

## ORION BOYD BERRYMAN

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Lab Website: <http://hs.umt.edu/chemistry/lab/berryman/>

### EMPLOYMENT

University of Montana, Missoula

**Full Professor**

**2024 – pres.**

Department of Chemistry and Biochemistry

**Director of Small Molecule X-ray Diffraction Facility**

Center for Biomolecular Structure and Dynamics

University of Montana, Missoula

**Associate Professor**

**2018 – 2024**

Department of Chemistry and Biochemistry

University of Montana, Missoula

**Assistant Professor**

**2012 – 2018**

Department of Chemistry and Biochemistry

The Scripps Research Institute, La Jolla, CA

**Postdoctoral researcher (Mentor: Julius Rebek Jr.)**

**2008 – 2012**

The Skaggs Institute for Chemical Biology

### EDUCATION

University of Oregon, Eugene

**Ph. D. in Organic Chemistry (Advisor: Darren W. Johnson)**

**2003 – 2008**

GPA 3.95

University of New Hampshire, Durham

**1999 – 2003**

**B.A. in Organic Chemistry**

Magna Cum Laude

GPA 3.59

**Minor: Music** – Trumpet

### FUNDING

NSF DRP – How Charge, Sterics and HBeXB Influence Assembly of Higher-Order Helicates

**2023 – 2026**

- Berryman, P.I. \$575,457

NSF DRP – Hydrogen Bond Liquid Chromatography

**2023 – 2026**

- Berryman, Co P.I. \$450,000

NSF MRI – Track 1 Acquisition of a 600 MHz NMR Spec. for Research Teaching & Outreach

**2023 – 2026**

- Berryman, Co P.I. \$1,397,480

NSF EPSCoR CREWS Workforce Development Summer Internship \$5,000

**2023**

Murdock Commercial Initiation Project \$150,000

**2022**

Murdock Partners in Science \$19,000

**2022**

SCF for Griz Cluster computer hardware \$54,502

**2021**

SCF for Gaussian 16 software \$5,600

**2021**

SIEF – Digital document camera \$450	2021
NSF DRP – Hydrogen Bond Enhanced Halogen Bond (HBeXB) for Anion Transport	2021 – 2024
- Berryman, Lead P.I. \$420,000	
Wenner-Gren Fellowship \$10,000	2019 – 2020
University Small Grant Program to Mentor Women in Science \$5,000	2020
NIH CoBRE Pilot Project \$20,000	2019 – 2020
SIEF – Aluminum Hot Plates \$2,933	2022
NSF CAREER – Halogen Bonding Catalysts	2016 – 2021
- Berryman, Lead P.I. \$689,587	
SIEF – Color 3D printer for tactile teaching \$14,805	2017
MREDI Research Initiative – Instrumentation for Water Quality Monitoring	2015
- Berryman, Co-P.I. \$319,054	
NSF Major Research Instrumentation program – Single Crystal X-ray Diffractometer	2013
- Berryman, lead P.I. \$378,571	
UM Faculty Professional Enhancement Program \$500	2012
NIH subproject of grant 8P20GM103546-02 (CoBRE)	2012
University of Montana Start-up funds	2012
NIH Ruth L. Kirschstein Postdoctoral Fellowship	2010 – 2012
Skaggs Postdoctoral Fellow	2008 – 2009
NSF Integrative Graduate Education and Research Traineeship (IGERT)	2005 – 2008
University of Oregon Research Associate	2003 – 2005
UNH Summer Undergraduate Research Fund (SURF)	2002 – 2003

## AWARDS

Invited Speaker at Eastern Washington University	2024
Invited Speaker at the Aqueous Supramolecular Workshop – Bozeman, MT	2023
Invited to chair an organic symposium at the ACS NORM – Bozeman, MT	2023
Invited Speaker at ACS NORM – Bozeman, MT	2023
Invited Seminar at Baylor University – Waco, TX	2023
Invited Speaker at the International Symposium on Halogen Bonding – Chiba, Japan	2022
Invited Speaker at the International Symposium on Macrocyclic and Supramolecular Chem	2022
Invited Speaker at third workshop on Aromatic Foldamers – Leeds, UK	2022
Invited Speaker at the Aqueous Supramolecular Workshop – Bozeman, MT	2022
Invited Seminar at University of Uppsala – Uppsala, Sweden	2020
Invited Seminar at Norway Organic Chemistry Winter Meeting – Skeikampen, Norway	2020
Invited Chemical Review article on “Helical Anion Foldamers in Solution”	2020
Wenner-Gren Award – Sweden	2019
Invited chapter in “Halogen Bonding in Solution”	2019
Invited Seminar at Bochum University – Bochum, Germany	2020
Invited Speaker at Julius Rebek Jr. Symposium – Shanghai, China	2019
Invited Seminar at University of Idaho – Moscow, ID	2019
Invited Seminar at Montana State University – Bozeman, MT	2018
Research highlighted on the SciShow interview “Molecular Architecture”	2017
<a href="https://www.youtube.com/watch?v=0qpZdriOzEc">https://www.youtube.com/watch?v=0qpZdriOzEc</a>	
Research highlighted in Atlas of Science	2017

“Halogen Bonding Assembly of an Iodide-Binding Triple Helix”

<https://atlasofscience.org/halogen-bonding-assembly-of-an-iodide-binding-triple-helix/#more-20385>

Invited to chair microsposium at the 24 <sup>th</sup> IUCr – Hyderabad, India	2017
Invited Seminar at UO – Eugene, OR	2017
Research highlighted on the SciShow talk show “Building New Molecules”	2016
<a href="https://www.youtube.com/watch?v=zml_aKumRrk">https://www.youtube.com/watch?v=zml_aKumRrk</a>	
Rising Star Honorarium at the ISXB conference – Gothenburg, Sweden	2016
Invited article in Acta Crystallographica Section B special issue on halogen bonding	2016
Invited Seminar at EWU – Cheney, WA	2016
Invited Seminar at Montana State University – Bozeman, MT	2016
Invited chapter in “Aspects of Multi-Component Crystals: Synthesis, Concepts and Function”	2016
Invited Seminar at Pacificchem 2015 – Honolulu, HI	2015
Invited chapter in <i>Comprehensive Supramolecular Chemistry 2<sup>nd</sup> edition</i>	2015
Invited Seminar at University of Wisconsin – Eau Claire, WI	2015
Invited Seminar at University of New Hampshire – Durham, NH	2014
Invited Seminar at Washington State University – Pullman, WA	2014
Keynote Speaker Local ACS meeting – Helena, MT	2014
Cottrell Scholar New Faculty Workshop – Washington, D.C.	2013
Invited <i>Israel Journal of Chemistry</i> Review Article	2011
SOF Travel Grant – March 2012, ACS National Meeting	2011
Invited <i>Chemical Science</i> Article	2010
Invited <i>Chemical Communications</i> Feature Article	2009
Top chemistry oral presentation – TSRI Fall Research Symposium	2010
Travel grant – ISMSC in Salice Terme, Italy	2007
Invited collaborative oral presentation at the Materials Science Retreat	2006
Dean’s List – University of New Hampshire	2000 – 2003
High Honors – University of New Hampshire	2000 – 2003

