

**Alice E. Bruce**  
**Curriculum Vitae**

University of Maine  
Department of Chemistry  
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**Professional Experience**

- 1993 – present    University of Maine, Orono, Maine  
*Associate Professor, Department of Chemistry*
- 2006 – 2011      University of Maine, Orono, Maine  
*Interim Chair and Chair, Department of Chemistry*
- 1987 – 1993      University of Maine, Orono, Maine  
*Assistant Professor, Department of Chemistry*
- 1985 – 1987      University of North Carolina, Chapel Hill, NC  
*Postdoctoral Research Associate, Department of Chemistry*  
Advisor: Professor Joseph L. Templeton  
Synthesized and studied reactivity of low oxidation state tungsten phosphonium carbene and carbyne complexes.
- 1985 – 1987      University of North Carolina, Chapel Hill, NC  
*Visiting Lecturer, Introductory Chemistry, Evening College Program*
- 1977 – 1980      Kettering Research Laboratory, Yellow Springs, Ohio  
*Research Associate*  
Research Supervisor: Dr. Edward I. Stiefel  
Synthesized dioxo molybdenum complexes with sulfur and nitrogen donor ligands as models for molybdoenzymes

**Education**

- 1980 – 1985      Columbia University, New York, NY  
*Ph.D., M.A., M. Phil. Chemistry*  
Thesis advisor: Professor David R. Tyler  
Dissertation topic: photochemical reactivity of LMCT excited states in high oxidation state organometallic sulfur complexes.
- 1974 – 1978      Antioch College, Yellow Springs, Ohio  
*B.S. Chemistry*

## Selected Service and Professional Activities

Faculty Senate, University of Maine (2017- 20200)  
Curriculum Revision Committee, Dept. of Chemistry, University of Maine (2015 - 2017)  
Program Integration Team, University of Maine (2015 – 2016)  
Advance Initiative Council, University of Maine (2009-2011)  
Graduate Coordinator, Department of Chemistry, University of Maine (1996 - 2006)  
University of Maine Committee on NCAA Athletics Certification (2004 – 2005)  
Faculty Research Funds Committee, University of Maine (2000 - 2003)  
Chair, President’s Council on Women, University of Maine (2002 - 2005)  
Co-chair, President’s Council on Women, University of Maine (1999 – 2001)  
President’s Council on Women, University of Maine (1998 – 1999)  
Graduate Board, University of Maine (1992 – 1995; 1998 – 2006)  
Distinguished Maine Professor College Nominating Committee (1999 - 2000)  
Editorial Board Member, *Metal-Based Drugs* (2000 - 2005)  
Honors Council, University of Maine (1997 - 2000)  
Secretary, Graduate Board, University of Maine (1994 - 1995)  
Executive Committee, Graduate Board, University of Maine (1993 - 1995)  
Expanding Your Horizons (1993 - 2015)  
New England Board of Higher Education, Science & Engineering Academic Support Network (1992 – 2002)  
Women in Science and Engineering Task Force, University of Maine (1991 - 1992)  
Project SEED Program, University of Maine (1991 - 2004)  
Advisory Board Member and Faculty for Upward Bound Math-Science Initiative, University of Maine (1991 - 1998)  
Curriculum Revision Committee, Women in the Curriculum Program, University of Maine (1992 - 1995)  
Curriculum Revision Committee, Dept. of Chemistry, University of Maine (1992 - 1997)  
Faculty Advisor for ACS Student Affiliate Group, University of Maine (1989 - 1995)  
Association for Women in Science member (1991 - 2003)  
Volunteer Scientist for Science-by-Mail, Boston Museum of Science (1989 - 1995)  
American Chemical Society member (1983 - present)  
Reviewer for: *Inorganic Chemistry*, *Journal of the American Chemical Society*, *Journal of Coordination Chemistry*, *European Journal of Inorganic Chemistry*, *Journal of Inorganic Biochemistry*, National Science Foundation, ACS-PRF

