
24. American Crystallographic Association Meeting, Denver, CO, July 2016.
25. AVS Meeting, PNW Region, Mount Hood, OR, Oct 2nd, 2015.
26. American Crystallographic Association Meeting, Philadelphia, PA, July, 28th 2015.
27. University of Idaho, Department of Physics Colloquium, March 30th 2015.
28. Washington State University, Physical Chemistry Division Seminar, Feb. 27, 2015
29. University of Washington, Materials Science and Engineering Seminar Series, Feb. 2, 2015
30. Energy Materials Nanotechnology Meeting on Photovoltaics, Orlando, FL, January 13, 2015
31. Washington State University Materials Science and Engineering Colloquium, Pullman, WA, Sept. 19, 2014.
32. Washington State University Physics Colloquium, Pullman WA, Feb. 13, 2014.
33. Vermont University Physics/Materials Science Colloquium, Burlington, VT, Feb. 10, 2014.
34. University of New Hampshire Physics/Materials Science Colloquium, Durham, NH, January 29th, 2014.

35. ***Plenary Speaker****:* Advanced Light Source User Meeting, Berkeley, CA, October 8th 2013.
36. Resonant Soft X-ray Scattering for Mesoscale Science Workshop, ALS User Meeting, Berkeley, CA, October 9th 2013.
37. Neutron and Nano User Meeting, Oak Ridge National Laboratory, TN, August 15th, 2013.
38. Canadian Light Source User Meeting, Saskatoon, Saskatchewan, CA, May 2, 2013.
39. Materials Research Society Fall Meeting, Boston, MA, November 28th, 2012.
40. Coherent Scattering and Microscopy (COSMIC) Imaging Workshop, Advanced Light Source User Meeting, Berkeley, CA October 10, 2012.
41. Soft X-Ray Characterization of Organic Devices and Energy Materials Workshop, Advanced Light Source User Meeting, Berkeley, CA, October 5, 2011.
42. ***Plenary Speaker***: Advanced Light Source User Meeting, Berkeley, CA, October 4, 2011.
43. Coherent Scattering and Microscopy (COSMIC) Workshop, Lawrence Berkeley National Laboratory, CA, June 7, 2011

Contributed Talks:

44. APS March Meeting 2023 "Local chemical enhancement and gating of organic mixed ionic-electronic transport"
45. MRS Spring Meeting 2022 "Revealing the impact of interfacial structure on charge generation and recombination in organic photovoltaics."
46. WSU Brown Bag Summer Seminars, "Organic Electronics: Printable, Flexible, & Biocompatible," June, 2021.
47. APS March Meeting, "Label-free characterization of aqueous micelle nanostructure, chemistry, and dynamics via in-situ RSoXS," (virtual) March, 2021.
48. 4th International Conference on Resonant Elastic X-ray Scattering, Riverhead, Long Island, NY, June 18th 2019.
49. 17th International Small Angle Scattering Conference, Traverse City, Michigan, Oct 9, 2018
50. SPIE Optics and Photonics Meeting, San Diego, CA, to be given August 2018.
51. American Physical Society March Meeting, Los Angeles, CA, March 2018.
52. American Physical Society March Meeting, New Orleans, LA, March 2017.
53. American Physical Society March Meeting, Baltimore, MD, March 2016.
54. 12th International Symposium on Functional Pi-Electron Systems, Seattle, WA July 2015.
55. NW American Physical Society Meeting, Pullman, WA, May, 2015.
56. Materials Research Society Fall Meeting, Boston, MA. December 1, 2014.
57. American Physical Society March Meeting, Denver, CO, March, 2014.
58. Low-Q Seminar, NIST Center for Neutron Research, September 4th, 2013.
59. Materials Research Society Spring Meeting, San Francisco, CA, April 3, 2013.
60. American Physical Society March Meeting, Baltimore, MD, March 21, 2013.
61. 2012 Conference on Synchrotron Radiation in in Polymer Science, San Francisco, CA. March 30th – April 2nd, 2012.
62. Materials Research Society Fall Meeting, Boston, MA, November 28, 2011.
63. American Physical Society March Meeting, Dallas, TX, March 23, 2011.
64. Materials Research Society Fall Meeting, Boston, MA, December 1, 2010.
65. American Physical Society March Meeting, Pittsburgh, PA, March 19, 2009.
66. Advanced Photon Source User Science Seminar, Argonne National Laboratory, Argonne, IL, November 7, 2008.
67. American Physical Society March Meeting, New Orleans, LA, March 13, 2008.
68. American Physical Society March Meeting, Denver, CO, March 8, 2007.
69. North American Molecular Beam Epitaxy Conference, Duke University, NC, October 10, 2006.
70. American Physical Society March Meeting, Baltimore, MD, March 14, 2006.
71. "Advanced Photon Source User Science Seminar, Argonne National Laboratory, Argonne, IL, June 28, 2005.

