

**Employment**

- 2016- **University of Oregon, Eugene, OR.** Associate professor of chemistry
- 2011-2016 **University of Oregon, Eugene, OR.** Assistant professor of chemistry. Appointment: Sept. 16, 2011.
- 2008-2011 **Massachusetts Institute of Technology, Cambridge, MA.** NIH NRSA and NIH Pathway to Independence postdoctoral fellow.
- 2005-2008 **University of California, Berkeley, CA.** NSF predoctoral fellow. Graduate student instructor: Taught organic chemistry to undergraduate students (1 yr), x-ray crystallography to graduate students (2 yr). Graduate student assistant, NMR facility (2 yr): Trained and instructed graduate students, and postdoctoral researchers on experimental NMR techniques.

**Education**

- 2008-2011 **Massachusetts Institute of Technology, Cambridge, MA**  
*Postdoctoral Advisor: Stephen J. Lippard*  
Designed fluorescent probes for detection of biological nitric oxide and used the developed probes to study nitric oxide production in live tissues. Investigated nitric oxide binding to transition metal complexes.
- 2004-2008 **University of California, Berkeley, CA** Ph.D., Chemistry.  
*Ph.D. Advisors: Robert G. Bergman, Kenneth N. Raymond*  
Thesis: "Host-Guest Chemistry and Proton-Catalyzed Reactivity in a Self-Assembled Supramolecular Assembly."  
Studied the host-guest chemistry of a water-soluble supramolecular assembly. Utilized the assembly to carry out acid catalyzed reactions in basic solution.
- 2000-2004 **University of Oregon, Eugene, OR** BS, Chemistry, Mathematics *magna cum laude*  
*Research Advisor: David R. Tyler*  
Investigated water-soluble molybdocene catalysts for nitrile hydration.

**Honors and Awards**

- 2016 UO Outstanding Early Career Award
- 2016 Camille Dreyfus Teacher Scholar Award
- 2015 Thieme Chemistry Journal Award
- 2015 Sloan Fellowship
- 2015-2020 NSF CAREER Award
- 2010-2014 NIH Pathway to Independence Award
- 2008-2010 NIH NRSA Ruth Kirschstein Postdoctoral Fellowship
- 2008 American Cancer Society Postdoctoral Fellowship (declined)
- 2008 American Chemical Society Young Investigator Award
- 2006 Outstanding Graduate Student Instructor Award
- 2004-2007 NSF Graduate Research Fellowship
- 2004 The Chemical Society Outstanding Chemistry Student Award
- 2004 Outstanding Inorganic Student Award
- 2003 College of Arts and Sciences Fellowship Award
- 2003 Barry M. Goldwater Scholarship Award
- 2003 College of Arts and Letters Fellowship

2003 Bowerman Scholarship Award  
2002 Undergraduate Research Award  
2002 Junior Scholar Award  
2000-2004 Presidential Fellowship

## **Professional and Institute Affiliations**

### Professional Societies:

American Chemical Society, Organic, Inorganic, and Biological Chemistry Divisions  
Society for Free Radical Biology and Medicine  
American Heart Association  
Phi Beta Kappa

### University of Oregon Institute Memberships:

Material Science Institute (MSI), Member, 2014-present  
Material Science Institute (MSI), Associate Member, 2011-2014  
Institute of Molecular Biology (IMB), Associate Member, 2013-present

## **Students Advised**

Postdoctoral Researchers: (1 current, 2 total): Dr. Yu Zhao, Dr. Nathanael Lau (starting 7/2017)

Graduate Students: (3 current, 10 total). Thomas Bailey (PhD 2016), Matthew Cerda, Matthew Hammers (PhD 2016), Matthew Hartle (PhD 2017), Hillary Henthorn (MS 2016), Jacqueline McGrath (PhD 2015), Leticia Montoya (PhD 2015), Dan Seidenkranz, Samantha Sommer (PhD 2015), Andrea Steiger.

Rotation Students: (27 total). In addition to supervised graduate students: Joshua Barker (S2017), Sarah Bolton (F2016), Micah Donor (F2014), Justin Dressler (W2016), Jane Fielder (S2013), Ryan Hansen (W2014), Adrian Henle (S2013), James McDermott (F2013), Christine McDevitt (F2016), Alan Moghaddam (F2011), Sean Naughton (W2014), Emilia Padilla (S2013), Cleophas Rwemera (F2013), Dan Seidenkranz (S2014), Kara Sherman (S2012), Christopher Thomas (W2017), Jeff van Raden (F2014), Austin Ventura (W2017), Keenan Woods (S2014).