## PEER-REVIEWED PUBLICATIONS

**h-index: 26 Cited 2,347 times**

† Denotes undergraduate co-authors \* Denotes corresponding author

- John, E. A.; Riel, A. M. S.; Wieske, L. H. E.; Ray, D.; Decato, D. A.; Boller, M.; Takacs, Z.; Erdelyi, M.; Bryantsev, V. S.\*; **Berryman, O. B.\*** “Taming Molecular Folding: Anion-Templated Foldamers with Tunable Quaternary Structures.” *Journal of the American Chemical Society*, **2024**, *146*, 16419-16427. <https://doi.org/10.1021/jacs.3c14820>
- Suating, P.; Kimberly, L. B.; Ewe, M. B.; Chang, S. L.; Fontenot, J. M.; Sultane, P. R.; Bielawski, C. W.; Decato, D. A.; **Berryman, O. B.**; Taylor, A. B.; Urbach, A. R. “Cucurbit[8]uril Binds Nonterminal Dipeptide Sites with High Affinity and Induces a Type II  $\beta$ -Turn.” *Journal of the American Chemical Society*, **2024**, *146*, 7649-7657. <https://doi.org/10.1021/jacs.3c14045>
- Sun, J.; Decato, D. A.; Bryantsev, V. S.; John, E. A.; **Berryman, O. B.\*** “The Interplay Between Hydrogen and Halogen Bonding: Substituent Effects and their Role in the Hydrogen Bond Enhanced Halogen Bond.” *Chemical Science*, **2023**, *14*, 8924-8935. <https://doi.org/10.1039/D3SC02348F>
- Decato, D. A.\*; Janke, M.†; **Berryman, O. B.\*** “Conformational Polymorphism of 3-(azidomethyl)benzoic acid.” *Acta Crystallographica Section C*. **2023**, *79*, 344-352. <https://doi.org/10.1107/S2053229623006824>

**- † Denotes high school teacher co-author**

50. Decato, D. A.; Sun J.; **Boller, M. R. †**; **Berryman, O. B.\*** "Pushing the Limits of the Hydrogen Bond Enhanced Halogen Bond—the Case of the C-H Hydrogen Bond." *Chemical Science*, **2022**, *13*, 11156–11162. <https://pubs.rsc.org/en/content/articlelanding/2022/SC/D2SC03792K>
49. Riel, A. M. S.; Decato, D. A.; Sun J.; **Berryman, O. B.\*** "Halogen Bonding Organocatalysis Enhanced Through Intramolecular Hydrogen Bonds." *Chemical Communications*, **2022**, *58*, 1378–1381. <https://pubs.rsc.org/en/content/articlelanding/2022/CC/D1CC05475A>
48. Lindbald, S.; Sethio, D.; **Berryman, O. B.\***; Erdélyi, M.\* "Modulating Photoswitch Performance with Halogen, Coordinative and Hydrogen Bonding: A Comparison of Relative Bond Strengths." *Chemical Communications* **2021**, *57*, 6261-6263. <https://pubs.rsc.org/en/content/articlelanding/2021/cc/d1cc01827b#ldivAbstract>
47. Decato, D. A.; Riel, A. M. S.; **May J. H. †**; Bryantsev, V. S.; **Berryman, O. B.\*** "Theoretical, Solid-State and Solution Quantification of the Hydrogen Bond Enhanced Halogen Bond." *Angewandte Chemie, International Edition* **2021**, *60*, 3685-3692. <https://onlinelibrary.wiley.com/doi/full/10.1002/ange.202012262>

**- † Denotes undergraduate co-author**

46. Turunen, L.; Németh, F. B.; Decato, D. A.; Pápai, P. I.; **Berryman, O. B.\***; Erdélyi, M.\* "Halogen Bonds of Iodonium Ions: A World Dissimilar to Silver Coordination." *Bulletin of the Chemical Society of Japan* **2020**, *94*, 191-196. <https://doi.org/10.1246/bcsj.20200274>
45. John, E. A. †; Massena, C. J. †; **Berryman, O. B.\*** "Helical Anion Foldamers in Solution." *Chemical Reviews* **2020**, *120*, 5, 2783-2810. <https://doi.org/10.1021/acs.chemrev.9b00583>

**- ‡ Both authors contributed equally**

44. Riel, A. M. S.; Huynh, H. T.; Jeannin, O.; Berryman, O. B.; Fourmigue, M.\* "Organic Selenocyanates as Halide Receptors: From Chelation to One-Dimensional Systems." *Crystal Growth & Design* **2019**, *19*, 1418-1425. <https://doi.org/10.1021/acs.cgd.8b01864>
43. Riel, A. M. S.; Jeannin, O.; Berryman, O. B.; Fourmigue, M.\* "Co-crystals of an Organic Triselenocyanate with Ditopic Lewis Bases: Recurrent Chalcogen Bond Interactions Motifs." *Acta Crystallographica Section B* **2019**, *B75*, 34-38. <https://doi.org/10.1107/S2052520618017778>
42. Decato, D. A.; Riel, A. M. S.; **Berryman, O. B.\*** "Anion Influence on the Packing of 1,3-Bis(4-Ethynyl-3-Iodopyridinium)-Benzene Halogen Bond Receptors." *Crystals* **2019**, *9*, 522-536. <https://doi.org/10.3390/cryst9100522>
41. Riel, A. M. S.; Rowe, R. K.; Ho, E. N.; Carlsson, A.-C. C.; Rappé, A. K.; **Berryman, O. B.\***; Ho, P. S.\* "Hydrogen Bond Enhanced Halogen Bonds: A Synergistic Interaction in Chemistry and Biochemistry." *Accounts of Chemical Research* **2019**, *52*, 2870–2880. <https://doi.org/10.1021/acs.accounts.9b00189>
40. Decato, D. A.; **Berryman, O. B.\*** "Structural and Computational Characterization of a Bridging Zwitterionic-Amidoxime Uranyl Complex." *Organic Chemistry Frontiers*, **2019**, *6*, 1038-1043, 2019. <https://doi.org/10.1039/C9QO00267G>
39. Massena, C. J., Decato, D. A., **Berryman, O. B.\*** "A Long-Lived Halogen-Bonding Anion Triple Helicate Accommodates Rapid Guest Exchange." *Angewandte Chemie, International Edition*, **2018**, *57*, 16109-16113. <https://doi.org/10.1002/anie.201810415>

38. Riel, A. M. S.†; Decato, D. A.†; Sun J.; Massena, C. J.; **Jessop, M. J.†**; **Berryman, O. B.\*** "The Intramolecular Hydrogen Bonded–Halogen Bond: A New Strategy for Preorganization and Enhanced Binding." *Chemical Science*, **2018**, *9*, 5828–5836. <https://doi.org/10.1039/C8SC01973H>

-† **Denotes undergraduate co-author** † **Both authors contributed equally**

37. Wageling, N. B.; Decato, D. A.; **Berryman, O. B.\*** "Steric Effects of pH Switchable, Substituted (2-pyridinium)urea Organocatalysts: a Solution and Solid Phase Study." *Supramolecular Chemistry*, **2018**, *30*, 1004–1010. <https://doi.org/10.1080/10610278.2015.1118101>
36. Sun, J.; Riel A. M. S.; **Berryman, O. B.\*** "Solvatochromism and Fluorescence Response of a Halogen Bonding Anion Receptor." *New Journal of Chemistry*, **2018**, *42*, 10489–10492. <https://doi.org/10.1039/C8NJ00558C>

- **Invited contribution to thematic issue on halogen bonding**

35. Riel, A. M. S.; **Jessop, M. J.†**; Decato, D. A.; Massena, C. J.; Nascimento, V. R.†; **Berryman, O. B.\*** "Experimental Investigation of Halogen-Bond Hard-Soft Acid Base Complementarity." *Acta Crystallographica Section B*, **2017**, *B73*, 203-209. <https://doi.org/10.1107/S2052520617001809>

