

Employment

North Carolina State University – Raleigh, NC, USA

2023 – present

Assistant Professor
Department of Materials Science and Engineering

University of Toronto – Toronto, ON, Canada

2019 – 2023

Postdoctoral Fellow
Advisor: Prof. Alán Aspuru-Guzik

Education

University of California, Santa Barbara – Santa Barbara, CA, USA

2014 – 2019

Ph.D., Chemistry
Advisor: Prof. Guillermo C. Bazan

University of Southern California – Los Angeles, CA, USA

2010 – 2014

B.S., Chemistry
Minor in Musical Studies

Publications

Preprints & submitted manuscripts:

4. S. Dehghan-Toranposhti, A. Martin, C. Du, R. Zmarzlak, M. Thuo*, **M. Seifrid***, Metadata Analysis to Reveal Environmental Effects in Large-Area Molecular Tunneling Junctions. *Submitted*. DOI: [10.26434/chemrxiv.15001578](https://doi.org/10.26434/chemrxiv.15001578)
3. M. Abolhasani, M. Ahmadi, S. Baird, C. P Berlinguette, K. A Brown, D. Fenning, I. T. Foster, W. Gottstein, S. Pablo-Garcia, G. Gomes, J. R. Hattrick-Simpers, J. E. Hein, T. Hitosugi, S. V. Kalinin, B. Maruyama, J. Schrier, **M. Seifrid**, T. D. Sparks, S. Sun, B. R. Sutherland, N. J. Szymanski, D. Thomas, L. Walters, J. Xu, Y. Zeng, C. Yang, On the Need for Autonomous Science Instruments: A Call to Action. *ChemRxiv*. DOI: [10.26434/chemrxiv.10001836](https://doi.org/10.26434/chemrxiv.10001836)
2. A. Martin, C. Du, D. Jamadgni, S. Chigome, O. Duckworth, J. Jones, **M. Seifrid**, J. Genzer, J. Muthengia, R. Moreira, S. Fujii, A. Baw-Luximon, J. Kimani, F. Chesneau, V. Odari, F. So, B. Kwasa, M. Bortner, J. E. Foster, M. Thuo, Cognitive Diversity and Interdisciplinarity in Nanoscience: Science in the Savannah Conference. *Submitted*.
1. A. Pauls, E. Boyce, A. Martin, D. U. Jamadgni, F. Amoo, S. Toranposhti, E. Ison, S. Brock, **M. Seifrid***, M. Thuo*, Stoichiometry-Driven Magnetic Frustration in Triangular Lattice Complexes. *Submitted*.

Published works:

40. S. Dehghan-Toranposhti, M. Alghamdi, A. Smith, **M. Seifrid***, Robust Learning from Literature Data: Model Generalizability and Uncertainty for Predicting Conjugated Polymer Solution Conformation. *APL Mach. Learn.* **2026**, 4, 016107. DOI: [10.1063/5.0303721](https://doi.org/10.1063/5.0303721)
 - Invited article

