

Robert Manuel Stolz

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EDUCATION AND TRAINING

Stanford University, *Baker Postdoctoral Fellow* 2022–Date

Advisor: Hemamala Karunadasa

Research: Optoelectronic properties of semiconductors, thin film photovoltaics, synthetic chemistry

Dartmouth College, *Postdoctoral Scholar* 2022

Advisor: Katherine A. Mirica

Research: Surface chemistry of semiconductors, electrochemical methods development, synthetic chemistry,

Dartmouth College, *Ph.D., Chemistry* 2015–2021

Advisor: Katherine A. Mirica

Thesis: *The Role of Surface Chemistry in Electroanalysis with Conductive Two-Dimensional Framework Materials*

Date awarded: 10/01/2021

Wesleyan University, *M.A., Chemistry* 2012–2013

Advisor: Brian H. Northrop

Thesis: *Synergy of Dynamic Covalent and Click Methodologies in Dendrimer Synthesis: A Study of Thiol-Ene Reactions in Material Science*

Wesleyan University, *B.A., Chemistry* 2008–2012

PROFESSIONAL EXPERIENCE

DuPont Chemical Company, Crop Protection Division, Wilmington, DE 2015

Associate Scientist, Research Areas: aromatic functionalization, reaction scale-up

Dow Chemical Company, Advanced Materials Division, Collegetown, PA 2013–2015

Chemist, Research Areas: emulsion polymerization, coatings development

AWARDS AND HONORS

PRISM Baker Fellowship, *Stanford University* 2022–Date

Stanford PRISM Scholar, *Stanford University* 2022

NH-BioMade Seed Award, *National Science Foundation EPSCOR* 2021–2022

Outstanding Research Mentor Award, *Dartmouth College* 2021

(Awarded by the Dartmouth Center for the Advancement of Learning)

Walter H. Stockmayer Graduate Fellowship, *Dartmouth College* 2020

(awarded by a vote of the Faculty of the Dept. of Chemistry for outstanding research performance)

German Exchange Delegate, *New England Section of the American Chemical Society* 2019–2021

Undergraduate Research Fellowship, *Howard Hughes Medical Institute* 2011–2012

Undergraduate Research Fellowship, *Andrew W. Mellon Foundation* 2010

TEACHING AND MENTORING EXPERIENCE

Teaching Assistant, CHEM 258: Organic Chemistry Laboratory (Wesleyan University, 2010)
Teaching Assistant, PHYS 102: Physics for Future Presidents (Wesleyan University, 2009, 2010)
Laboratory Instructor, CHEM 5: General Chemistry Laboratory (Dartmouth College: 2015, 2018)
Laboratory Instructor, CHEM 6: General Chemistry Laboratory (Dartmouth College: 2016)
Teaching Assistant, CHEM 10: Honors General Chemistry (Dartmouth College: 2016)
Laboratory Instructor, CHEM 10: Honors General Chemistry Laboratory (Dartmouth College: 2016)
Mentored 5 undergraduate students in research chemistry at Dartmouth College

PEER-REVIEWED PUBLICATIONS

*denotes corresponding author(s), † denotes co-first authors, underlined authors indicate undergraduate scholars