- **Invited contribution to thematic issue on halogen bonding** -† **Denotes undergraduate co-author**

34. Massena, C. J.; Wageling, N. B.; Decato, D. A.; Rodriguez, E. M.†; **Berryman, O. B.\*** "A Halogen Bond Induced Triple Helicate Encapsulates Iodide." *Angewandte Chemie International Edition* **2016**, *55*, 12398-12402. <https://doi.org/10.1002/anie.201605440>

- **Cover art and UM press release, featured by NSF EPSCoR/IDeA Foundation, SciShow, Montana Associated Technology Roundtables, Montanan Magazine, UM President's Report, UM We Are Montana tour, highlighted in Atlas of Science** -† **Denotes undergraduate co-author**

33. Riel, A. M. S.; Decato, D. A.; **Berryman, O. B.\*** "Protonation and Alkylation Induced Multidentate C–H•••Anion Binding to Perrhenate." *Crystal Growth and Design*, **2016**, *16*, 974-980. <https://doi.org/10.1021/acs.cgd.5b01524>

32. Wageling, N. B.†; **Neuhaus, G. F.††**; Rose, A. M.; Decato, D. A.; **Berryman, O. B.\*** "Advantages of Organic Halogen Bonding for Halide Recognition." *Supramolecular Chemistry*, **2016**, *28*, 665-672. <https://doi.org/10.1080/10610278.2015.1118101>

-† **Denotes undergraduate co-author** † **Both authors contributed equally**

31. Massena, C. J.; Riel, A. M. S.; Neuhaus, G. F.†; Decato, D. A.; **Berryman, O. B.\*** "Solution and Solid-Phase Halogen and C-H Hydrogen Bonding to Perrhenate." *Chemical Communications*, **2015**, *51*, 1417-1420. <https://doi.org/10.1039/C4CC09242B>

-† **Denotes undergraduate co-author**

30. Decato, D. A.; **Berryman, O. B.\*** "Crystal Structure of [1,1':3',1''-Terphenyl]-2',3,3''-Tricarboxylic Acid." *Acta Crystallographica Section E*, **2015**, *E71*, o667-o668. <https://doi.org/10.1107/S2056989015015029>

29. Tresca, B. W.; **Berryman, O. B.**; Zakharov, L. N.; Johnson, D. W.; Haley, M. M. "Anion-Directed Self-Assembly of a 2,6-bis(2-Anilinoethynyl)pyridine Bis(amide) scaffold." *Supramolecular Chemistry*, **2016**, *28*, 37-44. <https://doi.org/10.1080/10610278.2015.1072199> (invited for special issue in honor of Jonathan L. Sessler)

28. **Berryman, O. B.**; Johnson, C. A.; Vonnegut, C. L.; Fajardo, K. A.; Zakharov, L. N.; Johnson, D. W.; Haley, M. M. "Solid-State Examination of Conformationally Diverse Sulfonamide Receptors Based on Bis(2-anilinoethynyl)pyridine, -Bipyridine, and -Thiophene." *Crystal Growth and Design*, **2015**, *15*, 1502-1511. <https://doi.org/10.1021/cg5018856>
27. Sather, A. C.; **Berryman, O. B.**; Rebek, J. Jr. "Selective Recognition and Extraction of the Uranyl Ion from Aqueous Solutions with a Recyclable Chelating Resin." *Chemical Science*, **2013**, *4*, 3601-3605. <https://doi.org/10.1039/C3SC51507A>
26. Sather, A. C.; **Berryman, O. B.**; Moore, C. E.; Rebek, J. Jr. "Uranyl Ion Coordination with Rigid Aromatic Carboxylates and Structural Characterization of their Complexes." *Chemical Communications*, **2013**, *49*, 6379-6381. <https://doi.org/10.1039/C3CC43358G>
25. Collins, M. S.; Carnes, M. E.; Sather, A. C.; **Berryman, O. B.**; Zakharov, L. N.; Teat, S. J.; Johnson, D. W. "Pnictogen-Directed Synthesis of Discrete Disulfide Macrocycles." *Chemical Communications*, **2013**, *49*, 6599-6601. <https://doi.org/10.1039/C3CC43524E>
24. Sather, A. C.; **Berryman, O. B.**; Rebek, J. Jr. "Synthesis of Fused Indazole Ring Systems and Application to Nigeglanine Hydrobromide." *Organic Letters*, **2012**, *14*, 1600-1603. <https://doi.org/10.1021/ol300303s>
23. **Berryman, O. B.**; Sather, A. C.; Lledo, A.; Rebek, J. Jr. "Switchable Catalysis with a Light Responsive Cavitand." *Angewandte Chemie International Edition*, **2011**, *50*, 9400-9403. <https://doi.org/10.1002/anie.201105374>

- Editor designated "hot paper" for importance in a rapidly evolving field of high interest.

22. **Berryman, O. B.**; Sather, A. C.; Rebek, J. Jr. "A Deep Cavitand with a Fluorescent Wall Functions as an Ion Sensor." *Organic Letters*, **2011**, *13*, 5232-5235. <https://doi.org/10.1021/ol2021127>
21. **Berryman, O. B.**; Dube, H.; Rebek, J. Jr. "Photophysics Applied to Cavitands and Capsules." *Israel Journal of Chemistry*, **2011**, *51*, 700-709. <https://doi.org/10.1002/ijch.201100055>

- Invited review article

20. Fontenot, S. A.; Cangelosi, V. M.; Pitt, M. A. W.; Sather, A. C.†; Zakharov, L. N.; **Berryman, O. B.**; Johnson, D. W. "Design, Synthesis and Characterization of Self-Assembled As<sub>2</sub>L<sub>3</sub> and Sb<sub>2</sub>L<sub>3</sub> Cryptands." *Dalton Transactions*, **2011**, *40*, 12125-12131. <https://doi.org/10.1039/C1DT10817D>
19. Gavette, J. V.; Lara, J.; **Berryman, O. B.**; Zakharov, L. N.; Haley, M. M.; Johnson, D. W. "Lithium Cation Enhances Anion Binding in a Tripodal Phosphine Oxide-Based Ditopic Receptor." *Chemical Communications*, **2011**, *47*, 7653-7655. <https://doi.org/10.1039/C1DT10817D>
18. Carroll, C. N.; Coombs, B. A.; McClintock, S. P.; Johnson, C. A.; **Berryman, O. B.**; Johnson, D. W.; Haley, M. M. "Anion-Dependent Fluorescence in Bis(anilinoethynyl)pyridine Derivatives: Switchable ON-OFF and OFF-ON responses." *Chemical Communications*, **2011**, *47*, 5539-5541. <https://doi.org/10.1039/C1CC10947B>
17. **Berryman, O. B.**; Sather, A. C.; Rebek, J. Jr. "A Light Controlled Cavitand Wall Regulates Guest Binding." *Chemical Communications*, **2011**, *47*, 656-658. <https://doi.org/10.1039/C0CC03865B>
16. Sather, A. C.; **Berryman, O. B.**; Ajami, D.; Rebek, J. Jr. "Reactivity of N-nitrosoamides in Confined Spaces." *Tetrahedron Letters*, **2011**, *52*, 2100-2103. <http://doi.org/10.1016/j.tetlet.2010.11.030>