39. R. B. Canty, J. A. Bennett, K. A. Brown, T. Buonassisi, S. V. Kalinin, J. R. Kitchin, B. Maruyama, R. G. Moore, J. Schrier, **M. Seifrid**, S. Sun, T. Vegge, M. Abolhasani, Science Acceleration and Accessibility with Self-Driving Labs. *Nat. Commun.* **2025**, 16 (1), 3856. DOI: [10.1038/s41467-025-59231-1](https://doi.org/10.1038/s41467-025-59231-1).
38. R. Ferreira Da Silva, R. Moore II, B. Mintz, R. Advincula, A. Alnajjar, L. Baldwin, C. A. Bridges, R. Coffee, E. Deelman, C. Engelmann, B. Etz, M. Firestone, I. Foster, P. Ganesh, L. Hamilton, D. Huber, I. N. Ivanov, S. Jha, Y. Li, Y. Liu, J. Lofstead, A. Mandal, H. G. Martin, T. Mayer, M. McDonnell, V. Murugesan, S. Nimer, N. Rao, **M. Seifrid**, M. Taheri, M. Taufer, K. Vogiatzis, Shaping the Future of Self-Driving Autonomous Laboratories Workshop. ORNL/TM-2024/3714; Oak Ridge National Laboratory (ORNL), Oak Ridge, TN (United States). Oak Ridge Leadership Computing Facility (OLCF), **2024**. DOI: [10.2172/2481197](https://doi.org/10.2172/2481197).
37. G. Tom*, S. P. Schmid, S. G. Baird, Y. Cao, K. Darvish, H. Hao, S. Lo, S. Pablo-García, E. M. Rajaonson, M. Skreta, N. Yoshikawa, S. Corapi, G. D. Akkoc, F. Strieth-Kalthoff*, **M. Seifrid***, A. Aspuru-Guzik*, Self-Driving Laboratories for Chemistry and Materials Science, *Chem. Rev.*, **2024**. Online. DOI: [10.1021/acs.chemrev.4c00055](https://doi.org/10.1021/acs.chemrev.4c00055)
 - *Corresponding author
36. **M. Seifrid**^{†,*}, S. Lo[†], D.G. Choi, G. Tom, M.L. Le, K. Li[‡], R. Sankar[‡], H.-T. Vuong[‡], A. Yi[‡], Z. Zhu[‡], N. Schopp, A. Peng, B. Luginbuhl, T.-Q. Nguyen*, A. Aspuru-Guzik*, Beyond Molecular Structure: Critically Assessing Machine Learning for Designing Organic Photovoltaic Materials and Devices, *J. Mater. Chem. A*, **2024**, 12, 14540. DOI: [10.1039/D4TA01942C](https://doi.org/10.1039/D4TA01942C)
 - 2024 Emerging Investigators issue
 - *Corresponding author; ^{†‡}Contributed equally
35. **M. Seifrid**[†], F. Strieth-Kalthoff[‡], M. Haddadnia, T. C. Wu, E. Alca, L. Bodo, S. Arellano-Rubach, N. Yoshikawa, M. Skreta, R. Keunen, A. Aspuru-Guzik, Chemspeed: An Open-Source Python Interface for Chemspeed Robotic Chemistry and Materials Platforms, *Digital Discovery*. **2024**, 3, 1319. DOI: [10.1039/D4DD00046C](https://doi.org/10.1039/D4DD00046C)
 - [†]Contributed equally
34. F. Strieth-Kalthoff, H. Hao, V. Rathore, J. Derasp, T. Gaudin, N. H. Angello, **M. Seifrid**, E. Trushina, M. Guy, J. Liu, X. Tang, M. Mamada, W. Wang, T. Tsagaantsooj, C. Lavigne, R. Pollice, T. C. Wu, K. Hotta, L. Bodo, S. Li, M. Haddadnia, A. Wolos, R. Roszak, C.-T. Ser, C. Bozal-Ginesta, R. J. Hickman, J. Vestfrid, A. Aguilar-Granda, E. L. Klimareva, R. C. Sigerson, W. Hou, D. Gahler, S. Lach, A. Warzybok, O. Borodin, S. Rohrbach, B. Sanchez-Lengeling, C. Adachi, B. A. Grzybowski, L. Cronin, J. E. Hein, M. D. Burke, A. Aspuru-Guzik, Delocalized, Asynchronous, Closed-Loop Discovery of Organic Laser Emitters, *Science*. **2023**, 384 (6697). DOI: [10.1126/science.adk9227](https://doi.org/10.1126/science.adk9227)
33. **M. Seifrid**[†], A. Karki[†], H. Wakidi, H. Vezin, G. C. Bazan, B. F. Chmelka, T.-Q. Nguyen, G. N. M. Reddy, Importance of short-range order in governing thin film morphology and electronic properties of polymeric organic semiconductor. *Chem. Mater.* **2023**, 36 (3), 1214-1227. DOI: [10.1021/acs.chemmater.3c01931](https://doi.org/10.1021/acs.chemmater.3c01931)
 - [†]Contributed equally
32. M. Allen, K. Bediako, W. J. Bowman, M. Calabrese, L. Caretta, R. K. Cersonsky, W. Chen, S. Correa, R. Davidson, L. Dresselhaus-Marais, C. N. Eisler, A. Furst, T. Ge, A. Hook, Y.-T. Hsu, C. Jia, J. Lu, A. Lunghi, M. S. Messina, I. A. Moreno-Hernandez, E. Nichols, R. Rao, **M. Seifrid**, K. E. Shulenberger, A. N. Simonov, X. Su, D. F. Swearer, E. Tang, M. K. Taylor, H. Tran, G. F. Trindade, R. Truby, H. Utzat, Y. Yang, D. W. Yee, S. Zhao, S. Cranford, 35+1 challenges in materials science being tackled by PIs under 35(ish) in 2023. *Matter*. **2023**, 6 (8), 2480-2487. DOI: [10.1016/j.matt.2023.06.046](https://doi.org/10.1016/j.matt.2023.06.046)
31. S. Lo, **M. Seifrid**, T. Gaudin, A. Aspuru-Guzik, Augmenting Polymer Datasets by Iterative Rearrangement. *J. Chem. Inf.* **2023**, 63, 4266-4276. DOI: [10.1021/acs.jcim.3c00144](https://doi.org/10.1021/acs.jcim.3c00144)

