

List of Publications for Bruce Mattson (in reverse chronological order)

Key: Appeared in 2019. Submitted in 2018. Accepted in 2018. Planned for 2020.

92. "Safely conducting catalyzed reactions of explosive mixtures", Samaya Kallepalli and Laura Cogua, to be submitted to *J. Chem. Educ.*, 2020.
91. "Graham's Law of Effusion. A simple experiment", to be submitted to **Chem13 News** Part 30
90. "Heterogeneous catalysis: Investigating the mechanism of alkyne hydrogenation. An open-ended, inquiry-based undergraduate research project", Anne Mirich, Mackenzie Enmeier, Katie Cunningham, Kara Grossman, Grace Recker, Samantha Jarman, Tazah Weinmaster, Reba Mehaffey, Grayson Huldin, Giorgio Bacchin, and Bruce Mattson*, to be submitted to *J. Chem. Educ.*, 2020.
89. "Visualizing Dissolution, Ion Mobility, and Precipitation through a Low-Cost, Rapid-Reaction Activity Introducing Microscale Precipitation Chemistry" Bob Worley, Eric M. Villa, Jess M. Gunn, Bruce Mattson* *J. Chem. Educ.*, **2019**, 96, **5**, 951-954.
88. Bringing New Chemistry into the Classroom: Nanoparticles and catalysis: Part 3. Building a nanoparticle, Bruce Mattson* and Samantha Jarman, **Chem13 News**, **2018**, 437, 12 – 15.
87. Bringing New Chemistry into the Classroom: Nanoparticles and catalysis. Part 2. Estimating the amazing surface area of the incredibly tiny, Bruce Mattson* and Samantha Jarman, **Chem13 News**, **2018**, 436, 15 – 17.
86. Bringing New Chemistry into the Classroom: Nanoparticles and catalysis series. Part 1. Function and Importance of nanoparticles in catalysis, Bruce Mattson* and Samantha Jarman, **Chem13 News**, **2017**, 435, 12 – 15. This is a 3-part series on Bringing New Chemistry into the Classroom: Nanoparticles and Catalysis Series.
85. Heterogeneous catalysis: deuterium exchange reactions of hydrogen and methane, Anne Mirich, Trisha Hoette Miller, Elsbeth Klotz, Bruce Mattson*, *J. Chem. Educ.*, **2015**, 92 (12), pp 2087–2093.
84. Structural characterization of dissolved organic matter: a review of current techniques, Elizabeth C. Minor, Michael Swenson, Bruce Mattson, and Alan Oyler *Environmental Science: Processes and impacts*, The Royal Society of Chemistry, 2014,16, 2064-2079.
83. Heterogeneous catalysis: The Horiuti-Polanyi mechanism and alkene hydrogenation. Bruce Mattson*, Wendy Foster, Jaclyn Greimann, Trisha Hoette,