1. Cleron, J. L.; Chen, C.; Pan, F.; Saha, S.; Marlton, F. P.; **Stolz, R. M.**; Li, J.; Dionne, J. A.; Liu, F.; Filip, M. R.; Karunadasa, H. I. "Twisted Tin-Chloride Perovskite Single Crystal Heterostructures" *Under Review*.
2. Benedetto, G. B.[†]; **Stolz, R. M.**[†] (co-first author); Meng, Z.[†]; Chan, J. Y. M.; Shehayeb, E. O.; Morell, C. T.; Fabusola, G.; Elsaesser, N.; Simon, C. M.*; Mirica, K. A.* "Conductive Covalent Organic Frameworks as Chemiresistive Sensor Arrays for the Detection and Differentiation of Gasotransmitters" *Under Review*.
3. Li, J.; Hofmann, J.; **Stolz, R. M.**; Wen, J.; Deschene C. R.; Bartels, H.; Liu, Z.; Salleo, A.; Chapman, K. W.; Karundasa, H. I.* "Suppressing Phase Transitions and High-Pressure Amorphization through Tethered Organic Cations in Organochalcogenide-Halide Perovskites" *J. Am. Chem. Soc.* **2025**, 147, 22, 19026–19038.
4. Ambroggi, E. K.; Damacet, P.; **Stolz, R. M.**; Mirica, K. A.* "Mechanistic Insight into the Formation of Conductive, Layered Metal–Organic Framework Nanocrystals" *ACS Nano* **2025**, 19, 1, 1383–1395.
5. Meng, Z.; **Stolz, R. M.**; Jones, C. G.; Nelson, H. M.; Mirica, K. A.* "Gas-Triggered Electrical and Magnetic Modulation of Two-Dimensional Conductive Metal–Organic Frameworks" *Angew. Chem. Int. Ed.* **2024**, e202404290
6. Eagleton A. E.[†]; Ko M.[†]; **Stolz, R. M.**; Vereshchuk, N.; Mendecki, L.; Levenson, A. M.; Huang, C.; MacVeigh, K. C.; Claude, I.; Meng, Z.; Peterson, G. W.; Mahdavi-Shakib, A.; Frederick, B. F.; Mirica, K. A.* "Fabrication of Multifunctional Electronic Textiles Using Oxidative Restructuring of Copper into a Cu-based Metal–Organic Framework" *J. Am. Chem. Soc.* **2022**, 144, 51, 23297–23312.
7. **Stolz, R. M.**[†]; Kolln, A. F.[†]; Rocha, B. C.; Brinks, A.; Eagleton, A. M.; Mendecki, L.; Vashisth, H.; Mirica, K. A.* "Epitaxial Self-Assembly of Interfaces of 2D Metal–Organic Frameworks for Electroanalytical Detection of Neurochemicals" *ACS Nano* **2022**, 16, 9, 13869–13883.
8. Aykanat, A.; Meng, Z.; **Stolz R. M.**; Morrell, C. M.; Mirica, K. A.* "Bimetallic Two-Dimensional Metal–Organic Frameworks for the Chemiresistive Detection of Carbon Monoxide". *Angew. Chem. Int. Ed.* **2022**, 60, 2–10.
9. Aykanat, A.; Jones, C. G.; Cline, E. L.; **Stolz, R. M.**; Nelson, H. M.*; Mirica, K. A.* "Conductive Stimuli-Responsive Coordination Network Linked with Bismuth for Chemiresistive Gas Sensing", *ACS Appl. Mater. Interfaces* **2021**, 13, 60306–60318.
10. Ko, M.; Mendecki, L.; Eagleton, A.; Durbin, C. G.; **Stolz, R. M.**; Meng, Z.; Mirica, K. A.* "Employing Conductive Metal–Organic Frameworks for Voltammetric Detection of Neurochemicals" *J. Am. Chem. Soc.* **2020**, 142, 11717–11733.
11. **Stolz, R. M.**; Mahdavi-Shakib, A.; Frederick, B. G.*; Mirica, K. A.* "Host–Guest Interactions and Redox Activity in Layered Conductive Metal–Organic Frameworks" *Chem. Mater.* **2020**, 32, 7639–7652.
12. Meng, Z.; **Stolz, R. M.**; Mirica, K. A.* "Two-Dimensional Chemiresistive Covalent Organic Framework with High Intrinsic Conductivity" *J. Am. Chem. Soc.* **2019**, 141, 11929–11937.
13. Meng, Z.[†]; **Stolz, R. M.**[†]; Mendecki, L.[†]; Mirica, K. A.* "Electrically-Transduced Chemical Sensors Based on Two-Dimensional Nanomaterials" *Chem. Rev.* **2019**, 119, 478–598.
14. Frayne, S. H.; **Stolz, R. M.**; Northrop, B. H.* "Dendritic Architectures by Orthogonal Thiol–Maleimide "Click" and Furan–Maleimide Dynamic Covalent Chemistries" *Org. Biomol. Chem.* **2019**, 7878–7883.

15. **Stolz, R. M.**; Northrop, B. H.* “Experimental and Theoretical Studies of Selective Thiol–Ene and Thiol–Yne Click Reactions Involving N-Substituted Maleimides” *J. Org. Chem.* **2013**, 78, 8105–8116.