30. T. C. Wu, A. Aguilar-Granda, K. Hotta, S. A. Yazdani, R. Pollice, J. Vestfrid, H. Hao, C. Lavigne, **M. Seifrid**, N. Angello, F. Bencheikh, J. E. Hein, M. Burke, C. Adachi, A. Aspuru-Guzik, A Materials Acceleration Platform for Organic Laser Discovery. *Adv. Mater.* **2022**, 2207070. DOI: [10.1002/adma.202207070](https://doi.org/10.1002/adma.202207070)
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29. **M. Seifrid**, R. Pollice, A. Aguilar-Granda, Z. Morgan Chan, K. Hotta, C. T. Ser, J. Vestfrid, T. C. Wu, A. Aspuru-Guzik, Autonomous Chemical Experiments: Challenges and Perspectives on Establishing a Self-Driving Lab. *Acc. Chem. Res.* **2022**, 55 (17), 2454-2466. DOI: [10.1021/acs.accounts.2c00220](https://doi.org/10.1021/acs.accounts.2c00220)
28. **M. Seifrid**, J. Hattrick-Simpers, A. Aspuru-Guzik, T. Kalil, S. Cranford, Reaching critical MASS: Crowdsourcing designs for the next generation of materials acceleration platforms. *Matter.* **2022**, 5 (7), 1972-1976. DOI: [10.1016/j.matt.2022.05.035](https://doi.org/10.1016/j.matt.2022.05.035)
• [Guest editor](#) for special issues in *Matter* and *Cell Reports Physical Science*
27. **M. Seifrid**, R. J. Hickman, A. Aguilar-Granda, C. Lavigne, J. Vestfrid, T. C. Wu, T. Gaudin, E. J. Hopkins, A. Aspuru-Guzik, Routescore: Punching the Ticket to More Efficient Materials Development. *ACS Cent. Sci.* **2022**, 8 (1), 122-131. DOI: [10.1021/acscentsci.1c01002](https://doi.org/10.1021/acscentsci.1c01002)
• [Press coverage](#) in *New Scientist*
26. B. R. Luginbuhl, S.-J. Ko, N. A. Ran, H. Hu, S. M. Becwar, A. Karki, **M. Seifrid**, T. Okubo, M. Wang, H. W. Ade, B. F. Chmelka, G. C. Bazan, G. N. Manjunatha Reddy, T.-Q. Nguyen, Low Voltage-Loss Organic Solar Cells Light the Way for Efficient Semitransparent Photovoltaics. *Solar RRL.* **2022**, 6, 2200135. DOI: [10.1002/solr.202200135](https://doi.org/10.1002/solr.202200135)
25. S. Halaby, M. Martynowycz, Z. Zhu, S. Tretiak, A. Zhugayevych*, T. Gonen* and **M. Seifrid***, Microcrystal Electron Diffraction for Molecular Design of Functional Non-Fullerene Acceptor Structures. *Chem. Mater.* **2021**, 33 (3), 966-977. DOI: [10.1021/acs.chemmater.0c04111](https://doi.org/10.1021/acs.chemmater.0c04111)
• *Corresponding author
24. **M. Seifrid** and A. Aspuru-Guzik, You Wouldn't Download a Molecule! Now, ChemSCAD Makes It Possible. *ACS Cent. Sci.* **2021**, 7, 228-230. DOI: [10.1021/acscentsci.1c00108](https://doi.org/10.1021/acscentsci.1c00108)
23. **M. Seifrid**, G. N. M. Reddy, B. F. Chmelka and G. C. Bazan, Insight into the Structures and Dynamics of Organic Semiconductors through Solid-State NMR Spectroscopy. *Nat. Rev. Mater.* **2020**, 5, 910-930. DOI: [10.1038/s41578-020-00232-5](https://doi.org/10.1038/s41578-020-00232-5)
22. R. Sharma, H. Lee, **M. Seifrid**, V. Gupta, G. C. Bazan and S. Yoo, Performance Enhancement of Conjugated Polymer-Small Molecule-Non Fullerene Ternary Organic Solar Cells by Tuning Recombination Kinetics and Molecular Ordering. *Solar Energy* **2020**, 201, 499-507. DOI: [10.1016/j.solener.2020.03.008](https://doi.org/10.1016/j.solener.2020.03.008)
21. M. Ford, M. Suzuki, C. Bridges, K. Bustillo, **M. Seifrid**, M. Wang, H. Yamada, T.-Q. Nguyen and G. C. Bazan, Robust Unipolar Electron Conduction using an Ambipolar Polymer Semiconductor with Solution-Processable Additive. *Chem. Mater.* **2020**, 32 (16), 6831-6837. DOI: [10.1021/acs.chemmater.0c00234](https://doi.org/10.1021/acs.chemmater.0c00234)
20. J. Vollbrecht, J. Lee, S.-J. Ko, V. V. Brus, A. Karki, W. Le, **M. Seifrid**, M. J. Ford, K. Cho, G. C. Bazan and T.-Q. Nguyen, Design of Narrow Bandgap Non-Fullerene Acceptors for Photovoltaic Applications and Investigation of Non-Geminate Recombination Dynamics. *J. Mater. Chem. C* **2020**, 8, 15175-15182. DOI: [10.1039/D0TC02136A](https://doi.org/10.1039/D0TC02136A)
19. **M. T. Seifrid**, G. N. M. Reddy, C. Zhou, B. F. Chmelka and G. C. Bazan, Direct Observation of the Relationship Between Molecular Topology and Bulk Morphology for a π -Conjugated Material. *J. Am. Chem. Soc.* **2019**, 141 (13), 5078-5082. DOI: [10.1021/jacs.8b13200](https://doi.org/10.1021/jacs.8b13200)
• Selected as [supplementary cover](#)
18. Y. Xu, J. Yuan, S. Zhou, **M. Seifrid**, L. Ying, B. Li, F. Huang, G. C. Bazan and W. Ma, Ambient Processable and Stable All-Polymer Organic Solar Cells. *Adv. Funct. Mater.* **2019**, 29 (8), 1806747. DOI: [10.1002/adfm.201806747](https://doi.org/10.1002/adfm.201806747)