Undergraduate Students: (7 current, 17 total). Matthew Cerda (REU), WonJin Choi (UO Chemistry), Alder Crammond (UO Chemistry), Stephen Dietrich (UO Biochemistry), David Drake (UO Chemistry), Mary Earp (UO Chemistry), Karoline Eckhart (REU), Brendan Gallagher (UO Biochemistry), Ryan Hansen (UO Chemistry), Jordan Mohrhardt (UO Chemistry), Taylor Pearce (UO Biochemistry), Loveprit Singh (UO Chemistry), Katherine Stile (UO Chemistry), Samuel Prakesel (UO Biochemistry), Sterling Tanner (UO Chemistry), McKinna Tillotson (UO Biology), Husam Zaidan (UO Biochemistry). Prior to UO: Maria Chan (MIT, Chemistry), Gloria Odusote (MIT, Chemistry)

## **Courses Taught**

CH 451/551 (renamed to CH420/421) *Physical Organic Chemistry II*

4 credits; Spring 2012 (22 students; avg. student evaluation 4.63/5; dept mean 4.01/5)

4 credits; Spring 2013 (26 students; avg. student evaluation 4.78/5; dept mean 4.15/5)

4 credits; Spring 2014 (17 students; avg. student evaluation 4.45/5; dept mean 4.19/5)

4 credits; Spring 2015 (20 students; avg. student evaluation 4.72/5; dept mean 4.23/5)

4 credits; Spring 2016 (12 students; avg. student evaluation 4.68/5; dept mean 3.92/5)

4 credits; Spring 2017 (23 students; in progress)

CH 410/510 *Physical Organic Chemistry I*

4 credits; Winter 2012 (30 students, avg. student evaluation 4.56/5; dept mean 4.06/5)

CH 405/605 *Fellowship Application Skills*, (w/ Boettcher)

- 1 credit; Fall 2012 (6 students)
- 1 credit; Fall 2013 (13 students)
- 1 credit; Fall 2014 (14 students)
- 1 credit; Fall 2015 (13 students)
- 1 credit; Fall 2016 (3 students)
- CH 342 *Majors Track Organic Chemistry II*
  - 4 credits; Winter 2014 (75 students; avg. student evaluation 4.53/5; dept mean 4.06/5)
  - 4 credits; Winter 2015 (90 students; avg. student evaluation 4.73/5; dept mean 4.11/5)
  - 4 credits; Winter 2016 (81 students; avg. student evaluation 4.66/5; dept mean 3.94/5)
  - 4 credits; Winter 2017 (58 students; avg. student evaluation 4.54/5; dept mean 4.08/5)
- CH 401/601/603 *Research: Organic Molecular Recognition*
  - Variable credit, ongoing, (70 credit hours in 401; 1003 credit hours in 601; 60 credits in 603)

## Publications

*Metrics. Total publications: 73 total citations: 3495; h-index: 30; i-index: 41*

73. Steiger, A.K.; Zhao, Y.; Pluth, M.D. "Emerging Roles of Carbonyl Sulfide (COS) in Chemical Biology: Sulfide Transporter or Gasotransmitter?" *Antioxid. Redox Signal.* **2017**, early view online.
72. Hartle, M.D.; Tillotson, M.R.; Pluth, M.D. "Spectroscopic Investigation of the Reaction of Metallo-Protoporphyrins with Hydrogen Sulfide" *J. Inorg. Biochem.* **2017**, early view online.
71. Cerda, M.M.; Hammer, M.D.; Earp, M.S.; Zakharov, L.N.; Pluth, M.D. "Applications of Synthetic Organic Tetrasulfides as H<sub>2</sub>S Donors." *Org. Lett.* **2017** ASAP Article
70. Zhao, Y.; Bolton, S.; Pluth, M.D. "Light-Activated COS/H<sub>2</sub>S Donation from Photocaged Thiocarbamates." *Org. Lett.* **2017**, early view online
69. Steiger, A.K.; Yang, Y.; Royzen, M.; Pluth, M.D. "Bio-orthogonal "Click-and-Release" Donation of Caged Carbonyl Sulfide (COS) and Hydrogen Sulfide (H<sub>2</sub>S)." *Chem. Commun.* **2017**, 53, 1378-1380.
68. Seidenkranz, D.T.; McGrath, J.M.; Zakharov, L.N.; Pluth, M.D. "Supramolecular Bidentate Phosphine Ligand Scaffolds from Deconstructed Hamilton Receptors." *Chem. Commun.* **2017**, 53, 561-564.
67. Bailey, T.S.; Henthorn, H.A.; Pluth, M.D. "The Intersection of NO and H<sub>2</sub>S: Persulfides Generate NO from Nitrite through Polysulfide Formation" *Inorg. Chem.* **2016**, 55(24), 12618-12625
66. Zhao, Y.; Pluth, M.D. "Hydrogen Sulfide Donors Activated by Reactive Oxygen Species." *Angew. Chem. Int. Ed.* **2016**, 55(47), 14638-14642.  
- Highlighted by *UO Research, Phys.org, ScienceBlog, EurekaAlert, ChemEurope*
65. Hartle, M.D.; Hansen, R.J.; Tresca, B.W.; Prakes, S.S.; Zakharov, L.N.; Haley, M.M.; Pluth, M.D.; Johnson, D.W. "A Synthetic Supramolecular Receptor for the Hydrosulfide Anion." *Angew. Chem. Int. Ed.* **2016**, 55, 11480-11484.
64. Steiger, A.K.; Pardue, S.; Kevill, C.G.; Pluth, M.D. "Self-Immolative Thiocarbamates Provide Access to Triggered H<sub>2</sub>S Donors and Analyte Replacement Fluorescent Probes." *J. Am. Chem. Soc.* **2016**, 138, 7256-7259.
63. Hartle, M.D.; Delgado, M.; Gilbertson, J.D.; Pluth, M.D. "Stabilization of a Zn(II) Hydrosulfido Complex Utilizing a Hydrogen-Bond Accepting Ligand." *Chem. Commun.* **2016**, 52, 7680-7682.