## Courses Taught

General Chemistry  
Advanced Inorganic Chemistry  
Physical Methods in Inorganic Chemistry  
Organometallic Chemistry  
Advanced Integrated Chemistry Laboratory  
Bioinorganic Chemistry (topics course)  
Inorganic Chemistry Literature (seminar/discussion)  
Chemistry Seminar (writing intensive)  
Chemistry for Everyday Living (chemistry for nonscientists)  
Majoring in Chemistry (introduction and advising for 1<sup>st</sup> year chemistry majors)

## Publications

Garusinghe, Gamage S. P.; Bessey, S. Max; Bruce, Alice E.; Bruce, Mitchell R. M. "Influence of Gold(I) on the Mechanism of Thiolate, Disulfide Exchange." *Dalton Transactions* **2016**,45(28), 11261-11266.

Bruce, Mitchell R. M.; Bruce, Alice E.. Avargil, Shirly; Amar, François G.; Wemyss, Thomas M.; Flood, Virginia J.; "Polymers and Cross Linking: a CORE Experiment to Help Students Think on the Atomic Scale." *Journal of Chemical Education*, **2016**, 93(9), 1599-1605.

Bruce, Mitchell R. M.; Wilson, Tiffany A.; Bruce, Alice E.; Bessey, S. Max; Flood, Virginia J., "A Simple, Student-Built Spectrometer to Explore Infrared Radiation and Greenhouse Gases." *Journal of Chemical Education*, **2016**, 93(11), 1908-1915.

Kurian, Roby; Bruce, Mitchell R. M.; Bruce, Alice E.; Amar, Francois G., "The influence of zinc(II) on thioredoxin/glutathione disulfide exchange: QM/MM studies to explore how zinc(II) accelerates exchange in higher dielectric environments." *Metallomics*, **2015**, 7, 1265-1273.

Garusinghe, Gamage S. P.; Bessey, S. Max; Boyd, Chelsea; Aghamoosa, Mostapha; Frederick, Brian G.; Bruce, Mitchell R. M.; Bruce, Alice E., "Identification of dimethyl sulfide in dimethyl sulfoxide and implications for metal-thiolate disulfide exchange reactions." *RSC Advances*, **2015**, 5, 40603-40606.

Avargil, Shirly; Bruce, Mitchell R. M.; Amar, Francois G.; Bruce, Alice E., "Students' Understanding of Analogy in a CORE (Chemical Observations, Representations, Experimentation) Learning Cycle, General Chemistry Experiment." *Journal of Chemical Education*, **2015**, 92, 1626-1638.

Garusinghe, Gamage S. P.; Bessey, S. Max; Aghamoosa, Mostapha; McKinnon, Meaghan; Bruce, Alice E.; Bruce, Mitchell R. M., "Disulfide competition for phosphine gold(I) thiolates: phosphine oxide formation vs. thiolate disulfide exchange." *Inorganics*, **2015**, 3, 40-54.

Chandrasoma, A.; Grant, R.; Bruce, A. E.; Bruce, M. R. M. "Electrochemical polymerization of aniline on carbon-aluminum electrodes for energy storage." *Journal of Power Sources*, **2012**, 219, 285-291.

Chandrasoma, A.; Hamid, A. A.; Bruce, A. E.; Bruce, M. R. M.; Tripp, C. P. "An Infrared Spectroscopic Based Method for Mercury(II) Detection in Aqueous Solutions." *Analytica Chimica Acta*, **2012**, 728, 57-63.

Hamid, A. A.; Tripp, C. P.; Bruce, A. E.; Bruce, M. R. M. "Application of Structural Analogs of Dimercaptosuccinic Acid-functionalized Silica Nanoparticles (DMSA-[silica]) to Adsorption of Mercury, Cadmium, and Lead." *Research on Chemical Intermediates*, **2011**, 37, 791-810.