17. A. Karki, G.-J. A. H. Wetzelaer, G. N. M. Reddy, V. Nádazdy, **M. Seifrid**, F. Schauer, G. C. Bazan, B. F. Chmelka, P. W. M. Blom and T.-Q. Nguyen, Unifying Energetic Disorder from Charge Transport and Band Bending in Organic Semiconductors. *Adv. Funct. Mater.* **2019**, 29 (20), 1901109. DOI: [10.1002/adfm.201901109](https://doi.org/10.1002/adfm.201901109)
16. A. T. Lill, A. F. Eftaiha, J. Huang, H. Yang, **M. Seifrid**, M. Wang, G. C. Bazan and T.-Q. Nguyen, High-k Fluoropolymer Gate Dielectric in Electrically Stable Organic Field-Effect Transistors. *ACS Appl. Mater. Interfaces* **2019** 11 (17), 15821-15828. DOI: [10.1021/acsami.8b20827](https://doi.org/10.1021/acsami.8b20827)
15. J. Lee, S.-J. Ko, H. Lee, J. Huang, Z. Zhu, **M. Seifrid**, J. Vollbrecht, V. Brus, H. Wang, K. Cho, T.-Q. Nguyen and G. C. Bazan, Side-Chain Engineering of Non-Fullerene Acceptors for Near-Infrared Organic Photodetectors and Photovoltaics. *ACS Energy Lett.* **2019**, 4 (6), 1401-1409. DOI: [10.1021/acsenerylett.9b00721](https://doi.org/10.1021/acsenerylett.9b00721)
 - Selected as [supplementary cover](#)
14. B. Yurash, D. Leifert, G. N. M. Reddy, D. X. Cao, S. Biberger, V. V. Brus, **M. Seifrid**, P. J. Santiago, A. Köhler, B. F. Chmelka, G. C. Bazan and T.-Q. Nguyen, Atomic-Level Insight into the Post Synthesis Bandgap Engineering of a Lewis Basic Polymer Using the Lewis Acid Tris(pentafluorophenyl)borane. *Chem. Mater.* **2019**, 31 (17), 6715-6725. DOI: [10.1021/acs.chemmater.9b01224](https://doi.org/10.1021/acs.chemmater.9b01224)
13. B. Yurash, D. X. Cao, V. V. Brus, D. Leifert, M. Wang, A. Dixon, **M. Seifrid**, A. E. Mansour, D. Lungwitz, T. Liu, P. J. Santiago, K. R. Graham, N. Koch, G. C. Bazan and T.-Q. Nguyen, Towards Understanding the Doping Mechanism of Organic Semiconductors by Lewis Acids. *Nat. Mater.* **2019**, 18, 1327-1334. DOI: [10.1038/s41563-019-0479-0](https://doi.org/10.1038/s41563-019-0479-0)
12. **M. T. Seifrid**, S. D. Oosterhout, M. F. Toney and G. C. Bazan, Kinetic Versus Thermodynamic Orientational Preferences for a Series of Isomorphous Molecular Semiconductors. *ACS Omega* **2018**, 3 (8), 10198–10204. DOI: [10.1021/acsomega.8b01435](https://doi.org/10.1021/acsomega.8b01435)
11. J. Lee, S.-J. Ko, **M. Seifrid**, H. Lee, C. McDowell, B. R. Luginbuhl, A. Karki, K. Cho, T.-Q. Nguyen and G. C. Bazan, Design of Nonfullerene Acceptors with Near-Infrared Light Absorption Capabilities. *Adv. Energy Mater.* **2018**, 8 (26), 1801209. DOI: [10.1002/aenm.201801209](https://doi.org/10.1002/aenm.201801209)
10. J. Lee, S.-J. Ko, **M. Seifrid**, H. Lee, B. R. Luginbuhl, A. Karki, M. Ford, K. Rosenthal, K. Cho, T.-Q. Nguyen and G. C. Bazan, Bandgap Narrowing in Non-Fullerene Acceptors: Single Atom Substitution Leads to High Optoelectronic Response Beyond 1000 nm. *Adv. Energy Mater.* **2018**, 8 (24), 1801212. DOI: [10.1002/aenm.201801212](https://doi.org/10.1002/aenm.201801212)
9. M. P. Hughes, K. D. Rosenthal, N. A. Ran, **M. Seifrid**, G. C. Bazan and T.-Q. Nguyen, Determining the Dielectric Constants of Organic Photovoltaic Materials Using Impedance Spectroscopy. *Adv. Funct. Mater.* **2018**, 28 (32), 1801542. DOI: [10.1002/adfm.201801542](https://doi.org/10.1002/adfm.201801542)
8. C. McDowell, K. Narayanaswamy, B. Yadagiri, T. Gayathri, **M. Seifrid**, R. Datt, S. M. Ryno, M. C. Heifner, V. Gupta, C. Risko, S. P. Singh and G. C. Bazan, Impact of Rotamer Diversity on the Self-Assembly of Nearly Isostructural Molecular Semiconductors. *J. Mater. Chem. A* **2018**, 6 (2), 383–394. DOI: [10.1039/C7TA09972J](https://doi.org/10.1039/C7TA09972J)
7. **M. Seifrid**, M. J. Ford, M. Li, K. M. Koh, P. Trefonas and G. C. Bazan, Electrical Performance of a Molecular Organic Semiconductor Under Thermal Stress. *Adv. Mater.* **2017**, 29 (12), 1605511. DOI: [10.1002/adma.201605511](https://doi.org/10.1002/adma.201605511)
6. B. Wang, G. Feng, **M. Seifrid**, M. Wang, B. Liu and G. C. Bazan, Antibacterial Narrow-Band-Gap Conjugated Oligoelectrolytes with High Photothermal Conversion Efficiency. *Angew. Chem. Int. Ed.* **2017**, 56 (50), 16063–16066. DOI: [10.1002/anie.201709887](https://doi.org/10.1002/anie.201709887)
5. C. Zhou, Q. Cui, C. McDowell, **M. Seifrid**, X. Chen, J.-L. Brédas, M. Wang, F. Huang and G. C. Bazan, Topological Transformation of π -Conjugated Molecules Reduces Resistance to Crystallization. *Angew. Chem. Int. Ed.* **2017**, 56 (32), 9318–9321. DOI: [10.1002/anie.201702646](https://doi.org/10.1002/anie.201702646)