15. Sather, A. C.; **Berryman, O. B.**; Rebek, J. Jr. "Selective Recognition and Extraction of the Uranyl Ion." *Journal of the American Chemical Society*, **2010**, *132*, 13572-13574. <https://doi.org/10.1021/ja1035607>
14. Beer, S.‡; **Berryman, O. B.‡**; Ajami, D.; Rebek, J. Jr. "Encapsulation of the Uranyl Dication." *Chemical Science*, **2010**, *1*, 43-47. <https://doi.org/10.1039/C0SC00116C>  
-‡ **Both authors contributed equally.** Highlighted in RSC press release, UK's Daily Telegraph, MSN news, Yahoo News and AOL news. Cover art.
13. Restorp, P.; **Berryman, O. B.**; Sather, A. C.; Ajami, D.; Rebek, J. Jr. "A Synthetic Receptor for Hydrogen Bonding to Fluorines of Trifluoroborates." *Chemical Communications*, **2009**, 5692-5694. <https://doi.org/10.1039/B914171E>
12. Johnson, C. A.; **Berryman, O. B.**; Sather A. C.; Zakharov, L. N.; Haley, M. M.; Johnson, D. W. "Anion Binding Induces Helicity in a Hydrogen Bonding Receptor: Crystal Structure of a 2,6-Bis(anilinoethynyl)pyridinium Chloride." *Crystal Growth and Design*, **2009**, *9*, 4247-4249. <https://doi.org/10.1021/cg900674p>
11. **Berryman, O. B.**; Johnson, D. W. "Experimental Evidence of Interactions Between Anions and Electron-Deficient Aromatic Rings." *Chemical Communications*, **2009**, 3143-3153. <https://doi.org/10.1039/B823236A>  
- **Invited feature article** and cover art.
10. Carroll, C. N.; **Berryman, O. B.**; Johnson, C. A.; Zakharov, L. N.; Haley, M. M.; Johnson, D. W. "Protonation Activates Anion Binding and Alters Binding Selectivity in New Inherently Fluorescent 2,6-bis(2-anilinoethynyl)pyridine Bisureas." *Chemical Communications*, **2009**, 2520-2522. <https://doi.org/10.1039/B901643K>
9. **Berryman, O. B.**; Sather, A. C.; Meisner, J. S.; Hay, B. P.; Johnson, D. W. "Solution Phase Measurement of Both Weak Sigma Complexes and C-H...X<sup>-</sup> Hydrogen Bonding Interactions in a Synthetic Receptor." *Journal of the American Chemical Society*, **2008**, *130*, 10895-10897. <https://doi.org/10.1021/ja8035652>
8. **Berryman, O. B.**; Johnson, C. A.; Zakharov, L. N.; Haley, M. M.; Johnson, D. W. "Water and Hydrogen Halides Serve the Same Structural Role in a Series of 2+2 Hydrogen-Bonded Dimers Based on 2,6-bis(2-anilinoethynyl)pyridine Sulfonamide Receptors." *Angewandte Chemie International Edition*, **2008**, *47*, 117-120. <https://doi.org/10.1002/anie.200703971>
7. Shultz, G. V.; **Berryman, O. B.**; Zakharov, L. N.; Tyler, D. R. "Preparation of Photodegradable Polymers Containing Metal-Metal Bonds Using ADMET." *Journal of Inorganic and Organometallic Polymers and Materials*, **2008**, *18*, 149-154. <https://doi.org/10.1007/s10904-007-9174-8>
6. **Berryman, O. B.**; Bryantsev, V. S.; Stay, D. P.; Johnson, D. W.; Hay, B. P. "Structural Criteria for the Design of Anion Receptors: the Interaction of Halides with Electron-Deficient Arenes." *Journal of the American Chemical Society*, **2007**, *129*, 48-58. <https://doi.org/10.1021/ja063460m>  
- UO Press release – December 2006, **cited 291 times**, Web of Science highly cited paper.
5. Meisner, J. S.; **Berryman, O. B.**; Zakharov, L. N.; Johnson, D. W. "Methyl 4-bromo-3,5-dinitrobenzoate." *Acta Crystallographica Section E*, **2007**, *63*, o2466. <https://doi.org/10.1107/S1600536807017874>
4. Cangelosi, V. A.; Sather, A. C.; Zakharov, L. N.; **Berryman, O. B.**; Johnson, D. W. "Diastereoselectivity in the Self-Assembly of As<sub>2</sub>L<sub>2</sub>Cl<sub>2</sub> Macrocycles is Directed by the As-π Interaction." *Inorganic Chemistry*, **2007**, *46*, 9278-9284. <https://doi.org/10.1021/ic701290h>

3. **Berryman, O. B.**; Hof, F.; Hynes, M. J.; Johnson, D. W. "Anion- $\pi$  Interaction Augments Halide Binding in Solution." *Chemical Communications*, **2006**, 506-508. <https://doi.org/10.1039/B511570A>
2. Johnson, C. A.; Baker, B. A.; **Berryman, O. B.**; Zakharov, L. N.; O'Connor, M. J.; Haley, M. M. "Synthesis and Characterization of Pyridine- and Thiophene-Based Platinacycline." *Journal of Organometallic Chemistry*, **2006**, 691, 413-421. <http://doi.org/10.1016/j.jorganchem.2005.09.008>
1. Vickaryous, W. J.; Healey, E. R.; **Berryman, O. B.**; Johnson, D. W. "Synthesis and Characterization of Two Isomeric, Self-Assembled Arsenic-Thiolate Macrocyces." *Inorganic Chemistry*, **2005**, 44, 9247-9252. <https://doi.org/10.1021/ic050954w>

## BOOK CHAPTERS

- A. Decato, D. A.; John, E. A. **Berryman, O. B.\***; "Halogen Bonding: An Introduction." In: Huber, S. M., Ed Halogen Bonding in Solution; Wiley-VCH Publishers. **2021**, vol. 1, pp 1-41. <https://doi.org/10.1002/9783527825738.ch1>
- B. Riel, A. M. S.; Wageling, N. B.; Decato, D. A.; **Berryman, O. B.\*** "Anion-Arene Interactions and the Anion- $\pi$  Phenomenon." In: Atwood, J. L., (ed.) Comprehensive Supramolecular Chemistry II, **2017**, vol. 1, pp. 149-184. Oxford: Elsevier. <https://doi.org/10.1016/B978-0-12-409547-2.12484-9>
- C. Decato, D. A.; **Berryman, O. B.\***; "Simultaneous Halogen and Hydrogen Bonding to Carbonyl and Thiocarbonyl Functionality" in Aspects of Multi-component Crystals: Synthesis, Concepts and Function, **2018**, vol. 1, pp272-288. Tiekink, E. R. T., Eds; De Gruyter Publishers. <https://doi.org/10.1515/9783110464955-012>
- D. Rather Healey, E.; Vickaryous, W. J.; **Berryman, O. B.**; Johnson, D. W. "Self-Assembled Supramolecular Main Group Coordination Complexes" in BOTTOM-UP NANOFABRICATION: Supramolecules, Self-Assemblies, and Organized Films." Ariga, K., Nalwa, H. S., Eds.; American Scientific Publishers: Stevenson Ranch, **2007**.