62. Montoya, L.A.; Pluth, M.D. "Organelle-Targeted H<sub>2</sub>S Probes Enable Visualization of the Subcellular Distribution of H<sub>2</sub>S Donors." *Anal. Chem.* **2016**, 88(11), 5769-5774.
61. Hartle, M.D.; Pluth, M.D. "A Practical Guide to Working with H<sub>2</sub>S at the Interface of Chemistry and Biology." *Chem. Soc. Rev.* **2016**, Advance Article. DOI: 10.1039/C6CS00212A  
- Inside Cover Article
60. Hartle, M.D.; Prell, J.S.; Pluth, M.D. "Spectroscopic Investigations into the Binding of Hydrogen Sulfide to Synthetic Picket-Fence Porphyrins." *Dalton Trans.* **2016**, 45, 4843-4853
59. Hammers, M.D.; Singh, L.; Montoya, L.A.; Moghaddam, A.D.; Pluth, M.D. "Synthesis of Amino-ADT Provides Access to Hydrolytically-Stable Amide-Coupled Hydrogen Sulfide-Releasing Drug Targets." *Synlett* **2016**, 27(9), 1349-1353.
58. Yang, G.; Sener, A.; Ji, Y.; Pei, Y.; Pluth, M.D. "Gasotransmitters in Biology and Medicine: Molecular Mechanisms and Drug Targets." *Oxid. Med. Cell. Longev.* **2016**, 2016, 4627308
57. Henthorn, H.A.; Pluth, M.D. "Mechanistic Insights into the H<sub>2</sub>S-Mediated Reduction of Aryl Azides Commonly used in H<sub>2</sub>S Detection." *J. Am. Chem. Soc.* **2015**, 137(48), 15330-15336.  
- Selected as Spotlight Article.
56. Hartle, M.D.; Meininger, D.J.; Zakharov, L.N.; Tonzetich, Z.J.; Pluth, M.D. "NBu<sub>4</sub>SH Provides a Convenient Source of HS<sup>-</sup> Soluble in Organic Solution for H<sub>2</sub>S and Anion-Binding Research." *Dalton Trans.* **2015**, 44, 19782-19785.
55. Pluth, M.D.; Bailey, T.S.; Hammers, M.D.; Hartle, M.D.; Henthorn, H.A.; Steiger, A.S. "Natural Products Containing H<sub>2</sub>S-Releasing Moieties." *Synlett*, **2015**, 26(19), 1633-1643.  
- 2<sup>nd</sup> most downloaded *Synlett* article in 12/2015.
54. Bailey, T.S.; Pluth, M.D. "Reactions of Isolated Persulfides Provide Insights into the Interplay between H<sub>2</sub>S and Persulfide Reactivity." *Free Radic. Biol. Med.* **2015**, 89, 662-667.
53. Sommer, S.K.; Henle, E.A.; Zakarov, L.N. Pluth, M.D. "Selection for a Single Self-Assembled Macrocyclic from a Hybrid Metal-Ligand Hydrogen-Bonded (MLHB) Ligand Subunit." *Inorg. Chem.* **2015**, 54(14), 6910-6916.
52. Hammers, M.D.; Taormina, M.J.; Cerda, M.M.; Montoya, L.A.; Seidenkranz, D.T.; Parthasarathy, R.; Pluth, M.D. "A Bright Fluorescent Probe for H<sub>2</sub>S Enables Analyte-Responsive, 3D Imaging in Live Zebrafish Using Light Sheet Fluorescence Microscopy." *J. Am. Chem. Soc.* **2015**, 137(32), 10216-10223.  
- Selected as Spotlight Article.  
- Cover Article
51. Sonke, E.; Verrydt, M.; Postenka, C.O.; Pardhan, S.; Willie, C.J.; Mazzola, C.R.; Hammers, M.D.; Pluth, M.D.; Lobb, I.; Power, N.E.; Chambers, A.F.; Leong, H.S.; Sener, A. "Inhibition of endogenous hydrogen sulfide production in clear-cell renal cell carcinoma cell lines and xenografts restricts their growth, survival and angiogenic potential." *Nitric Oxide*, **2015**, 49, 26-39.
50. Pluth, M.D.; Boettcher, S.W.; Nazin, G. Greenaway, A.L.; Hartle, M.D. "Collaboration and Near Peer Mentoring as a Platform for Sustainable Science Education Outreach." *J. Chem. Educ.*, **2015**, 92(4), 625-630.
49. Sommer, S.K.; Zakharov, L.N.; Pluth, M.D. "Design, Synthesis, and Characterization of Hybrid Metal-Ligand Hydrogen-Bonded (MLHB) Supramolecular Architectures." *Inorg. Chem.* **2015**, 54(4), 1912-1918.
48. Bailey, T.S.; Pluth, M.D. "Chemiluminescent Detection of Enzymatically Produced H<sub>2</sub>S." *Meth. Enzymol.* **2015**, 554, 81-99.