Hamid, A. A.; Tripp, C. P.; Bruce, A. E.; Bruce, M. R. M. "A Selective Optical Chemosensor for Iron(III) Ions in Aqueous Medium Based on [bis(22'-bipyridine)-bis(2-carboxypyridine)]ruthenium(II) complex." *Jordan Journal of Chemistry*, **2011**, 6, 393-401.

Bruce, Alice E.; Tripp, Carl P.; Bruce, Mitchell R. M.; Al Abdel Hamid, Amer A. G.; Acharige, Asela C. Maha "Sensitive and selective detection method for mercury (II) in aqueous solution" U.S. Pat. Appl. Publ. (2011), US 20110281363.

Hamid, A. A.; Tripp, C. T.; Bruce, A. E.; Bruce, M. R. M. "Mercury, Cadmium, and Lead Chelation to meso-2,3-Dimercaptosuccinic Acid Covalently Attached to Silica Gel via Amide Bond Linkages." *Journal of Coordination Chemistry*, **2010**, *63*, 731-741.

Dyadchenko, V. P.; Belov, N. M.; Lemenovskii, D. A.; Antipin, M. Yu.; K.A. Lyssenko, K. A.; Bruce, A. E.; Bruce, M. R. M. "Synthesis, crystal and molecular structure of gold(I) thiophenolate with 4'-ferrocenyl[1,1']biphenylisocyanides." *Journal of Organometallic Chemistry*, **2010**, *695*, 304-309.

Bessey, S.; Aghamoosa, M.; Garusinghe, G. S. P.; Chandrasoma, A.; Bruce, A. E. and Bruce, M. R. M. "The Synthesis of Triethylphosphine Gold(I) 4-Nitrobenzenethiolate and Solvent Dependent Visible Absorption Spectra of 4-Nitrobenzenethiolate." *Inorganica Chimica Acta*, **2009**, *363(1)*, 279-282.

Oussama, E.; Gonser, M. W. A.; Stewart, B. N.; Bruce, A. E.; Bruce, M. R. M.; Cundar, T. R.; Omary, M. A. "Luminescence, Structural, and Bonding Trends upon Varying the Halogen in Isostructural Auophilic Dimers" *Journal of the Chemical Society, Dalton Transactions*, **2009**, *9*, 1522-1533.

Foley, J.; Gay, S.; Vela, M.; Foxman, B.; Bruce, A.; Bruce, M. "Structure and Photochemical Isomerization of the Dinuclear Gold(I) Halide Bis(diphenylphosphino)-ethylene Complexes; Correlation Between Quantum Yield and Auophilicity" *European Journal of Inorganic Chemistry* **2007**, *31*, 946-951.

Makarov, M. V.; Lemenovskii, D. A.; Bruce, A. E.; Bruce, M. R. M.; Dyadchenko, V. P. "Thermotropic Liquid Crystals Based on Ferrocenylbiphenyl and Ferrocenylterphenyl" *Liquid Crystals*, **2006**, *33*, 485-494.

Chen, J.; Mohamed, A. A.; Abdou, H. A.; Krause Bauer, J. A.; Fackler, Jr., J. P.; Bruce, A. E.; Bruce, M. R. M. "Novel Metallamacrocyclic Gold(I) Thiolate Cluster Complex: Structure and Luminescence of  $[\text{Au}_9(\mu\text{-dppm})_4(\mu\text{-}p\text{-tc})_6](\text{PF}_6)_3$ ." *Journal of the Chemical Society, Chemical Communications*, **2005**, 1575-1577.

Larkin, S.; Krause Bauer, J. A.; Konoplev, V.; Dyadchenko, V.; Lemenovskii, D.; Bruce, M. R. M.; Bruce, A. E. " $\mu$ -Biphenyl-2,2'-dithiolato- $k^2\text{S}:\text{S}'$ -bis[(triphenylphosphine- $k\text{P}$ )gold(I)]" *Acta Crystallographica, Section C: Crystal Structure Communications*, **2004**, *C60(9)*, m440-m442.