Book Chapter:

1. B. A. Collins, F. A. Bokel, D. M. Delongchamp, "Organic Photovoltaic Morphology" in *Organic Photovoltaic Devices*, Christoph Brabec Ed., STM-Books (Wiley) 2014. ***959 citations, GS***

Peer Reviewed Publications: (H-index = 26; Citations in 2022 =616; 9 Publications > 300 Citations, Source: Google Scholar=GS) ORCID: 0000-0003-2047-8418; ResearcherID: M-5182-2013

@WSU

1. T. Khan, T. McAfee, T. Ferron, A. Alotaibi, B. A. Collins, "Local chemical enhancement and gating of organic coordinated ionic-electronic transport" ***Submitted*** (2023)

2. D. Grabner, P. D. Pickett, T. McAfee, B. A. Collins, "Molecular weight-independent "polysoap" nanostructure characterized via in-situ resonant soft X-ray scattering," ***Under Review*** (2023)

3. O. Alqahtani, A. Alotaibi, M. Burnes, B. A. Collins, "Green Additive Limits Runaway Crystallinity in PM6:Y6 Organic Solar Cells but Causes Field Independent Geminate Recombination," ***ACS Energy Letters*** (2023) DOI: 10.1021/acsenergylett.3c01604

4. B. Sun, N. Tokmoldin, O. Alqahtani, A. Patterson, C. S. P. De Castro, D. B. Riley, M. Pranav, A. Armin, F. Laquai, B. A. Collins, D. Neher, S. Shoaee, "Towards more efficient organic solar cells: a detailed study of loss pathway and its impact on overall device performance in low-offset organic solar cells," ***Advanced Energy Materials*** (2023) DOI: 10.1002/aenm.202300980

5. N. Tokmoldin, B. Sun, F. Moruzzi, A. Patterson, O. Alqahtani, R. Wang, B. A. Collins, I. McCulloch, L. Lüer, C. J. Brabec, D. Neher, S. Shoaee, "Elucidating How Low Energy Offset Matters to Performance of Nonfullerene Acceptor-Based Solar Cells," ***ACS Energy Letters*** (2023) DOI: 10.1021/acsenergylett.3c00572

6. J. Xin, H, Zhao, J. Xue, S. Seibt, B. A. Collins, W. Ma, "Solvent induced polymorphism in non-fullerene based organic solar cells" ***Solar RRL*** (2022) DOI: 10.1002/solr.202200819.

7. X. Zhou, C. Zhao, A. N. Alotaibi, H. Wu, H. B. Naveed, B. Lin, K. Zhou, Z. Ma, B. A. Collins, W. Ma, "Electrical edge effect induced photocurrent overestimation in low-light organic photovoltaics" ***Joule*** (2022) DOI: 10.1016/j.joule.2022.06.008.

8. T. Fritsch, J. Kurpiers, S. Roland, N. Tokmoldin, S. Shoeaee, T. Ferron, B. A. Collins, S. Janietz, K. Vandewal, D. Neher, "On the interplay between CT and singlet exciton emission in organic solar cells with small driving force and its impact on voltage loss" ***Advanced Energy Materials*** (2022) DOI: 10.1002/aenm.202200641.

9. O. Alqahtani, J. Lv, T. Xu, V. Murcia, T. Ferron, T. McAfee, D. Grabner, T. Duan, B. A. Collins, "High sensitivity of non-fullerene organic solar cells morphology and performance to a processing additive" ***Small*** (2022) DOI: 10.1002/smll.202202411.

10. S. Al-Ghamdi, C. R. Sonar, Z. Albahr, O. Alqahtani, B. A. Collins, S. S. Sablani, "Pressure-Assisted Thermal Sterilization of Avocado Puree in High Barrier Polymeric Packaging" ***LWT – Food Science and Technology*** (2021) DOI: 10.1016/j.lwt.2021.112960.