47. Bailey, T.S.; Donor, M.T.; Naughton, S.P.; Pluth, M.D. "A Simple Bioluminescent Method for Measuring D-Amino Acid Oxidase Activity." *Chem. Commun.* **2015**, 51, 5425-5428.
46. Montoya, L.A.; Shen, X.; McDermott, J.J.; Kevil, C.G.; Pluth, M.D. "Mechanistic Studies Reveal that Dibromobimane Extrudes Sulfur from Biological Sulfhydryl Sources other than Hydrogen Sulfide." *Chem. Sci.* **2015**, 6, 294-300.
45. McGrath, J.M.; Pluth, M.D. "Linear Free Energy Relationships Reveal Structural Changes in Hydrogen-Bonded HostGuest Interactions." *J. Org. Chem.* **2014**, 79(23), 11797-11801.
44. Bailey, T.S.; Zakharov, L.N; Pluth, M.D. "Understanding Hydrogen Sulfide Storage: Probing Conditions for Sulfide Release from Hydrodisulfides." *J. Am. Chem. Soc.* **2014**, 136(30), 10573-10576.
43. Hartle, M.D.; Sommer, S.K.; Dietrich, S.R.; Pluth, M.D. "Chemically Reversible Reactions of Hydrogen Sulfide with Metal Phthalocyanines." *Inorg. Chem.* **2014**, 53(15), 7800-7802.  
- Cover article
42. Hammers, M.D.; Pluth, M.D. "Ratiometric Measurement of Hydrogen Sulfide and Cysteine/Homocysteine Ratios Using a Dual-Fluorophore Fragmentation Strategy." *Anal. Chem.* **2014**, 86(14), 7135-7140.
41. Montoya, L.A.; Pluth, M.D. "Hydrogen Sulfide Deactivates Common Nitrobenzofurazan-Based Fluorescent Thiol Labeling Reagents." *Anal. Chem.* **2014**, 86(2), 6032-6039.
40. McGrath, J.M.; Pluth, M.D. "Understanding the Effects of Pre-Organization, Rigidity, and Steric Interactions in Synthetic Barbiturate Receptors." *J. Org. Chem.* **2014**, 79(2), 711-719.
39. Carnes, M.E.; Collins, M.S.; Lindquist, N.R.; Guzman-Percastegui, E.; Pluth, M.D.; Johnson, D.W. "A Simple Catalyst for Accelerating Multicomponent Self-Assembly of Arsenic Thiolates." *Chem. Commun.* **2014**, 50, 73-75
38. Bailey, T.S.; Pluth, M.D. "Chemiluminescent Detection of Enzymatically-Produced Hydrogen Sulfide: Substrate Hydrogen Bonding Influences Selectivity for H<sub>2</sub>S over Biological Thiols." *J. Am. Chem. Soc.* **2013**, 135(44), 16697-16704.
37. Pluth, M.D.; Bailey, T.S.; Hammers, M.D.; Montoya, L.A. "Chemical Tools for Studying Biological Hydrogen Sulfide." *In Biochalcogen Chemistry: The Biological Chemistry of Sulfur, Selenium, and Tellurium*, **2013**, 15-32.
36. Montoya, L.A.; Pearce, T.F.; Hansen, R.J. Zakharov, L; Pluth, M.D. "Nucleophilic Aromatic Substitution: A New Strategy to Develop Selective Colorimetric Probes for Hydrogen Sulfide." *J. Org. Chem.* **2013**, 78(13), 6550-6557.  
- Highlighted by UO Research, 6/24/2013
35. Chung, C.Y.; Khurana, V.; Aaluck, K.P.; Tardiff, D.F.; Mazzulli, J.R.; Soldner, F.; Baru, V.; Lou, Y.; Freyzon, Y.; Cho, S.; Mungenast, A.E.; Muffat, J.; Mitalipova, M.; Pluth, M.D.; Jui, N.T.; Schule, B.; Lippard, S.J.; Tsai, L.H.; Krainc, D.; Buchwald, S.L.; Jaenisch, R.; Lindquist, S. "Identification and Rescue of  $\alpha$ -Synuclein Toxicity in Parkinson Patient-Derived Neurons." *Science*, **2013**, 342(6161), 983-987.  
- Selected as "Highly Cited" paper in top 1% of the field of chemistry by Thomson ISI.
34. Ghosh, M.; van den Akker, N.M.S.; Wijnands, K.A.P.; Weber, Poeze, M.; Weber, C.; McQuade, L.E.; Pluth, M.D.; Lippard, S.J.; Post, M.J.; Molin, D.G.M.; van Zandvoort, M.A.M.J. "Specific visualization of nitric oxide in the vasculature with two-photon microscopy using a copper- based fluorescent probe." *PLoS One.* **2013**, 8(9), e75331.
33. Montoya, L.A.; Pluth, M.D. "Selective Turn-On Fluorescent Probes for Imaging Hydrogen Sulfide in Living Cells." *Chem. Commun.* **2012**, 48(39), 4767-4769.  
- One of the top 10 cited research articles from *Chem. Commun.* in 2012.