Mohamed, A. A.; Krause Bauer, J. A.; Bruce, A. E.; Bruce, M. R. M. "[ $m$ -o-Phenylenebis(diphenylphosphine)- $k_2\text{P}:\text{P}'$ ]bis[chlorogold(I)],  $\text{dppbz}(\text{AuCl})_2$ ." *Acta Crystallographica, Section C: Crystal Structure Communications*, **2003**, *C59(3)*, m84-m86.

Mohamed, A. A.; Chen, J.; Bruce, A. E.; Bruce, M. R. M.; Krause Bauer, J. A.; Hill, D. T. "Formation of a Cationic Gold(I) Complex and Disulfide by Oxidation of the Antiarthritic Gold Drug Auranofin." *Inorganic Chemistry*, **2003**, *42(7)*, 2203-2205.

Lemenovskii, D. A.; Makarov, M. V.; Dyadchenko, V. P.; Bruce, A. E.; Bruce, M. R. M.; Larkin, S.; Averkiev, B. B.; Starikova, Z. A.; Antipin, M. Yu. "Ferrocenyl Derivatives of Biphenyl. Synthesis and Crystal Structure." *Russian Chemical Bulletin*, **2003**, *3*.

Mohamed, A. A.; Abdou, H. E.; Chen, J.; Krause Bauer, J. A.; Bruce, A. E.; Bruce, M. R. M. "Perspectives in Inorganic and Bioinorganic Gold Sulfur Chemistry." *Comments on Inorganic Chemistry*, **2002**, *23(5)*, 321-334.

Chadwick, S.; English, U.; Ruhlandt-Senge, K.; Watson, C. Bruce, A.E.; Bruce, M.R.M. "Formation of Separated versus Contact Ion-Pairs in Alkali Thiolates and Selenolates", *Journal of the Chemical Society, Dalton Transactions*, **2000**, 2167-2173.

Chen, J.; Jiang, T.; Wei, G.; Mohamed, A.A.; Homrighausen, C.; Krause Bauer, J.A.; Bruce, A.E.; Bruce, M.R.M. "Electrochemical and Chemical Oxidation of Gold(I) Thiolate Phosphine Complexes: Formation of Gold Clusters and Disulfide", *Journal of the American Chemical Society*, **1999**, *121*, 9225.

Watson, C. M.; Dwyer, D. J.; Andle, J.; Bruce, A.E.; Bruce, M.R.M. "Stripping Analyses of Mercury Using Gold Electrodes: Irreversible Adsorption of Mercury", *Analytical Chemistry*, **1999**, *71*, 3181.

Foley, J. B.; Gay, S.E.; Turmel, C.; Wei, G.; Jiang, T.; Narayanaswamy, R.; Foxman, B.M.; Vela, M.J.; Bruce, A.E.; Bruce, M.R.M. "Electronic Structure of Dinuclear Gold(I) Complexes", *Metal-Based Drugs*, **1999**, *6*, 255.

DiLorenzo, M.; Ganesh, S.; Tadayon, L.; Bruce, M.R.M.; Bruce, A.E. "Reactions of Organic Disulfides and Gold(I) Complexes", *Metal-Based Drugs*, **1999**, *6*, 247.

Mohamed, A.A.; Bruce, A.E.; Bruce, M.R.M. "Cyclic Voltammetry of Auranofin", *Metal-Based Drugs*, **1999**, *6*, 233.

Mohamed, A.A.; Bruce, A.E.; Bruce, M.R.M. "Electrochemistry of Gold and Silver Complexes", in *Organic Derivatives of Silver and Gold*, Patai, S. and Rappaport, Z., Eds., John Wiley & Sons, England, 1998.