11. O. Alqahtani, S. M. Hosseini, T. Ferron, V. Murcia, T McAfee, K. Vixie, F. Huang, A. Armin, S. Shoaee, B. A. Collins, "Evidence that sharp interfaces suppress recombination in thick organic solar cells" ***ACS Applied Materials and Interfaces*** (2021) DOI: 10.1021/acsami.1c15570.

12. B. A. Collins, E. Gann, "Resonant Soft X-ray Scattering in Polymer Science" ***Journal of Polymer Science*** (2021) DOI: 10.1002/pol.20210414.

13. T. McAfee, T. Ferron, I. A. Cordova, P. D. Pickett, C. L. McCormick, C. Wang, B. A. Collins, "Label-free characterization of organic nanocarriers reveals persistent single-molecule cores for hydrocarbon sequestration" ***Nature Communications***, 12, 3123 (2021) DOI: 10.1038/s41467-021-23382-8.

14. E. Gann, T. Crofts, G. Holland, P. Beaucage, T. McAfee, J. R. Kline, B. A. Collins, C. McNeill, D. A. Fischer, D. DeLongchamp, "A NIST facility for Resonant Soft X-ray Scattering measuring nano-scale soft matter structure at NSLS-II" ***Journal of Physics: Condensed Matter***, 33, 164001 (2021) DOI: 10.1088/1361-648X/abdffb.

15. P. Dhakal, T. Ferron, A. Alotaibi, V. Murcia, O. Alqahtani, B. A. Collins, "Evidence for Field-Dependant Charge Separation Caused by Mixed Phases in Polymer-Fullerene Organic Solar Cells" ***The Journal of Physical Chemistry Letters***, 12, 1847 (2021) DOI: 10.1021/acs.jpclett.0c03863.

16. T. Ferron, D. Grabner, T. McAfee, B. A. Collins, "Absolute intensity calibration for carbon-edge soft X-ray scattering." ***Journal of Synchrotron Radiation*** 27, 1601 (2020).

17. K. Zhou, Y. Liu, A. Alotaibi, J. Yuan, C. Jiang, J. Xin, X. Liu, B. A. Collins, F. Zhang, and W. Ma, "Molecular and energetic order dominate the photocurrent generation processin organic solar cells with small energetic offsets," ***ACS Energy Letters*** 5, 589, (2020).

18. V. Savikhin, H-G Steinruck, R-Z Liang, B. A. Collins, S. D. Oosterhout, P. M. Beaujuge, M. F. Toney, "GIWAXS-SIIRkit: scattering intensity, indexing and refraction calculation toolkit for grazing-incidence wide-angle X-ray scattering of organic materials." ***Journal of Applied Crystallography***, 53, 1108 (2020)

19. T. Ferron, M. Waldrip, M. Pope & B. A. Collins, "Increased charge transfer state separation via reduced mixed phase interface in polymer solar cells."***Journal of Materials Chemistry A*** DOI:10.1039/c8ta12336e (2019).

20. J. Kurpiers, T. Ferron, S. Roland, J. A. Love, T. Thiede, F. Jaiser, S. Albrecht, A. Katholing, S. Janietz, A. Facchetti, B. A. Collins, D. Neher, "Activation energies in polymer-based organic bulk heterojunction devices rule out predominant hot generation pathways." ***Nature Communications*** 8, 2038 (2018).

21. O. Alqahtani, M. Babics, J. Gorenflot, V. Savikhin, T. Ferron, A. H. Balawi, A. Paulke, Z. Kan, M. Pope, A. J. Clulow, J. Wolf, P. L. Burn, I. R. Gentle, D. Neher, M. F. Toney, F. Laquai, P. M. Beaujuge, B. A. Collins, "Mixed domains enhance charge generation and extraction in bulk-heterojunction solar cells with small-molecule donors." ***Advanced Energy Materials***, 8, 1702941 (2018).

22. L. Ye, H. Hu, M. Ghasemi, T. Wang, B. A. Collins, J. Kim, K. Jiang, J. Carpenter, H. Li, Z. Li, T. McAfee, J. Zhao, X. Chen, J. Lai, T. Ma, J. Bredas, H. Yan, H. Ade, "Quantitative relations between interaction parameter, miscibility, and function in organic solar cells." ***Nature Materials***, 17, 253 (2018). ***552 citations, GS***

23. T. Ferron, M. Pope, B. A. Collins, "Spectral analysis for resonant soft X-ray scattering enables measurement of interfacial width in 3D organic nanostructures." ***Physical Review Letters***, 119, 167801 (2017).