- Selected as "Highly Cited" paper in top 1% of the field of chemistry by Thomson ISI.
32. Pluth, M.D.; Lippard, S.J. "Reversible Binding of Nitric Oxide to an Fe(III) Complex of a Tetra-amido Macrocyclic." *Chem. Commun.* **2012**, 48, 11981-11983
  31. Sartoretto, J.L.; Kalwa, H.; Shiroto, T.; Sartoretto, S.M.; Pluth, M.D.; Lippard, S.J.; Michel, T. "Role of Ca<sup>2+</sup> in the Control of H<sub>2</sub>O<sub>2</sub>-Modulated Phosphorylation Pathways Leading to eNOS Activation in Cardiac Myocytes." *PLoS One.* **2012**, 7(9), e44627.
  30. Sartoretto, J.L.; Kalwa, H.; Pluth, M.D.; Lippard, S.J.; Michel, T. "Hydrogen Peroxide Differentially Modulates Cardiac Myocyte Nitric Oxide Synthesis." *Proc. Natl. Acad. Sci. USA.* **2011**, 108(38), 15792-15797.
  29. Pluth, M.D.; Chan, M.R.; McQuade, L.E.; Lippard, S.J. "Seminaphthofluoresein-Based Fluorescent Probes for Imaging Nitric Oxide in Live Cells." *Inorg. Chem.* **2011**, 50(19), 9385-9392.
  28. Pluth, M.D.; Tomat, E.; Lippard, S.J. "Biochemistry of Mobile Zinc and Nitric Oxide Revealed by Fluorescent Sensors." *Annu. Rev. Biochem.* **2011**, 80, 333-355.
  27. McQuade, L.E.; Pluth, M.D.; Lippard, S.J. "Mechanism of Nitric Oxide Reactivity and Fluorescence Enhancement of the NO-Specific Probe, CuFL1." *Inorg. Chem.* **2010**, 49(17), 8025-8033.
  26. Hastings, C.J.; Pluth, M.D.; Bergman, R.G.; Raymond, K.N. "Enzyme-Like Catalysis of the Nazarov Cyclization by Supramolecular Encapsulation." *J. Am. Chem. Soc.* **2010**, 132(20), 6938-6940.  
- Selected as "Highly Cited" paper in top 1% of the field of chemistry by Thomson ISI.
  25. Pluth, M.D.; McQuade, L.E.; Lippard, S.J. "Cell-Trappable Fluorescent Probes for Nitric Oxide Visualization in Living Cells." *Org. Lett.* **2010**, 12(10), 2318-2321.
  24. Sgarlata, C.; Mugridge, J.S.; Pluth, M.D.; Tiedemann, B.E.F.; Zito, V.; Arena, G.; Raymond, K.N. "External and Internal Guest Binding of a Highly Charged Supramolecular Host in Water: Deconvoluting the Very Different Thermodynamics." *J. Am. Chem. Soc.* **2010**, 132(3), 1005-1009.
  23. Pluth, M.D.; Bergman, R.G.; Raymond, K.N. "Proton Mediated Chemistry and Catalysis in a Self-Assembled Supramolecular Host." *Acc. Chem. Res.* **2009**, 42(10), 1650-1659.  
- Selected as "Highly Cited" paper in top 1% of the field by Thomson ISI.
  22. Pluth, M.D.; Fiedler, D.; Mugridge, J.S.; Bergman, R.G.; Raymond, K.N. "Encapsulation and Characterization of Proton-Bound Amine Homodimers in a Water Soluble, Self-Assembled Supramolecular Host." *Proc. Nat. Acad. Sci. USA* **2009**, 106, 10438-10443.
  21. Pluth, M.D.; Bergman, R.G.; Raymond, K.N. "The Acid Hydrolysis Mechanism of Acetals Catalyzed by a Supramolecular Assembly in Basic Solution." *J. Org. Chem.* **2009**, 74(1), 58-63.  
- Selected by journal as Featured Article
  20. Pluth, M.D.; Johnson, D.W.; Szigethy, G.; Davis, A.V.; Teat, S.J.; Oliver, A.G.; Bergman, R.G.; Raymond, K.N. "Structural Consequences of Anionic Host-Cationic Guest Interactions in a Supramolecular Assembly." *Inorg. Chem.* **2009**, 48(1), 111-120.  
- One of the top 20 articles downloaded from *Inorg. Chem.* in 2009.
  19. Pluth, M.D.; Bergman, R.G.; Raymond, K.N. "Supramolecular Catalysis of Orthoformate Hydrolysis in Basic Solution: An Enzyme-Like Mechanism." *J. Am. Chem. Soc.* **2008**, 130(34), 11423-11429.