Schwerdtfeger, P.; Bruce, A.E.; Bruce, M.R.M. "Theoretical Studies on the Photochemistry of the *cis* to *trans* Conversion in Dinuclear Gold Halide Bis(diphenylphosphino)ethylene Complexes", *Journal of the American Chemical Society*, **1998**, *120*, 6587.

Andle, J.; Schweyer, M.; Munson, J.; Roderick, R.; McAllister, D.; French, L.; Vetelino, J.; Watson, C.; Foley, J.; Bruce, A.; Bruce, M. "Electrochemical Piezoelectric Sensors for Trace Ionic Contaminants", *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control*, **1998**, *45*, 1408.

Lee, C.C.; Halbert, T.; Pan, W.-H.; Harner, M.A.; Wei, L.; Lenowicz, M.E.; Dim, C.O.; Miller, K.F.; Bruce, A.E.; McKenna, S.; Corbin, J.L.; Wherland, S.; Stiefel, E.I. "Synthesis, Reactivity and Redox Properties of Molybdenum Sulfur Complexes." *Inorganica Chimica Acta*, **1996**, *243*, 147.

Foley, J.B.; Bruce, A.E.; Bruce, M.R.M. "An Unprecedented Photochemical *Cis* to *Trans* Isomerization of Dinuclear Gold(I) Bis(diphenylphosphino)ethylene Complexes." *Journal of the American Chemical Society*, **1995**, *117*, 9596.

Jones, W.B.; Yuan, J.; Narayanaswamy, R.; Young, M.A.; Elder, R.C.; Bruce, A.E.; Bruce, M.R.M. "Solid State EXAFS and Luminescence Studies of Neutral, Dinuclear Gold(I) Complexes. Gold(I)-Gold(I) Interactions in the Solid State." *Inorganic Chemistry*, **1995**, *34*, 1996.

Jiang, T.; Wei, G.; Turmel, C.; Bruce, A.E.; Bruce, M.R.M.; "Redox Chemistry of Gold(I) Phosphine Thiolates: Sulfur-Based Oxidation." *Metal Based Drugs*, **1994**, *1*, 419.

Foley, J.; Fort, R.C., Jr.; McDougal, K.; Bruce, M.R.M.; Bruce, A.E. "Electronic and Steric Effects in Gold(I) Phosphine Thiolate Complexes." *Metal Based Drugs*, **1994**, *1*, 405.

Saravanamuthu, A.; Ho, D.M.; Kerr, M.E.; Fitzgerald, C.; Bruce, M.R.M.; Bruce, A.E. "Insight into Formation and Reactivity of Molybdenum(0) Bent-Nitrenes. Crystal Structure of a Phosphine-Phosphoranimine Chelate." *Inorganic Chemistry*, **1993**, *32*, 2202.

Narayanaswamy, R.; Young, M.A.; Parkhurst, E.; Ouellette, M.; Kerr, M.E.; Ho, D.; Elder, R.C.; Bruce, A.E.; Bruce, M.R.M. "Synthesis, Structure Determination, and Electronic Spectroscopy of Neutral, Dimeric Gold(I) Complexes. Gold(I)-Gold(I) Interactions in Solution and in the Solid State." *Inorganic Chemistry*, **1993**, *32*, 2506.

Saravanamuthu, A.; Bruce, A.E.; Bruce, M.R.M.; Fermin, M.C.; Hneihen, A.S.; Bruno, J.W. "Spectroelectrochemistry: Reversible C-C Bond Activation in Niobium Ketene Complexes." *Organometallics*, **1992**, *11*, 2190.

Fei, M.; Tyler, D.R.; Bruce, M.R.M.; Bruce, A.E.; Rieger, A.L.; Rieger, P.H. "Solvent Effects of Electron Delocalization in Paramagnetic Organometallic Complexes; Solvent Manipulation of the Amount of 19-Electron Character in  $\text{Co}(\text{CO})_3\text{L}_2$  ( $\text{L}_2$  = a chelating phosphine)." *Journal of the American Chemical Society*, **1992**, *114*, 6418.