## PATENTS

- I. **Berryman, O. B.**; Palmer Christopher; "Stationary Phase Chromatography Methods and Compounds." Filed February 7, 2022. Application No. 63307258.
- II. Lohrman, J.; Riel A. M. S.; Decato, D. A.; Haley, M.; Johnson, D. W.; **Berryman, O. B.**; "Fluorescent Halogen Bonding Arylethynyl Scaffolds for Anion Recognition." filed May 1, **2019**. U.S. Patent No. 16/401,037.
- III. **Berryman, O. B.**; Massena, C. J. "A Halogen-Bond-Induced Triple Helicate Encapsulates Iodide." Serial No. 62/362,226, filed July 14, **2016**.
- IV. Haley, M. M.; Johnson, D. W.; **Berryman, O. B.**; Johnson, C. A.; Stimpson, C. A. "Process for Preparation of Tunable Phenylacetylene Host Compounds for Ligand Binding." U.S. Pat. Appl. US 2008167472, **2008**, 21.
- V. Rebek, J. Jr.; **Berryman, O. B.**; Sather, A. C. "Methods and Compositions for Chelating Metals in Aqueous Solutions." US Pat. Application # 61/217,078, **2009**.

## RESEARCH EXPERIENCE

University of Montana, Missoula, Montana – **Assistant, Associate and Full Professor**

**2012 – pres.**

**Halogen and Hydrogen Bonding Organocatalysts, foldamers and anion receptors**

Organic synthesis, characterization, single crystal X-ray diffraction, kinetics.

**Self-Assembled Ligands for Uranium**

Organic synthesis, characterization, self-assembly, single crystal X-ray diffraction, HPLC, LC-MS.

The Scripps Research Institute, La Jolla, California – **Advisor: Julius Rebek Jr.**

**2008 – 2012**

**Synthesis of neglanine hydrobromide – methods development for fused indazoliums**

Organic synthesis, characterization, optimization, single crystal X-ray diffraction.

**Light controlled catalysis of the Knoevenagel condensation**

Organic synthesis, characterization, kinetics, photochemistry, UV-Vis/fluorescence, 2D NMR, ITC.

**Tripodal receptors to probe weak B–F hydrogen bonds**

Organic synthesis, characterization, equilibria studies.

**Encapsulating uranium – carboxylate ligands and water extraction**

Organic and inorganic synthesis, characterization, single crystal X-ray diffraction, extraction studies, ICP metal analysis.

University of Oregon, Eugene – **Advisor: Darren W. Johnson**

**2003 – 2008**

**New hydrogen bonding scaffolds for the recognition of small molecules**

Organic synthesis, binding studies, X-ray diffraction.

**Physical organic studies – the interaction of anions with electron-deficient aromatics**

Organic synthesis, characterization, equilibria studies – WinEQNMR, Hunter software and DynaFit, crystallography, computational chemistry.

**Probing guest interactions in arsenic – thiolate capsules**

Inorganic synthesis, single crystal X-ray diffraction.

University of New Hampshire, Durham

**2001 – 2003**

**Synthesis of extended aromatics – towards controlled nanotube synthesis**

Organic synthesis, characterization (NMR, IR, UV-vis, Mass spectrometry)

## CONFERENCES

**TALKS**

Berryman, O. B. “The Role of Hydrogen Bonds and Halogen Bonds in the Assembly of Anion Binding Higher-Order Helices.” Invited Seminar at Eastern Washington University, Cheney, WA, April 25<sup>th</sup>, **2024** – invited talk

Berryman, O. B. “The Role of Charge and the Hydrogen Bond Enhanced Halogen Bond in the Assembly of Anion Binding Higher-Order Helicates.” Invited Seminar at the Aqueous Supramolecular Chemistry Workshop, Bozeman, MT, July 26<sup>th</sup>, **2023** – invited talk

Berryman, O. B. "Halogen Bonding Catalysis Improved with Intramolecular Hydrogen Bonds." Abstracts of Papers, ACS Regional NORM Meeting, Bozeman, MT, June 29<sup>th</sup>, **2023** – invited talk

Berryman, O. B. "A New Strategy to Preorganize Molecular Structure and Enhance Binding: The Hydrogen Bond Enhanced Halogen Bond." Invited Seminar at Baylor University, Waco, TX, April 14<sup>th</sup>, **2023** – invited talk

Berryman, O. B. "Molecules that Coil: Using Noncovalent Interactions to Control Self-Assembly." CBSD Invited Seminar at University of Montana, Missoula, MT, December 5<sup>th</sup>, **2022** – invited talk

Berryman, O. B.; John, E. J.; Riel, A. M. S.; Massena, C. J.; Decato, D. A. "Anion Induced Assembly of Aromatic Foldamers Decorated with Hydrogen and Halogen Bonds." Abstracts of Papers, 5<sup>th</sup> International Symposium on Halogen Bonding, Chiba, Japan, November 7<sup>th</sup>, **2022** – invited talk

Berryman, O. B. "Fundamentals of Halogen Bonding in Aqueous Systems and their Application in Aromatic Foldamers." Invited Seminar at the Aqueous Supramolecular Chemistry Workshop, Bozeman, MT, July 18<sup>th</sup>, **2022** – invited talk

Berryman, O. B.; "Controlling the Assembly of Anion Helicates with Hydrogen and Halogen Bonds." Abstracts of Papers, International Symposium on Macrocyclic and Supramolecular Chemistry, Eugene, Oregon, June 21<sup>st</sup>, **2022** – invited talk

Berryman, O. B. "Aromatic Foldamers Decorated with Hydrogen and Halogen Bonds." Invited Seminar at the 3<sup>rd</sup> Workshop on Aromatic Foldamers, Leeds, UK, April 22<sup>nd</sup>, **2022** – invited talk

Berryman, O. B.; "New Strategy to Preorganize Molecular Structure and Enhance Binding: The Hydrogen Bond Enhanced Halogen Bond." Abstracts of Papers, Pacificchem, Honolulu, HI (Virtual), December 19<sup>th</sup>, **2021** – invited talk

Berryman, O. B.; "Self-Assembly and Characterization of Anion Binding Triple Helicates and Foldamers from Halogen Bonding Oligomers." Abstracts of Papers, Pacificchem, Honolulu, HI (Virtual), December 18<sup>th</sup>, **2021** – invited talk

Berryman, O. B.; John, E. J.; Riel, A. M. S.; Massena, C. J.; Decato, D. A. "Conformational Control with Halogen and Hydrogen Bonds." Abstracts of Papers, 4<sup>th</sup> International Symposium on Halogen Bonding, Stellenbosch, South Africa (Virtual), November 15<sup>th</sup>, **2020** – invited talk

Berryman, O. B. "Towards Sequence Controlled Synthetic Anion Channels: Long Oligomers Decorated with Halogen and Hydrogen Bonds." Abstracts of Papers, The Center for Biomolecular Structure and Dynamics, 9<sup>th</sup> annual CoBRE Research Retreat, Missoula, MT, United States, September 9<sup>th</sup>, **2020** – invited talk

Berryman, O. B. "Towards Sequence Controlled Synthetic Anion Channels: Long Oligomers Decorated with Halogen and Hydrogen Bonds (and How to Sabbatical During a Pandemic)." CBSD Invited Seminar at University of Montana, Missoula, MT, July 6<sup>th</sup>, **2020** – invited talk

Berryman, O. B. "Halogen Bonding: Catalysts, Receptors and Helicates, Oh My." Invited Seminar at Uppsala University, Uppsala, Sweden, March 13, **2020** – invited talk

Berryman, O. B. "Solution Self-Assembly and Characterization of Anion Binding Triple Helicates from Halogen Bonding Oligomers" Invited Seminar at Ruhr-Universität Bochum, Bochum, Germany, February 27, **2020** – invited talk

Berryman, O. B. "Halogen Bonding: A New Paradigm for Preorganization and Self-Assembly." Abstracts of Papers, 35<sup>th</sup> Norwegian Organic Chemistry Winter Meeting, Skeikampen, Norway, January 9-12, **2020** – invited talk