18. Pluth, M.D.; Bergman, R.G.; Raymond, K.N. "Acceleration of Amide Bond Rotation by Encapsulation in the Hydrophobic Interior of a Water-Soluble Supramolecular Assembly." *J. Org. Chem.* **2008**, 73(18), 7132-7136.
17. Hastings, C.J.; Pluth, M.D.; Shannon M. Biros, Bergman, R.G.; Raymond, K.N. "Simultaneously Bound Guests and Chiral Recognition: A Chiral Self-Assembled Supramolecular Host Encapsulates Hydrophobic Guests." *Tetrahedron* **2008**, 64(36), 8362-8367.
16. Pluth, M.D.; Bergman, R.G.; Raymond, K.N. "Encapsulation of Protonated Diamines in a Water-Soluble Chiral Supramolecular Assembly Allows for Measurement of Hydrogen-Bond Breaking Followed by Nitrogen Inversion/Rotation (NIR)." *J. Am. Chem. Soc.* **2008**, 30(20), 6362-6366.
15. Pluth, M.D.; Tiedemann, B.E.F.; van Halbeek, H.; Nunlist, R.; Raymond, K.N. "Diffusion of a Highly-Charged Supramolecular Assembly: Direct Observation of Ion-Association in Water." *Inorg. Chem.* **2008**, 47(5), 1411-1413.
14. Pluth, M.D.; Bergman, R.G.; Raymond, K.N. "Selective Organic and Organometallic Reactions in Water-Soluble Host-Guest Supramolecular Systems." *The Nucleus* **2008**, 8, 10-17, 20-21.
13. Pluth, M.D.; Bergman, R.G.; Raymond, K.N. "Selective Stoichiometric and Catalytic Reactivity in the Confines of a Chiral Supramolecular Assembly." In *Supramolecular Catalysis*; van Leeuwen, P. W. N. M, Ed.; Wiley-VCH Germany, **2008**; pp 165-197.
12. Pluth, M.D.; Bergman, R.G.; Raymond, K.N. "Catalytic Deprotection of Acetals in Basic Solution Using a Self-Assembled Supramolecular 'Nanozyme.'" *Angew. Chem. Int. Ed.* **2007**, 119(45), 8741-8743.
  - Selected by journal as VIP (Very Important Paper) article.
  - Highlighted at <http://www.organic-chemistry.org>, March 31, 2008.
11. Nolin, K.A.; Krumper, J.R.; Pluth, M.D.; Bergman, R.G.; Toste, F.D. "Analysis of an Unprecedented Mechanism for the Catalytic Hydrosilylation of Carbonyl Compounds." *J. Am. Chem. Soc.* **2007**, 129(47); 14684-14696.
10. Pluth, M.D.; Bergman, R.G.; Raymond, K.N. "Making Amines Strong Bases: Thermodynamic Stabilization of Protonated Guests in a Highly-Charged Supramolecular Host." *J. Am. Chem. Soc.* **2007**, 129(37), 11459-11467.
9. Pluth, M.D.; Bergman, R.G.; Raymond, K.N. "Acid Catalysis in Basic Solution: A Supramolecular Host Promotes Orthoformate Hydrolysis." *Science* **2007**, 316(5821), 85-88.
  - Subject of *Chemical & Engineering News* concentrate: **2007**, 85(15), 36.
  - Selected as "Highly Cited" paper in top 1% of the field of chemistry by Thomson ISI.
8. Pluth, M.D.; Raymond, K.N. "Reversible Guest Exchange Mechanisms in Supramolecular Host-Guest Assemblies." *Chem. Soc. Rev.* **2007**, 36(2), 161-171.
  - Selected as "Highly Cited" paper in top 1% of the field of chemistry by Thomson ISI.
7. Seitz, M.; Pluth, M.D.; Raymond, K.N. "1,2-HOIQO – A Highly Versatile 1,2-HOPO Analog." *Inorg. Chem.* **2007**, 46(2), 351-353.
6. Davenport, T.C.; Gleason, A.E.; Liska, P.L.; Mugridge, J.S.; Pluth, M.D.; "N,N'-(Pyrene-1,8-diyl)bis(2,3-dimethoxybenzaldehyde)." *Acta Cryst. E.* **2007**, E63(8), 3621-3622.
5. Breno, K.L.; Ahmed, T.J.; Pluth, M.D.; Balzarek, C.; Tyler, D.R. "Organometallic Chemistry in Aqueous Solution: Reactions Catalyzed by Water-Soluble Molybdocenes." *Coord. Chem. Rev.* **2006**, 250(9-10), 1141-1151.