Bourquet, J.L.; Leblanc, M.; Saravanamuthu, A.; Bruce, M.R.M.; Bruce, A.E. "Reactions of Molybdenum(0) Tricarbonyl Complexes with 8-Azidoquinoline. Crystal Structure of the Phosphinimine Complex,  $\text{Mo}(\text{CO})_4[\text{N}(\text{PPh}_3)(\text{C}_9\text{H}_6\text{N})]$  and Evidence for a Bent Nitrene Intermediate." *Inorganic Chemistry*, **1991**, *30*, 3242.

Saravanamuthu, A.; Bruce, A.E.; Bruce, M.R.M. "Compact FTIR Spectrometer Inside a Glovebox: IR Spectroelectrochemistry and Other Applications." *Vibrational Spectroscopy*, **1991**, *2*, 101.

Jamison, G.M.; Bruce, A.E.; White, P.S.; Templeton, J.L. "Monomeric Group VI (M = Mo, W) Methylidyne Complexes and Their Dimerization to Nonclassical Vinylidene-Bridged  $\text{Tp}'(\text{CO})_2\text{M}(\mu\text{-CCH}_2)\text{M}(\text{CO})_2\text{Tp}'$  Products." *Journal of the American Chemical Society*, **1991**, *103*, 5057.

Bruce, A.E.; Gamble, A.S.; Tonker, T.L.; Templeton, J.L. "Cationic Phosphonium Carbyne and Bis-Phosphonium Carbene Tungsten Complexes:  $[\text{Tp}'(\text{CO})_2\text{WC}(\text{PMe}_3)_n][\text{PF}_6]$  ( $n = 1, 2$ )." *Organometallics*, **1987**, *6*, 1350.

Willis, L.J.; Loehr, T.M.; Miller, K.F.; Bruce, A.E.; Stiefel, E.I. "Raman and Infrared Spectroscopic Studies of Dioxomolybdenum (VI) Complexes with Cysteamine Chelates." *Inorganic Chemistry*, **1986**, *25*, 4289.

Bruce, M.R.M.; Bruce, A.E.; Tyler, D.R. "SCF-X $\alpha$ -SW Molecular Orbital Calculation of  $[\text{CpMoS}(\mu\text{-S})]_2$ , a Molecule that Undergoes a Photochemically Induced Isomerization." *Polyhedron*, **1985**, 2073.

Bruce, A.E.; Tyler, D.R. "Photochemical Isomerization of  $[\text{Cp}^*\text{MoS}(\mu\text{-S})]_2$  to  $\text{Cp}^*_2\text{Mo}_2(\mu\text{-S}_2)(\mu\text{-S})_2$  and  $[\text{Cp}^*\text{MoS}]_2(\mu\text{-S}_2)$ ." *Inorganic Chemistry*, **1984**, *23*, 3433.

Bruce, A.E.; Bruce, M.R.M.; Sclafani, A.; Tyler, D.R. "Photochemistry and Electronic Structure of the  $\text{Cp}_2\text{MoS}_2$  Complex." *Organometallics*, **1984**, *3*, 1610.

Bruce, A.E.; Bruce, M.R.M.; Tyler, D.R. "Photochemistry and Electronic Structure of the Cp<sub>2</sub>TiS<sub>5</sub> Complex." *Journal of the American Chemical Society*, **1984**, *106*, 6660.

Corbin, J.L.; Miller, K.F.; Pariyadath, N.; Heinecke, J.; Bruce, A.E.; Wherland, S.; Stiefel, E.I. "Substituted Cysteamine Ligands and Their Complexes with Mo(VI)." *Inorganic Chemistry*, **1984**, *23*, 3404.