24. S. G. Urqhardt, M. Martinson, S. Eger, V. Murcia, H. Ade, B. A. Collins, "Connecting molecular conformation to aggregation in P3HT using near edge X-ray absorption fine structure spectroscopy." ***The Journal of Physical Chemistry C***, 121, 21820 (2017).

25. J. Rivnay, S. Inal, B. A. Collins, M. Sessolo, E. Starvrinidou, X. Strakosas, C. Tassone, D. M. Delongchamp, G. G. Malliaras, "Structrual control of mixed ionic and electronic transport in conducting polymers." ***Nature Communications***, **7** 11287 (2016). ***743 citations, GS***

Previous to WSU:

26. L. Ye, B. A. Collins, X. Jaio, J. Zhao, H. Yan, H. Ade, "Miscibility-function relations in organic solar cells: Significance of optimal miscibility in relation to percolation." ***Advanced Energy Materials***, 8, 1703058 (2018).

27. F. A. Bokel, S. Engmann, A. A. Herzing, B. A. Collins, H. W. Ro, D. M. DeLongchamp, L. J. Richter, E. Schaible, A. Hexemer, "In situ X-ray scattering studies of the influence of an additive on the formation of a low-bandgap bulk-heterojunction." ***Chemistry of Materials***, 29, 2283 (2017).

28. E. Gann, B. A. Collins, M. Tang, J. R. Tumbleston, S. Mukherjee, H. Ade, "Morphological origins of polarized-induced scattering anisotropy from organic thin films." *Journal of Synchrotron Radiation*, **23**, 219, (2016).

29. B. A. Collins, Y,. S. Chu, L. He, D. Haskel, F. Tsui, "Structural and chemical ordering of Heusler $Co_xMn_yGe_z$ epitaxial films on Ge (111) – quantitative study using traditional and anomalous x-ray diffraction techniques." ***Physical Review B***, **92**, 224108 (2015).

30. S. Roland, M. Schubert, B. A. Collins, J. Kurpiers, Z. H. Chen, A. Facchetti, H. Ade, D. Neher., "Fullerene-free polymer solar cells with highly reduced bimolecular recombination and field-independent charge carrier generation.", ***J. Phys. Chem. Lett.*** **5**, 2815 (2014).

31. M. Schubert, B. A. Collins, H. Mangold, I. A. Howard, W. Schindler, K. Vandewal, S. Rloand, J. Behrends, F. Kraffert, R. Steyrleuthner, Z. Chen, K Fostiropouulos, R. Bittl, A. Salleo, A. Facchetti, F. Laquai, H. Ade, D. Neher, "Correlated Donor/Acceptor Crystal Orientation and Fast Charge-Transfer State Recombination Controls Photocurrent Generation in All-Polymer Solar Cells." ***Adv. Func. Mater.*** **24**, 4068 (2014).

32. R. Steyrleuthner, R. Di Pietro, B. A. Collins, F. Polzer, S. Himmelberger, H. Kirmse, M. Schubert, Z. Chen, A. Salleo, H. Ade, A. Facchetti and D. Neher, "The role of regioregularity and crystallinity on electron transport anisotropy in a high mobility n-type copolymer." ***J. Am. Chem. Soc.*** **136**, 4245 (2014).

33. J. R. Tumbleston, B. A. Collins, L. Yang, A. C. Stuart, E. Gann, W. Ma, W. You, H. Ade, "The influence of molecular orientation on organic bulk heterojunction solar cells." ***Nature Photonics***, **8**, 385 (2014). ***502 citations, GS***

34. J. R. Tumbleston, A. D. Gadisa, Y. Liu, B. A. Collins, E. T. Samulski, R. Lopez, H. Ade, "Modifications in morphology resulting from nanoimprinting bulk heterojunction blends for light trapping organic solar cell designs." ***ACS Applied Materials and Interfaces***, **5**, 8225 (2013).

35. J. A. Bartelt, Z. M. Beiley, E. T. Hoke, W. R. Mateker, J. D. Douglas, B. A. Collins, J. R. Tumbleston, K. R. Graham, A. Amassian, H. Ade, J. M. J. Fréchet, M. F. Toney, M. D. McGehee "The importance of fullerene percolation in the mixed regions of polymer-fullerene bulk heterojunction solar cells." ***Adv. Energy Mater.*** **3**, 364 (2013). ***503 citations, GS***

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