4. M. Wang, M. J. Ford, C. Zhou, **M. Seifrid**, T.-Q. Nguyen and G. C. Bazan, Linear Conjugated Polymer Backbones Improve Alignment in Nanogroove-Assisted Organic Field-Effect Transistors. *J. Am. Chem. Soc.* **2017**, *139* (48), 17624–17631. DOI: [10.1021/jacs.7b10332](https://doi.org/10.1021/jacs.7b10332)
3. S. L. Fronk, Y. Shi, **M. Seifrid**, C.-K. Mai, C. McDowell and G. C. Bazan, Chiroptical Properties of a Benzotriazole–Thiophene Copolymer Bearing Chiral Ethylhexyl Side Chains. *Macromol.* **2016**, *49* (24), 9301-9308. DOI: [10.1021/acs.macromol.6b02229](https://doi.org/10.1021/acs.macromol.6b02229)
2. J. Facendola, **M. Seifrid**, J. S. Siegel, P. I. Djurovich and M. E. Thompson, Synthesis and Characterization of Phosphorescent Platinum and Iridium Complexes with Cyclometalated Corannulene. *Dalton Trans.* **2015**, *44*, 8456-8466. DOI: [10.1039/C4DT03541K](https://doi.org/10.1039/C4DT03541K)
1. L. F. Gomez, *et al.*, Shapes and Vorticities of Superfluid Helium Nanodroplets. *Science* **2014**, *345* (6199), 906–909. DOI: [10.1126/science.1252395](https://doi.org/10.1126/science.1252395)