Berg, J.M.; Spira, D.J.; Hodgson, K.O.; Bruce, A.E.; Miller, K.F.; Corbin, J.L.; Stiefel, E.I. "Six-Coordinate Dioxo Molybdenum (VI) Complexes Containing A Nonoctahedral Structure with Short Sulfur-Sulfur Contact." *Inorganic Chemistry*, **1984**, *23*, 3412.

Berg, J.M.; Hodgson, K.O.; Bruce, A.E.; Corbin, J.L.; Pariyadath, N.; Stiefel, E.I. "The Crystal and Molecular Structures of Dioxo Mo(VI) Complexes of Tripodal Tetradentate N,S-Donor Ligands." *Inorganica Chimica Acta*, **1984**, *90*, 25.

Corbin, J.L.; Miller, K.F.; Pariyadath, N.; Wherland, S.; Bruce, A.E.; Stiefel, E.I. "Preparation and Properties of Tripodal and Linear Tetradentate N,S-Donor Ligands and Their Complexes Containing the MoO<sub>2</sub><sup>2+</sup> Core." *Inorganica Chimica Acta*, **1984**, *90*, 41.

Berg, J.M.; Spira, D.; Wo, K.; McCord, B.; Lye, R.; Co, M.S.; Belmont, J.; Barnes, C.; Kosydar, K.; Raybuck, S.; Hodgson, K.O.; Bruce, A.E.; Corbin, J.L.; Stiefel, E.I. "Structural Comparison of Octahedral MoO<sub>2</sub><sup>2+</sup> Complexes of Bidentate and Linear Tetradentate N,S-Donor Ligands." *Inorganica Chimica Acta*, **1984**, *90*, 35.

Marabella, C.P.; Enemark, J.H.; Miller, K.F.; Bruce, A.E.; Pariyadath, N.; Corbin, J.L.; Stiefel, E.I. "Complexes Containing the Mo<sub>2</sub>O<sub>5</sub><sup>2+</sup> Core: Preparation, Properties, and Crystal Structure of Mo<sub>2</sub>O<sub>5</sub>[(CH<sub>3</sub>)<sub>2</sub>NCH<sub>2</sub>CH<sub>2</sub>NHCH<sub>2</sub>C(CH<sub>3</sub>)<sub>2</sub>S]<sub>2</sub>." *Inorganic Chemistry*, **1983**, *22*, 3456.

Bruce, A.E.; Corbin, J.L.; Dahlstrom, P.L.; Hyde, J.R.; Minelli, M.; Stiefel, E.I.; Spence, J.T.; Zubieta, J. "Investigations of the Coordination Chemistry of Molybdenum with Facultative Tetradentate Ligands Possessing N<sub>2</sub>S<sub>2</sub> Donor Sets." *Inorganic Chemistry*, **1982**, *21*, 917.

Stiefel, E.I.; Miller, K.F.; Bruce, A.E.; Corbin, J.L.; Berg, J.M.; Hodgson, K.O. "A Nonoctahedral Dioxo Molybdenum Complex with a Coordinated Partial Disulfide Bond." *Journal of the American Chemical Society*, **1980**, *102*, 3624.

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Berg, J.M.; Hodgson, K.O.; Cramer, S.P.; Corbin, J.L.; Elsberry (Bruce), A.; Pariyadath, N.; Stiefel, E.I. "Structural Results Relevant to the Molybdenum Sites in Xanthine Oxidase and Sulfite Oxidase. Crystal Structures of MoO<sub>2</sub>L, L = (SCH<sub>2</sub>CH<sub>2</sub>)<sub>2</sub>NCH<sub>2</sub>CH<sub>2</sub>X with X = SCH<sub>3</sub>, N(CH<sub>3</sub>)<sub>2</sub>." *Journal of the American Chemical Society*, **1979**, *101*, 2774.

Srinivasan, V.; Stiefel, E.I.; Elsberry (Bruce), A.; Walton, R.A. "X-Ray Photoelectron Spectra of Inorganic Molecules. 21. Sulfur 2p Chemical Shifts Associated with the Binding of Thiol and Thioether Groups to Transition Metal Ions." *Journal of the American Chemical Society*, **1979**, *101*, 2611.