Berryman, O. B. “Conformational Control with Hydrogen and Halogen Bonds.” Invited Seminar at University of Idaho, Moscow, ID, November 5<sup>th</sup>, **2019** – invited talk

Berryman, O. B. “Conformational Control with Hydrogen and Halogen Bonds.” Invited Seminar at Julius Rebek Jr. Symposium, Shanghai, China, October 18<sup>th</sup>, **2019** – invited talk

Berryman, O. B. “Small Molecule X-ray Diffraction.” Abstracts of Papers, The Center for Biomolecular Structure and Dynamics, 8<sup>th</sup> annual CoBRE Research Retreat, Missoula, MT, United States, September 13<sup>th</sup>, **2019** – invited talk

Berryman, O. B.; “Anion Triple Helicates: Self-Assembly Directed by Halogen Bonding.” Abstracts of Papers, 14<sup>th</sup> International Symposium on Macrocyclic and Supramolecular Chemistry, Lecce, Italy, June 3<sup>rd</sup>, **2019** – invited talk

Berryman, O. B. “Anion Triple Helicates: Self-Assembly Directed by Halogen Bonding.” Invited Seminar at Montana State University, Bozeman, MT, March 15<sup>th</sup>, **2019** – invited talk

Berryman, O. B. “Engineering Tiny Holes: Developing Molecules that Move Anions Inside of Cells.” Abstracts of Papers, Montana University System Research Road Show, Missoula, Montana, October 24<sup>th</sup>, **2018**

Berryman, O. B. “Can Halogen Bonding Molecules Function as Anion Carriers and Channels?” CBSD Invited Seminar at University of Montana, Missoula, MT, July 2<sup>nd</sup>, **2018** – invited talk

Berryman, O. B.; Massena, C. J.; Riel, A. M. S.; Wageling, N. B.; Decato, D. A. “Halogen Bonding: A New Paradigm for Preorganization and Self-Assembly.” Abstracts of Papers, 3<sup>rd</sup> International Symposium on Halogen Bonding, Greenville, South Carolina, June 10-14<sup>th</sup>, **2018**

Berryman, O. B. “Small Molecule X-ray Diffraction at University of Montana.” Abstracts of Papers, The Center for Biomolecular Structure and Dynamics, 7<sup>th</sup> annual CoBRE Research Retreat, Missoula, MT, United States, September 7<sup>th</sup>, **2018** – invited talk

Berryman, O. B. “Halogen Bonding Strategies for Catalysis and Supramolecular Assembly.” Invited Seminar at University of Oregon, Eugene, OR, October 6<sup>th</sup>, **2017** – invited talk

Berryman, O. B. “Halogen Bonding Strategies for Catalysis and Supramolecular Assembly.” Invited Seminar at University of Montana, Missoula, MT, March 14<sup>th</sup>, **2017** – invited talk

Berryman, O. B. “Halogen Bonding Strategies for the Assembly of Supramolecular Materials.” MUS Materials Science Annual Meeting, Bozeman, MT, October 14<sup>th</sup>, **2016** – invited talk

Berryman, O. B. “A Halogen Bond Induced Triple Helicate Encapsulates Iodide.” Abstracts of Papers, The Center for Biomolecular Structure and Dynamics, 5<sup>th</sup> annual CoBRE Research Retreat, Missoula, MT, United States, June 1<sup>st</sup>, **2016** – invited talk

Berryman, O. B. “A Halogen Bond Induced Triple Helicate Encapsulates Iodide.” Abstracts of Papers, 2<sup>nd</sup> International Symposium on Halogen Bonding, Gothenburg, Sweden, June 6-10<sup>th</sup>, **2016** – *Rising Star honorarium*

Berryman, O. B.; Massena, C. J.; Riel, A. M. S.; Decato, D. A. “A Halogen Bond Induced Triple Helicate Encapsulates Iodide.” Invited Seminar at Eastern Washington University, Cheney, WA, United States, April 28<sup>th</sup>, **2016** – invited talk

Berryman, O. B. "Halogen Bonding as a Strategy for Higher Order Assembly." Abstracts of Papers, Pacifichem, Honolulu, HI, United States, December 15-20<sup>th</sup>, **2015** – invited talk

Berryman, O. B.; Riel, A. M. S.; Massena, C. J.; Neuhaus, G. F.; Wageling, N. B.; Decato, D. A. "Fundamental Studies of Bidentate Halogen Bond Donors for Supramolecular Catalysis." Invited Seminar at University of Wisconsin, Eau Claire, Eau Claire, WI, United States, October 16<sup>th</sup>, **2015** – invited talk

Berryman, O. B. "Synthetic Hydrogen and Halogen Bonding Oxyanion Holes." Abstracts of Papers, The Center for Biomolecular Structure and Dynamics, 4<sup>th</sup> annual CoBRE Research Retreat, Seeley Lake, MT, United States, September 13<sup>th</sup>, **2015** – invited talk

Berryman, O. B.; Riel, A. M. S.; Massena, C. J.; Neuhaus, G. F.; Wageling, N. B.; Decato, D. A. "Fundamental Studies of Bidentate Halogen Bond Donors for Supramolecular Catalysis." Invited Seminar at University of New Hampshire, Durham, NH, United States, June 29<sup>th</sup>, **2015** – invited talk

Berryman, O. B.; Riel, A. M. S.; Massena, C. J.; Neuhaus, G. F.; Wageling, N. B.; Decato, D. A. "Fundamental Studies of Bidentate Halogen Bond Donors for Supramolecular Catalysis." Invited Seminar at Washington State University, Pullman, WA, United States, March 2<sup>nd</sup>, **2015** – invited talk

Berryman, O. B.; Riel, A. M. S.; Massena, C. J.; Neuhaus, G. F.; Wageling, N. B.; Decato, D. A. "Synthesis, X-ray Structure and Preliminary Anion Binding Studies of Bis-Ethynyl Pyridinium Halogen Bonding Organocatalysts." Abstracts of Papers, The Center for Biomolecular Structure and Dynamics, 3<sup>rd</sup> annual CoBRE Research Retreat, Seeley Lake, MT, United States, September 6<sup>th</sup>, **2014** – invited talk

Berryman, O. B. "Developing New Organocatalysts: Halogen Bonds in Action" Abstracts of Papers, ACS NORM Meeting, Helena, MT, United States, June 22-25<sup>th</sup>, **2014** – Invited talk

Berryman, O. B. "Developing New Organocatalysts: Halogen Bonds in Action" Abstracts of Papers, Montana ACS Spring Meeting, Helena, MT, United States, April 12<sup>th</sup>, **2014** – Invited talk

Berryman, O. B. "CoBRE Update: Halogen Bonding Scaffolds." CBSD Invited Seminar at University of Montana, Missoula, MT, February 6<sup>th</sup>, **2014** – invited talk

Berryman, O. B. "Incorporating Halogen Bonding Interactions for Catalysis." Abstracts of Papers, The Center for Biomolecular Structure and Dynamics, 2<sup>nd</sup> annual CoBRE Research Retreat, Seeley Lake, MT, United States, August 18<sup>th</sup>, **2013** – invited talk

Berryman, O. B. "Catalysis with Noncovalent Interactions." Abstracts of Papers, The Center for Biomolecular Structure and Dynamics, 1<sup>st</sup> annual CoBRE Research Retreat, Seeley Lake, MT, United States, September 8<sup>th</sup>, **2012** – invited talk

Berryman, O. B.; Sather, A. C.; Rebek, J. Jr. "Supramolecular Catalysis with a Light Responsive Cavitand." Abstracts of Papers, 243<sup>rd</sup> ACS National Meeting, San Diego, CA, United States, March 27<sup>th</sup> **2012**.