Presentations

Invited Talks

15. “Bridging the Transition for Conventional Laboratories to SDLs: Data Infrastructure & Knowledge Sharing” *Pacificchem 2025*. Honolulu, HI. December 15-20, 2025.
14. “Automation and AI Enable Precision and Reproducibility in Organic Semiconductor Function” *2025 ACS Fall Meeting*. Washington, DC. August 17-21, 2025.
13. “Establishing the Data-Driven Organic Materials Lab” *3rd Annual Autonomous Experimentation and Science Policy Symposium*. Philadelphia, PA. May 1, 2025
12. “Establishing the Data-Driven Organic Materials Lab” *Department of Chemistry, University of North Carolina at Chapel Hill*. Chapel Hill, NC. April 24, 2025
11. “Data & Automation Enable the Future of Science” *Science in the Savannah*. Amboseli, Kenya. April 15-18, 2025.
10. “Opportunities, Challenges in SDLs for Polymers & Materials Science” *Shaping of the Future of Self-Driving Autonomous Laboratories*. Denver, CO. November 6, 2024.
9. “Establishing the Data-Driven Organic Materials Lab” *Southeast Regional Meeting of the ACS 2024*. Atlanta, GA. October 24, 2024.
8. “Materials Science of the Future: Data Science & Automation” *2024 Training Workshop: Emerging Materials for Contemporary Challenges*. Raleigh, NC. October 21-22, 2024.
7. “Establishing the Data-Driven Organic Materials Lab” *National Institute of Standards and Technologies (NIST)*. Gaithersburg, MD. June 20, 2024.
6. “Evolving Materials Design Toward the Lab of the Future” *Oak Ridge National Laboratory*. Oak Ridge, TN. May 31, 2024.
5. “Critically Assessing the Potential and Challenges of Machine Learning for Designing Organic Photovoltaic Devices” *MRS 2024 Spring Meeting*. Seattle, WA. April 23, 2024.

4. “Accelerated discovery of organic mixed conductors: Envisioning developments in the next century of polymer science and engineering” *ACS 2024 Spring Meeting*. New Orleans, LA. March 20, 2024.
3. “Beyond Molecular Structure: Machine Learning for Designing Organic Photovoltaic Materials and Devices” *Center for Polymers and Organic Solids*. University of California, Santa Barbara. October 26, 2022.
2. “Microcrystal Electron Diffraction for Molecular Design of Functional Non-Fullerene Acceptor Structures” *American Crystallographic Association 71st Annual Meeting*. Online. July 30 – August 5, 2021.
1. “New Opportunities in Organic Solar Cells” *IEE Emerging Technologies Review*. University of California, Santa Barbara. May 10, 2018.

Contributed

16. **M. Seifrid**, “Establishing the Data-Driven Organic Materials Lab”, *2025 Polymers GRC*. Mount Holyoke College, MA. June 8-13, 2025. Poster.
15. **M. Seifrid**, S. Lo, D. Choi, G. Tom, M. L. Le, K. Li, R. Sankar, H.-T. Vuong, H. Wakidi, A. Yi, Z. Zhu, N. Schopp, A. Peng, B. Luginbuhl, T.-Q. Nguyen, A. Aspuru-Guzik, “Can Machines Learn from the Literature? State-of-the-Art, Important Lessons and a Discussion of Future Opportunities” *15th International Symposium on Functional π -Electron Systems*. Raleigh, NC, USA. June 16-21, 2023. Talk.
14. **M. Seifrid**, R. J. Hickman, E. Alca, A. Aspuru-Guzik, “A Self-Driving Lab Autonomously Learns to Accurately Dispense Samples via Dynamic Experimental Control” *MRS 2022 Fall Meeting*. Boston, MA, USA. November 27 – December 2, 2022. Talk.
13. **M. Seifrid**, R. J. Hickman, E. Alca, A. Aspuru-Guzik, “Autonomous Optimization of Robotic Process Parameters for Accurate Experiments” *AIChE 2022 Annual Meeting – Topical Conference: Applications of Data Science to Molecules and Materials*. Phoenix, AZ, USA. November 13-18, 2022. Talk.
12. **M. Seifrid**, A. Aguilar-Granda, E. Alca, Z. Morgan Chan, K. Hotta, R. J. Hickman, R. Pollice, C. T. Ser, F. Strieth-Kalthoff, J. Vestfrid, T. C. Wu, A. Aspuru-Guzik, “Can Robots Learn to have ‘Good Hands’? Fully Autonomous Optimization of Accurate Sample Dosing Parameters” *ACS 2022 Fall Meeting*. Chicago, IL, USA. August 21-25, 2022. Talk & poster.
11. **M. Seifrid** on behalf of the A. Aspuru-Guzik, M. D. Burke, L. Cronin, B. Grzybowski and J. E. Hein groups, “Molecular Automated Discovery of Novelty Enabled by Synthetic Systems (MADNESS)” *Materials Genome Initiative PI Meeting*. University of Maryland, College Park. June 27-28, 2022. Poster.
10. **M. Seifrid**, “Building the Lab of the Future: Autonomous Exploration of Mixed Conduction in Organic Materials” *2022 Future Faculty Workshop: Diverse Leaders for the Future*. University of Delaware, DE, USA. June 21-23, 2022. Talk
9. **M. Seifrid**, R. J. Hickman, A. Aguilar-Granda, C. Lavigne, J. Vestfrid, T. C. Wu, T. Gaudin, E. J. Hopkins, A. Aspuru-Guzik, “Punching the Ticket to More Efficient Materials Development”. *University of Chicago Chemistry 2021 Future Faculty Conference*. Online. May 24-25, 2021. Talk.
8. **M. Seifrid**, R. J. Hickman, A. Aguilar-Granda, C. Lavigne, J. Vestfrid, T. C. Wu, A. Aspuru-Guzik, “Punching the Ticket to More Efficient Materials Development” *ACS 2021 Spring Meeting*. Online. April 5-16, 2021. Talk.