**Presentations** (1999-present; presenter underlined)

"CORE: Using Analogical Reasoning in Lab to Foster Macroscopic- Submicroscopic Connections", by Walter, Joseph C.; Bruce, Mitchell R. M.; Bruce, Alice E.; Turner, Anna C.; Howard, Devin. Poster presentation at Chemistry Education Within the National and Global Educational Context, Gordon Research Conference, Bates College, Lewiston, ME, June 18-23, 2017.

"CORE: Using Analogical Reasoning in Lab to Foster Macroscopic- Submicroscopic Connections", by Walter, Joseph C.; Bruce, Mitchell R. M.; Bruce, Alice E.; Turner, Anna C.; Howard, Devin. Poster presentation at Transforming Undergraduate STEM Education (TRUSE), A Conference to Promote the Integration of Research on Undergraduate Science and Mathematics Education, University of St. Thomas, St. Paul, Minnesota, July 5-9, 2017.

"Synthesis, characterization and electrochemical investigation of ferrocenyl gold (I) thiolate complexes." Veillette, Kyle A.; Garusinghe, Gamage S.; Bruce, Alice E.; Bruce, Mitchell R., 41st Northeast Regional Meeting of the American Chemical Society, Binghamton, NY, United States, October 5-8, 2016, NERM-537.

"Kinetic and mechanistic investigations on metal-assisted (Zn, Au) thiolate-disulfide exchange." Garusinghe, G. S.; Bruce, A. E.; Bruce, M. R., 251st ACS National Meeting & Exposition, San Diego, CA, United States, March 13-17, 2016. INOR-322.

"Metal-assisted (Zn, Au) thiolate-disulfide exchange: explorations of the mechanism using 2D NMR." Garusinghe, G. S.; Bruce, A. E.; Bruce, M. R., 251st ACS National Meeting & Exposition, San Diego, CA, United States, March 13-17, 2016. INOR-1256.

"Conservation of Mass and Limiting Reactants: A two-week CORE laboratory experiment employing chemical observations, a bridging analogy, and student designed experiments." Bruce, M.; Bruce, A.; Amar, F.; Avargil, S., Chemistry Education Research & Practice, Gordon Research Conference, Chemistry Education as an Agent in Global Progress, June 21-26, 2015, Bates College, Lewiston, ME.

"The Synthesis and Characterization and Electrochemical Study of  $\text{DPPF}(\text{AuSC}_6\text{H}_4\text{NO}_2)_2$ ." Veillette, K. A.; Bruce, M. R., Bruce A. E., Garusinghe, G., Farberg, A., 40th Northeast Regional Meeting of the American Chemical Society, Ithaca, NY, June 10, 2015.

"Infrared Radiation and Greenhouse Gases: An Introductory Chemistry Laboratory Experiment." Bruce, Mitchell; Wilson, Tiffany; Bruce, Alice; Bessey, S. Max; 249th ACS National Meeting & Exposition, Denver, CO, United States, March 23, 2015.

"Examining Student Analogical Reasoning in Introductory Chemistry Laboratory." Bruce, Mitchell; Avargil, Shirly; Bruce, Alice; Amar, François, 249th ACS National Meeting & Exposition, Denver, CO, United States, March 24, 2015.



“CORE learning cycle: Anchoring analogical reasoning to the laboratory experience.” Bruce, M. R.; Avargil, S.; Amar, F. Bruce, A. E., In *2014 Biennial Conference on Chemical Education*, Grand Valley State University, August 3-7, 2014.

“A Framework for Anchoring Analogical Reasoning Activities to the Chemistry Laboratory Experience.” Bruce, Mitchell; Avargil, Shirly; Bruce, Alice; Amar, François, National Association of Research in Science Teaching (NARST) Pittsburgh, PA, March 31, 2014.

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