4. Demoin, D.W.; Pluth, M.; Soo, H.S.; Xu, Y. "Dimethoxyphosphinoyl Phenyl Ketone p-Tolylsulfonylhydrazone." *Acta Cryst. E.* **2006**, E62(8), 3551-3552.
3. Pluth, M.D.; Bergman, R.G.; Raymond, K.N. "Encapsulation of Cationic Organometallic Guests by a Chiral Self-Assembled Supramolecular Cage: Enantioselective Binding, Dynamic Resolution, and Selective C-H Bond Activation." *Chemtracts* **2004**, 17, 515-522.
2. Breno, K.L.; Pluth, M.D.; Landorf, C.W.; Tyler, D.R. "Aqueous Phase Organometallic Catalysis Using  $(\text{MeCp})_2\text{Mo}(\text{OH})(\text{H}_2\text{O})^+$  Intramolecular Attack of Hydroxide on Organic Substrates." *Organometallics* **2004**, 23(8), 1738-1746.
1. Breno, K.L.; Pluth, M.D.; Tyler, D.R. "Organometallic Chemistry in Aqueous Solution. Hydration of Nitriles to Amides Catalyzed by a Water-Soluble Molybdocene,  $(\text{MeCp})_2\text{Mo}(\text{OH})(\text{H}_2\text{O})^+$ ." *Organometallics* **2003**, 22(6), 1203-1211.

### **Patent Activity**

1. 14/292,378. Visual methods of  $\text{H}_2\text{S}$  Detection. Pluth, M.D.; Montoya, L.A.; Bailey, T.S. Pearce, T.F.
2. 62/323,309. Thiocarbamate compounds for carbonyl sulfide / hydrogen sulfide release and methods of making and using the same. Pluth, M.D.; Steiger, A.K.; Zhao, Y.
3. 63/345,619. Synthetic reporters for hydrosulfide. Haley, M.M.; Pluth, M.D.; Johnson, D.W.



## ***Invited Lectures***

34. 04/22/2017 "Responsive chemical tools for COS and H<sub>2</sub>S delivery" 1<sup>st</sup> American Gasotransmitter Symposium, Atlanta, GA.
33. 04/03/2017 "Responsive chemical tools for COS and H<sub>2</sub>S delivery" 253rd National ACS Meeting, San Francisco, CA.
32. 02/28/2017 "Sulfur, Sulfur Everywhere! The Multifaceted Roles of Sulfur-Containing Biomolecules." Online presentation at ScienceNation.com
31. 12/01/2016 "Chemical Tools for Understanding Biological Hydrogen Sulfide." Eastern Washington University. Spokane, WA.
30. 11/11/2016 "Chemical Tools for Understanding Biological Hydrogen Sulfide." Indiana University, Bloomington, IN
29. 09/27/2016 "Small-Molecule Chemical Tools for Hydrogen Sulfide Research." Pacific University. Forrest Grove, OR.
28. 08/21/2016 "Small-Molecule Chemical Tools for Hydrogen Sulfide Research." 251<sup>st</sup> National Meeting of the American Chemical Society, Philadelphia, PA.
27. 08/07/2016 "Synthetic H<sub>2</sub>S Donors with Defined Release Mechanisms and Tunable Release Rates." Thiol-based Redox Regulation and Signaling Gordon Research Conference, Stowe, VT.
26. 06/03/2016 "Development of New Synthetic H<sub>2</sub>S Donors with Defined Release Mechanisms and Tunable Release Rates." 4<sup>th</sup> International Conference on the Biology of Hydrogen Sulfide. Naples, Italy.
25. 03/31/2016 "Chemical Tools for Understanding Biological Hydrogen Sulfide." University of Arizona. Tucson, AZ
24. 03/24/2016 "Chemical Tools for Understanding Biological Hydrogen Sulfide." Auburn University. Auburn, AL
23. 03/23/2016 Georgia State University. Atlanta, GA. "Chemical Tools for Understanding Biological Hydrogen Sulfide."
22. 01/14/2016 "Chemical Tools for Understanding Biological Hydrogen Sulfide." Oregon Health Science University, Portland, OR
21. 12/09/2015 "Chemical Tools for Understanding Biological Hydrogen Sulfide." University of Texas, Austin. Austin, TX
20. 11/10/2015 "Chemical Tools for Understanding Biological Hydrogen Sulfide." University of Houston. Houston, TX
19. 11/09/2015 "Chemical Tools for Understanding Biological Hydrogen Sulfide." Rice University. Houston, TX
18. 10/29/2015 "Chemical Tools for Understanding Biological Hydrogen Sulfide." University of California, Irvine. Irvine, CA
17. 9/28/2015 "Chemical Tools for Understanding Biological Hydrogen Sulfide." Washington State University. Pullman, WA.
16. 8/28/2015 "Chemical Tools for Understanding Biological Hydrogen Sulfide." University of New Mexico. Albuquerque, NM.