7. S. Halaby, M. Martynowycz, Z. Zhu, S. Tretiak, A. Zhugayevych, T. Gonen and **M. Seifrid**, "Microcrystal Electron Diffraction for Molecular Design of Functional Non-Fullerene Acceptor Structures" *ACS 2021 Spring Meeting*. Online. April 5-16, 2021. Talk.
6. S. Halaby, M. Martynowycz, Z. Zhu, S. Tretiak, A. Zhugayevych, T. Gonen and **M. Seifrid**, "Microcrystal Electron Diffraction for Molecular Design of Functional Non-Fullerene Acceptor Structures" *International Conference on NFA-Based Organic Solar Cells: Materials, Morphology and Fundamentals*. Online. February 3-4, 2021. Talk.
5. **M. Seifrid**, R. Hickman, C. Lavigne and A. Aspuru-Guzik, "A New Approach to Expanding the Chemical Space Accessible by Self-Driving Labs" *Chemical Science Symposium 2020: How can machine learning and autonomy accelerate chemistry?* Online. September 29-30, 2020. Poster.
4. **M. Seifrid**, G. N. M. Reddy, C. Zhou, B. F. Chmelka and G. C. Bazan, "Direct Observation of the Relationship Between Molecular Topology and Bulk Morphology for a π -Conjugated Material" *14th International Symposium on Functional π -Electron Systems*. Berlin, Germany. June 3-7, 2019. Poster.
3. **M. Seifrid**, G. N. M. Reddy, B. F. Chmelka and G. C. Bazan, "Atomic-Level Resolution of the Solid-State Organization of Organic Semiconductors" *Emerging Material Technologies Summit 2018*. Hanoi, Vietnam. November 4-8, 2018. Talk.
2. **M. Seifrid**, J. Lee, S.-J. Ko, T.-Q. Nguyen and G. C. Bazan, "Materials Design & Energetic Considerations for Narrow Bandgap Non-Fullerene Organic Solar Cells" *9th International Conference on Excited State Processes in Electronic and Bio Nanomaterials 2018*. Santa Fe, NM, USA. June 4-7, 2018. Talk.
1. **M. Seifrid**, M. J. Ford, M. Li, K. M. Koh, P. Trefonas and G. C. Bazan, "Characterization of Electrical Performance in a Molecular Organic Semiconductor Under Thermal Stress" *Zing Organic Semiconductors Conference 2016*. Dubrovnik, Croatia. September 23-25, 2016. Talk.

Patents & Applications

3. U.S. provisional patent application 63/956,271: "Synthesis of Quantum Spin Liquids"
2. U.S. patent US-11233207-B2: "Narrow bandgap non-fullerene acceptors and devices including narrow bandgap non-fullerene acceptors"
1. U.S. patent US-11916180-B2: "Organic solar cell and photodetector materials and devices"

Awards, Honors & Recognition

Research Corporation for Science Advancement Scialog Fellow, Automating Chemical Laboratories
2024 Emerging Investigator themed collection, *J. Mater. Chem. A*

2024
2024

Service

Grant proposal review:

DOE BES, Condensed Phase and Interfacial Molecular Science

NSF CBET, Electrochemical Systems

NSF CISE, Accelerating Computing-Enabled Scientific Discovery

Editorial board membership:

Early Career Board, *Materials Informatics and Data Science* 2023 – present

Editor:

Guest editor, *APL Machine Learning*, “Machine Learning for Self-Driving Laboratories” 2024–2025

Guest editor, *Matter & Cell Reports Physical Science*, “Reaching Critical MASS” 2022

Peer review:

<i>ACS Central Science</i>	<i>Communications Chemistry</i>	<i>Nature Communications</i>
<i>Advanced Functional Materials</i>	<i>Digital Discovery</i>	<i>Nature Energy</i>
<i>Advanced Materials</i>	<i>Integrating Materials and Manufacturing Innovation</i>	<i>Review of Scientific Instruments</i>
<i>APL Machine Learning</i>		<i>Scientific Reports</i>
<i>Chemical Science</i>	<i>JACS</i>	<i>Smal</i>
<i>Chemistry of Materials</i>	<i>Matter</i>	<i>Small Methods</i>
	<i>Nature Chemical Engineering</i>	

Symposium & workshop organizing:

9. “AI/ML/Autonomous Experimentation for Thin Films Processing”. *AVS 72 International Symposium & Exhibition*. Pittsburgh, PA. November 2026. Organizer.
8. “Automation & AI in Polymer Science: Accelerating Discovery for Functional Polymers” *PMSE, ACS 2026 Spring Meeting*. Atlanta, GA. March 2026. Organizer.
7. “Integrating High-Throughput Techniques and Digital Technologies for Sustainability” *PMSE, ACS 2025 Spring Meeting*. San Diego, CA. March 2025. Organizer.
6. *Young Investigator Workshop, 8th International Soft Matter Conference*. Raleigh, NC. July 2024. Organizer.
5. *Tosoh Polymer Conference 2024*. Raleigh, NC. June 2024. Discussion leader.
4. “Automation, ML and AI in Colloid and Surface Science” *2024 ACS Colloid and Surface Science Symposium*. Seattle, WA. June 2024. Organizer.
3. “EN04: Beyond 20% Efficiencies with Organic Solar Cell Devices” *MRS 2024 Spring Meeting*. Seattle, WA. April 2024. Session chair.
2. *FUTURE Labs Workshop: Foundation for Unmanned Technological Utilization, Research, and Exploration*. Raleigh, NC. January 2024. Organizer.

1. “Special Session: Schmidt Futures/Cell Press (Part 2)” *Accelerate Conference*. Toronto, ON, USA. August 31, 2022. Session chair.

Outreach:

Graduate Students for Diversity in Science (GSDS) 2014 – 2019

GSDS strives to promote the participation of underrepresented groups in the STEM fields and facilitate an inclusive atmosphere for scientific discussion.

Ventura High School visits to UCSB 2015 & 2017

Visits to UCSB for students from high schools in Ventura County, CA, organized by Prof. Thuc-Quyen Nguyen and the Center for Polymers and Organic Solids. The visits aim to inspire the students to pursue a college education in the STEM fields.

Sci Trek volunteer 2014 & 2015

SciTrek aims to provide elementary and middle schools students in Santa Barbara County, CA, the opportunity to experience the scientific process through live inquiry-based partnerships with local schools.

Teaching and mentorship**Teacher:**

MSE 380, NC State 2025 – present

- Microstructure of Organic Materials

MSE 490/591, NC State 2024 – present

- Materials and Data Science

MSE 201, NC State 2023

- Structure and Properties of Engineering Materials

CHEM 6BL, UCSB: 2019

- Teaching assistant, Organic Chemistry lab

MATRL 280A, UCSB: 2019

- Guest lecturer, “DFT as Applied to Conjugated Polymers”
- Established a teaching lab for students to learn about density functional theory (DFT) in materials chemistry

CHEM 282C, UCSB: 2018

- Guest lecturer, “Instrumental Methods in Materials Chemistry”

CHEM 1AL – CHEM 1CL, UCSB: 2014 – 2015

- Teaching assistant, General Chemistry lab

Advisor:

Graduate students:

- Kohen Goble, 2025 – present
- Siona Benjamin, 2024 – present
- Sina Dehghan Toranposhti, 2023 – present

Undergraduates:

- Julian Morin-Kensicki, 2025 – present
 - o Major: Materials Science & Engineering, NC State
- Addison Blackwelder, 2025 – present
 - o Major: Electrical & Computer Engineering, NC State
- Kyle Hollars, 2024 – present
 - o Major: Materials Science & Engineering, NC State

- Avery Smith, 2024 – present
 - o Major: Materials Science & Engineering, NC State
- Jonathan Till, 2024 – present
 - o Major: Materials Science & Engineering, NC State
- Stephen Stewart, 2024 – present
 - o Major: Materials Science & Engineering, NC State
- Connor Hurst, 2024
 - o Major: Mechanical Engineering, Clarkson University
 - o 2024 MAT-DAT REU
- Mohannad Alghamdi, 2024
 - o KAUST Gifted Student Program gap year student

Mentor:

Aspuru-Guzik group:

- Leticia Bodo (undergraduate), 2023
 - o Graduate student at University of Toronto (2023)
 - o One paper
- Mohammad Haddadnia (undergraduate), 2022 – 2023
 - o Graduate student at Harvard (2023)
 - o One paper
- Stanley Lo (undergraduate & graduate), 2021 – 2023
 - o Received NSERC USRA
 - o Won departmental poster prizes for summer research and undergraduate thesis
 - o Talk & poster at *2022 ACS Fall Meeting*
 - o Graduate student in Chemistry, University of Toronto (2022)
 - o Two papers
- Anji Zhang (undergraduate), 2021 – 2022
 - o Graduate student in Chemistry, MIT (2022)
 - o Work resulted in one future manuscript
- Emre Alca (undergraduate), 2020 – 2022
 - o One paper
- Jack Batey (undergraduate), 2020

Bazan group:

- Ziyue Zhu (graduate), 2019
- Luana Llanes (graduate), 2019

Professional Society Memberships

- Materials Research Society
- American Chemical Society
- The Minerals, Metals & Materials Society