MANUSCRIPTS IN PREPERATION

1. Stolz, R. M.; Fisk, A. C.; Carbone, A. Marlton F. P.; Cleron, J. C.; , Jang, Z.; Cattermull, J. C.; Li, J. Saldivar Valdes, A.; Dauskardt, R. H.; Karunadasa, H. I. “Dimensional Reduction without Dielectric Confinement in (MA)PbI₃” *Manuscript in preparation*.
2. Stolz, R. M., Mullens, B. C.; Cleron, J. L.; Marleton, F. P.; Chapman, K.; Karunadasa, H. K. “Interconverting 2D and 3D hybrid Organochalcogenide Perovskites with Vapor-phase Transformations” *Manuscript in preparation*.

PATENTS

1. “Conductive Metal–Organic Frameworks for Electrochemical Detection of Analytes” Mirica, K. A.; Mendecki, L.; Ko, M.; Meng, Z.; **Stolz, R. M.**; Eagleton, A. US Patent 11,852,605, 2023
2. “Two-dimensional Stimuli-Response Covalent Organic Frameworks with High Intrinsic Conductivity” Mirica, K. A.; Meng, Z.; **Stolz, R. M.**; US Patent 11,634,446, 2023

ORAL PRESENTATIONS

1. University of Maine, Orono, ME, (invited, December, **2025**)
2. Onwards and Upwards: The How and Why of Finding a Postdoc, Dartmouth College, Hanvoer, NH, **2024**
3. NSF EPSCOR NH-BioMade, Dartmouth College, Hanover, NH, USA, **2022**
4. *Pacificchem*, **2021**, Virtual
5. (*BOSSs*), **2021**, Virtual (<https://www.bosssymposium.org/>).
6. “Organic pi-Electron Molecules and Materials Meetings (OPiEM3), **2021**, Virtual (<https://haleylab.uoregon.edu/opiem3-meetings/>).
7. *Frühjahrssymposium*, **2021**, Leipzig, Germany (invited)
8. NSF EPSCOR NH-BioMade, University of New Hampshire, Durham, NH, **2021**,
9. American Chemical Society Spring National Meeting, San Fransisco, **2020**
10. Frontier Institute for Research in Sensor Technologies (FIRST), University of Maine, Orono, ME, **2020**

CONTRIBUTED POSTERS

1. *NSYCC (NESACS)*, **2021**, Boston, MA (virtual)
2. *Frühjahrssymposium*, **2021**, Leipzig, Germany (virtual)
3. NSF EPSCOR NH-BioMade, University of New Hampshire, **2020**, Durham, NH
4. *3D Printing 2019*, **2019**, Hanover, NH
5. *Gordon Research Conference: Self-Assembly and Supramolecular Chemistry*, **2019**, Les Diablerets, CH.
6. *2nd From Carbon-Rich Molecules to Carbon-Based Materials*, **2018**, Nassau, Bahamas

INSTITUTIONAL SERVICE

Committee Member, Graduate Student and Postdoctoral Advisory Committee (VPGE), *Stanford*, 2023–date
Panelist, Graduate Professional Development Summit, *Stanford*, 2024
Committee Member, Provostial Search Advisory Committee, *Stanford*, 2023
Guest Editor, Special Edition of *Sensors*, 2022
Committee Member, Scholastic Development Team for the State Science Olympiad, *New Hampshire*, 2018
Chemistry Department Representative, Graduate Student Council, *Dartmouth College*, 2015–2016
Peer Reviewer for *Science*, *Nature Chem.*, *Chem. Sci.*, *Nature Commun.*, *J. Am. Chem. Soc.*, *Chem. Mater.*, *ACS Appl. Mater. Int.*, *ACS Sensors*, *J. Mater. Chem. C.*, *ACS Omega*

SERVICE AND OUTREACH

Project Lead, Perovskites in Teaching Labs Workshop, 2024
Outreach Volunteer, Stanford Nano Shared Facilities, 2023–Date

Judge, Stanford Research Conference, Stanford University, 2023

Educator, “Research Scientist for a Day” outreach initiative, Dartmouth College, 2015–2021

Guest Lecturer, Undergraduate Research Recruitment Initiative 2015–2020

Judge, Lyme Middle School Science Fair, New Hampshire, 2016

Tutor and Organizer, Community Science Outreach Society, Dow Chemical Company 2013–2014

Tutor for Upward Bound Math Science, Wesleyan University, 2009–2012