Berryman, O. B.; Sather, A. C.; Rebek, J. Jr. "Light Controlled Guest Binding in a Deep Cavitand." Abstracts of Papers, Pacifichem, Honolulu, HI, United States, December 15<sup>th</sup>, **2010**.

Berryman, O. B.; Beer, S.; Sather, A. C.; Rebek, J. Jr. "Encapsulation of the Uranyl Dication." Abstracts of Papers, Pacifichem, Honolulu, HI, United States, December 16<sup>th</sup>, **2010**.

Berryman, O. B.; Beer, S.; Sather, A. C.; Rebek, J. Jr. "Encapsulating the Uranyl Dication." Abstracts of Papers, TSRI Research Symposium, La Jolla, CA, United States, September 30<sup>th</sup>, **2010**.

Berryman, O. B.; Sather, A. C.; Rebek, J. Jr. "Light Controlled Guest Binding in a Deep Cavitand." Abstracts of Papers, 240<sup>th</sup> ACS National Meeting, Boston, MA, United States, August 25<sup>th</sup>, **2010**.

Berryman, O. B.; Beer, S.; Sather, A. C.; Rebek, J. Jr. "Encapsulation of the Uranyl Dication." Abstracts of Papers, 240<sup>th</sup> ACS National Meeting, Boston, MA, United States, August 25<sup>th</sup>, **2010**.

INVITED - Berryman, O. B.; Johnson, C. A.; Haley, M. M.; Johnson, D. W. "Guest-Induced Helical Dimerization of a Diverse Series of Hydrogen Bonding Receptors." Abstracts of Papers, MSI retreat, Gleneden Beach, Oregon, United States, December, 12-14<sup>th</sup>, **2006**.

Berryman, O. B.; Stay, D. P.; Johnson, D. W.; Bryantsev, V. S.; Hay, B. P. "Structural Criteria for the Design of Anion Receptors: Incorporating the Anion- $\pi$  Interaction." Abstracts of Papers, 232<sup>nd</sup> ACS National Meeting, San Francisco, CA, United States, September 10-14<sup>th</sup>, **2006**.

### **POSTERS**

Berryman, O. B.; Massena, C. J.; Riel, A. M. S.; Wageling, N. B.; Decato, D. A. "Halogen Bonding: A New Paradigm for the Self-Assembly of Higher-Order Anion Helicates." Abstracts of Papers, 13<sup>th</sup> International Symposium on Macrocyclic and Supramolecular Chemistry, Quebec City, Canada, July 8-13<sup>th</sup>, **2018**

Berryman, O. B.; Massena, C. J.; Riel, A. M.; Wageling, N. B.; Neuhaus, G. F.; Decato, D. A. "Fundamental Studies of Bidentate Halogen Bond Donors for Supramolecular Catalysis." Abstracts of Papers, Gordon Research Conference on Physical Organic Chemistry, Holderness, NH, United States, June 21-26<sup>th</sup>, **2015**.

Berryman, O. B.; Restorp, P.; Sather, A. C.; Rebek, J. Jr. "A Synthetic Receptor for Hydrogen-bonding to Fluorines of Trifluoroborates." Abstracts of Papers, Pacifichem, Honolulu, HI, United States, December 19<sup>th</sup>, **2010**.

Berryman, O. B.; Johnson, C. A.; Haley, M. M.; Johnson, D. W. "Dimerization of a Hydrogen-Bonded 2,6-alkynylpyridyl Scaffold is Induced by Both Water and Anions." Abstracts of Papers, MSI retreat, Gleneden Beach, Oregon, United States, December, 11-13<sup>th</sup>, **2007**.

Berryman, O. B.; Meisner, J. S.; Stay, D. S.; Johnson, D. W.; Bryantsev, V. S.; Hay, B. P. "Structural Criteria for the Design of Anion Receptors; Incorporating the Anion- $\pi$  Interaction." Abstracts of Papers, ISMSC International Meeting, Salice Terme, Italy, June 24-28<sup>th</sup>, **2007**.

Berryman, O. B.; Johnson, C. A.; Haley, M. M.; Johnson, D. W. "Dimerization of a Hydrogen-Bonded 2,6-alkynylpyridyl Scaffold is Induced by Both Water and Anions." Abstracts of Papers, ISMSC International Meeting, Salice Terme, Italy, June 24-28<sup>th</sup>, **2007**.

Berryman, O. B.; Stay, D. P.; Johnson, D. W.; Bryantsev, V. S.; Hay, B. P. "Structural Criteria for the Design of Anion Receptors; Incorporating the Anion- $\pi$  Interaction." Abstracts of Papers, ISMSC International Meeting, Victoria, B.C. Canada, June 25-30<sup>th</sup>, **2006**.

Berryman, O. B.; Stay, D. P.; Johnson, D. W.; Bryantsev, V. S.; Hay, B. P. "Structural Criteria for the Design of Anion Receptors; Incorporating the Anion- $\pi$  Interaction." Abstracts of Papers, Oregon Academy of Science Annual Meeting, Eugene, Oregon United States, February 26<sup>th</sup>, **2006**.

### TEACHING EXPERIENCE

University of Montana

**High School Students and teachers**

**2012 – pres.**

John Bower (Project SEED, 2016), Berit Blank, Michael Janke (Sentinel HS teacher), Leo Westenfelder, Nathan Mizner, Alicia Angell (Big Sky HS teacher)

**Undergraduates Mentored**

**2012 – pres.**

Neal Whaley, Erin McMahon, Geoffrey Glidewell, Alek Hierro, George Neuhaus, Casey Massena, Julia Allred, Christian McCurrdy, Hue Vu, Taymee Brandon, Evan McManigal, Alex Johnson, Ana Martin, Vinicius Nascimento, Morly Jessup, Christopher Grubb, Enrique Rodriguez, James May, Jacob Fromm, Curtis Williamson (Blackfeet community college), Heather Wiegert, Dylan Budke, Logan Robinette, McKenna Wendt, Madeleine Boller, Emily Carroll, Claire Woody, Novik Thomas, Erik Lundbeck, Katie Munro, Preston Covington, Melia McSherry, Eliot Woods, Kenzington Mann, Joseph Knudsen, Tony Shelton, Finley Disbrow, Isabelle Berry

**Graduate Students**

**2012 – pres.**

Nick Wageling, Ariana Rose, Asia Riel, Daniel Decato, Casey Massena, Jiyu Sun, Eric John, Seth Helsley, Fahmida Hossain, Markus Boyer, Mya Beyerl, Mohammad Eskandari, Ariful Islam, Alexis Parker

**Courses**

**2012 – pres.**

CHMY 697 Research  
 CHMY 690 Research  
 CHMY 630 Department Seminar  
 CHMY 599 Thesis  
 CHMY 597 Research  
 CHMY 595 Physical Organic Chemistry  
 CHMY 580 Supramolecular Research Survey  
 CHMY 562 Organic Structure and Mechanism  
 CHMY 499 Senior Thesis  
 CHMY 492 Independent Study  
 CHMY 490 Undergraduate Research  
 CHMY 411 Advanced Organic Chemistry  
 CHMY 292 Independent Study  
 CHMY 222 Organic Chemistry I lab  
 CHMY 223 Organic Chemistry II  
 CHMY 224 Organic Chemistry II lab

University of Oregon, Eugene

**Students mentored**

**2004 – pres.**

A. C. Sather, J. S. Meisner, C. Ward, S. Rodriguez-Azirez

**Laboratory teaching assistant – masters polymer internship course**

**2006 – 2007**

Course development, syllabus, responsible for laboratory preparation, cleanup and student safety

**Laboratory teaching assistant – general Chemistry**

**2003**

Developed syllabus and weekly lecture, taught practical skills, responsible for student safety

**Laboratory teaching assistant – organic chemistry**

**2003**

Developed syllabus and weekly lecture, taught practical skills, responsible for student safety

## INTERNSHIP

Pacific Northwest National Laboratory  
 Supervisor – Dr. Benjamin P. Hay  
 Computational chemistry.