15. 8/18/2015 "Chemical Tools for Understanding Biological Hydrogen Sulfide." Young Academic Investigator Symposium, 250<sup>th</sup> National Meeting of the American Chemical Society, Boston, MA.
14. 8/13/2015 "Unravelling Biological H<sub>2</sub>S Reactivity using Synthetic Model Compounds." ChemCommun Symposium on Inorganic Compounds for Bio-Applications, Seoul, South Korea.
13. 8/11/2015 "Chemical Tools for Detecting and Imaging Biological Hydrogen Sulfide." IUPAC 48<sup>th</sup> General Assembly and 45<sup>th</sup> World Chemistry Congress. Busan, South Korea.
12. 7/11/2015 "Chemical Tools for Understanding Biological Hydrogen Sulfide." European Division of Organic Chemistry Young Investigator Symposium. Aveiro, Portugal.
11. 5/03/2015 "Chemical Tools for Imaging H<sub>2</sub>S in Live Organisms." 2<sup>nd</sup> European Conference on H<sub>2</sub>S in Biology and Medicine. Athens, Greece.
10. 9/17/2014 "Chemical Tools for Understanding Biological Hydrogen Sulfide." UC Riverside, Riverside, CA.
9. 9/03/2014 "Chemical Tools for Understanding Biological Hydrogen Sulfide." Boise State University, Boise, ID.
8. 8/11/2014 "Chemical Tools for Understanding Biological Hydrogen Sulfide." 248<sup>th</sup> National Meeting of the American Chemical Society, San Francisco, CA.
7. 4/14/2014 "Chemical Tools for Understanding Biological Hydrogen Sulfide." LSU Health and Medical Center, Shreveport, LA.
6. 11/20/2013 "Chemical Tools for Detecting and Imaging Biological Hydrogen Sulfide." Society for Free Radical Biology and Medicine, National Meeting.
5. 10/18/2013 "Chemical Tools for Detecting and Imaging Biological Hydrogen Sulfide." Western Washington University.
4. 8/19/2012 "Selective Fluorescent Probes for Biological H<sub>2</sub>S Detection." 244<sup>th</sup> National Meeting of the American Chemical Society, Philadelphia, PA.
3. 8/1/2012 "Selective Fluorescent Probes for Biological H<sub>2</sub>S Detection." PacifiKen II Symposium Honoring Kenneth Raymond. Portland, OR.
2. 8/17/2008 "Host-Guest and Catalytic Chemistry of a Water Soluble Self-Assembled [Ga<sub>4</sub>L<sub>6</sub>]<sup>12-</sup> Supramolecular Assembly." 236<sup>th</sup> National ACS Meeting, Young Investigators Symposium, Philadelphia, PA.
1. 8/13/2006 "Supramolecular Metal Complexes: Chemistry Inside Chiral, Nanoscale Flasks." 37<sup>th</sup> International Conference of Coordination Chemistry, Cape Town, South Africa, August 13-18, 2006.

## ***Selected Current Grant Activity***

### **NIH**

Chemical Tools for Delivery and Detection of Biological Hydrogen Sulfide  
NIH NIGMS; 09/01/2015 – 08/31/2020; Role: PI

### **NSF**

CAREER: Understanding the Reactivity of Hydrogen Sulfide with Bio(in)organic Targets  
NSF CLP; 02/01/2015 – 01/31/2020; Role: PI

Self-Assembled Multicomponent Ligands for Allosteric Catalysis  
NSF MSN; 09/01/2015 – 08/31/2018; Role: PI

MRI: Acquisition of an Epifluorescent Microscope for Research and Education at the University of Oregon CAMCOR Facility  
NSF; 08/01/2015 – 07/31/18; Role: PI (DeRose, Haley, Jasti, Johnson Co-PI)

MRI: Acquisition of a High Resolution Mass Spectrometer for Research and Education at the University of Oregon CAMCOR Facility  
NSF; 08/01/2016 – 07/31/1; Role: PI (Jasti Co-PI)

### **Other**

New Tools for Biological Hydrogen Sulfide Research and Applications to Chemical Education  
Camille and Henry Dreyfus Foundation; 6/01/16 – 5/30/151

Furlough Friday Science Days at the University of Oregon  
Camille and Henry Dreyfus Foundation; 11/16/2012 – 11/30/2015; Role: PI

Chemical Tool for Understanding Biological H<sub>2</sub>S  
Sloan Foundation; 03/01/2015 – 02/28/2017; Role: PI