Fall/winter 2005

## COLLABORATORS

Prof. Fraser Hof, University of Victoria — DFT calculations for anion/arene complexes  
 Profs. Darren W. Johnson and Michael M. Haley, University of Oregon — phenyl acetylene systems  
 Prof. Mate Erdélyi, Uppsala University – iodonium chemistry and photoswitches  
 Dr. Vyacheslav Bryantsev, Oak Ridge National Laboratory – quantum calculations

## MEMBERSHIPS/OUTREACH/INSTITUTIONAL INVOLVEMENT

Referee for (172+ reviews total) *Nature*, *Angewandte Chemie*, *Journal of Organic Chemistry*, *Journal of the American Chemical Society*, *European Journal of Organic Chemistry*, *Chemical Communications*, *Dalton Transactions*, *Inorganic Chemistry*, *New Journal of Chemistry*, *RSC Advances*, *European Journal of Inorganic Chemistry*, *SIEPP*, *Chemistry A European Journal*, *Chemistry an Asian Journal*, *Journal of Materials Chemistry C*, *Journal of Materials Chemistry A*, *Analytical Chemistry*, *CrystEngComm*, *Journal of Solution Chemistry*, *Journal of Chemistry*, *Journal of Inclusion Phenomenon and Macrocyclic Chemistry*, *American Chemical Science Journal*, *Acta Crystallographica Section B*, *IUCrJ*, *Crystal Growth & Design*, *ChemPlusChem*, *ACS Catalysis* **2011 – pres.**

Graduate Recruitment Committee, Chair **2023 – pres.**

UM Undergraduate Journal Advisory Committee **2023 – pres.**

ACS NORM symposium organizer “Bringing Molecules Together: Noncovalent Interactions” **2023**

Chemistry demonstrations for Hellgate & Townsend 6<sup>th</sup> grade classes (70 students) **2023**

Reviewer for NSF – CHE division grants, panelist **2023**

Reviewer for ACS – ND grant program **2023**

Reviewer for University of Tennessee grant program **2023**

Reviewer for NSF – CHE division grants **2022**

Reviewer for Montana INBRE program **2022**

Reviewer for ACS – ND grant program (2x) **2022**

Chemistry demonstrations for Sentinel HS AP science class (20 students) **2022**

Reviewer for NSF – CHE division grants **2021**

Reviewer for ACS – ND grant program **2021**

Laboratory Outreach Experience, Uppsala University (approx. 30 Junior high students) **2020**

Reviewer for NSF – CHE division grants **2020**

Reviewer for the Kansas State Cancer Center **2020**

Faculty Evaluation Committee **2020 – 2022**

Lead Faculty Development Workshop on running a successful research lab – UM **2018**

Reviewer for NSF – CHE division grants (2x) **2019**

Reviewer for the French National Research Agency **2019**

Faculty Advisor for the University of Montana Nordic Ski Club **2018 & 2025**

Reviewer for NSF – CHE division grants **2018**

Reviewer for Murdock grant program **2018**

Reviewer for ACS – ND grant program **2018**

Reviewer for Murdock Charitable Trust **2018**

Reviewer for Montana INBRE program	2018
Volunteer for We are Montana (3 <sup>x</sup> , 34+ 8 <sup>th</sup> graders)	2017
Reviewer for NSF – CHE division grants, panelist	2017
Question Reviewer for ORAU National Science Bowl	2017
Faculty Senate, University of Montana, member	2016 – pres.
Volunteer at spectrUM “building with biology” day	2016
Reviewer for NSF – MRI grant program	2016
Reviewer for NSF – CHE division grants	2016
Tribal college faculty rotation host for six faculty	2016
Big Sky high school job shadow for five students	2016 – pres.
UM Bioinorganic faculty search committee	2015
UM Materials Science faculty search committee	2015
Reviewer for ACS – DNI grant program	2015
Chemistry demonstrations for spectrUM science museum ( <b>424+ reached</b> )	2012 – pres.
ACS NORM 2014 symposium organizer “Small Forces Mountainous Outcomes”	2014
Unit Standards Review Committee member	2013
Graduate Recruitment Committee, Chair	2012 – 2016
NORM X-ray diffraction workshop organizer, Missoula, MT	2014
X-ray tutorial organizer UM	2014
Canadian Chemical Crystallography Workshop	2014
Organic and Crystallographer Faculty Search Committee (UO)	2006
Nano Quest Challenge 2006 – Judge	2006
University of Oregon Department Crystallographer	2005
American Chemical Society	2004 – pres.
Golden Key National Honour Society	1999 – pres.

## STUDENT AWARDS

Eric John – ISXB4 Travel Bursary Award	2020
Eric John – Montana ACS Char Elect	2019
Daniel Decato – Travel Grant ACA as well as Conf. on Noncovalent Interactions	2019
Daniel Decato – Bertha Morton Award	2018
Daniel Decato – Besancon Scholarship	2018
Casey Massena – Bertha Morton Scholarship	2017
Casey Massena – International finalist for 67 <sup>th</sup> Lindau Nobel Laureate Chemistry Meeting	2017
Asia Riel – Chateaubriand Fellowship – International study in France	2017
Asia Riel – Rennes Métropole – International study in France	2017
Asia Riel – ACS Division of Organic Chemistry Travel Grant Spring ACS Meeting	2017
Asia Riel – UM Research and Creative Scholarship Travel Grant Spring ACS Meeting	2017
Morly Jessop – President’s Recognition award	2017
James May – Dick Field Physical Chemistry award	2017
James May – General Chemistry award	2017
James May – William P. Cahill Memorial Scholarship	2017
Asia Riel – Lola Walsh Anacker Scholarship	2016
Dan Decato – Stanley R. Ames Scholarship	2016
Casey Massena – Besancon Scholarship	2016 – 2017

Casey Massena – Stanley R. Ames Scholarship	2016
Evan McManigal – General Chemistry Achievement Award	2016
Morly Jessup – Louis F. Kinney Award	2016
Chris Grubb – Richard H. Jesse Memorial Scholarship	2016
James May – 1 <sup>st</sup> place undergraduate poster award, SD undergraduate research symposium	2016
Morly Jessup – General Chemistry Achievement Award	2015
Asia Riel – Bertha Morton Scholarship	2015
Nicholas Wageling – CBSD Graduate Research Fellowship	AY 2014 – 15
George Neuhaus – Watkins Scholarship	AY 2013 – 15
George Neuhaus – Lewis F. Kinney Award	2014
Geoffrey Glidewell – Physical Chemistry award	2014
George Neuhaus – UMCUR award for best poster presentation	2013
George Neuhaus – Richard H. Jesse Scholarship	2013
Neal Whaley – Fessenden Organic Student award	2013
Casey Massena – Chemistry alumni faculty award	2013

## REFERENCES

Available upon request