- Nhu Le, Anne Mirich, Shanna Wankum, Ann Cabri, Claire Reichenbacher, and Erika Schwanke, *Journal of Chemical Education*, **2013**, **90** (5), 613–619.
82. The Spark(I)ing Vinaigrette,” Jorge Ibanez, Jorge Vazquez-Olavarrieta, Max Moran-Orozco, Elizabeth Garcia-Pintor, Angela Köhler-Krützfeldt, Michael Anderson, Bruce Mattson; *Journal of Chemical Education*, **2011**, **88**, 1404 – 1405.
81. The Equilibrium Constant for Bromothymol Blue: A general chemistry laboratory experiment using spectroscopy, Elsbeth Klotz, Robert Doyle, Erin Gross* and Bruce Mattson**, *Journal of Chemical Education*, **2011**, **88**, 637 – 639.
80. “Microscale Gas Chemistry,” Bruce Mattson and Michael Anderson, invited paper to the Association for Science Education (UK)’s premier journal *School Science Review*, **2011**, **92**, 43 – 48.
79. The remarkable chemistry of potassium dioxide(1-) (potassium superoxide). Two Microscale Classroom Demonstrations.” Andrew Allen, Michael Anderson, and Bruce Mattson; *Journal of Chemical Education* **2009**, **86**, 1286 – 1289.
78. Hydrogen and palladium foil. Two classroom demonstrations. Klotz, E.; and Mattson, B. *Journal of Chemical Education* **2009**, **86**, 465 – 469.
77. Microscale Gas Chemistry, invited commemorative article, Mattson, B., *Chem13 News* **2008**, **361**, 15 - 18.
76. “Microscale Gas Chemistry, Part 29. The Mini-Ozone Generator and Bacteria in Natural Aquatic Samples,” Bruce Mattson, Stephanie Gallegos, Laleh Mehrafiee, Jiro Fujita, *Chem13 News* **2007**, **351**, 8 – 10.
75. “Incomplete Combustion of Hydrogen: Trapping the Hydroxyl Radical,” Mattson, B.; Hoette, T.; *Journal of Chemical Education* **2007**, **84**, 1668 – 1670.
74. “Demonstrating the Paramagnetism of Liquid Oxygen with a Neodymium Magnet,” Mattson, B.; *Journal of Chemical Education* **2007**, **84**, 1296 - 1298.
73. “Microscale Gas Chemistry, Part 28. Mini-Ozone generator: 800 nanomole/minute,” Bruce Mattson, Janel Michels, Stephanie Gallegos, Jorge G. Ibanez, Alejandro Alatorre-Ordaz, Rodrigo Mayen-Mondragon, M. T. Moran-Moran, *Chem13 News* **2007**, **344**, 6 – 11.
72. “Microscale Environmental Chemistry Part 5. Production of ClO₂, an environmentally-friendly oxidizer and disinfectant;” Ibanez, Jorge G.; Navarro-Monsivais, Carlos; Terrazas-Moreno, Sebastian; Mena-Brito, Rodrigo; Pedraza-Segura, Lorena; Mattson, Bruce; Anderson, Michael P.; Fujita, Jiro; Hoette, Trisha, *Chem. Educator* **2006**, **11**, 174-177.

71. Invited book chapter, "Microscale Gas Chemistry," Mattson, B., ***Microscale Chemistry Experimentation for All Ages***, Peter Schwarz, Muhamad Hugerat, and Mordechai Livneh, editors; published by Arab Academic College for Education in Israel, Haifa, Israel, pages 267 – 285, 2006.
70. "Propanol to Propane. An advanced laboratory experiment using two gas-phase heterogeneous catalysts;" Mattson, B.; Hulce, M.; Cheng, W. Greimann, W.; Hoette, T.; and Menzel, P.; ***Journal of Chemical Education***, 2006, **83**, 421 – 424.
69. ***Microscale Gas Chemistry, 4th Edition***, (book), Mattson, B. M., Anderson, M. P.; and Mattson, S. E.; published by Educational Innovations, 2006.
68. "Microscale Gas Chemistry"; Mattson, B.; invited publication, ***Educación Química***. **16**(4), October, 2005, 514 – 528.
67. "Laboratory Experiments on the Electrochemical Remediation of the Environment, Part 7. Microscale Production of Ozone"; Ibanez, J. G.; Alatorre-Ordaz, A.; Mayen-Mondragon, R.; Moran-Moran, M. T.; Bruce Mattson, Scot Eskestrand; ***Journal of Chemical Education*** 2005, **82**, 1546-1548.
66. "Microscale Gas Chemistry, Part 27. Barometric Pressure without a Barometer", Mattson, B.; and Snipp, R.; Eskestrand. S.: ***Chem13 News***, **326**, 12 - 14, Jan, 2005.
65. "Microscale Gas Chemistry, Part 26. Carbonated Beverages — Priestley's Soda-water", Mattson, B.; Saunders, E.; Sconzo, P.; ***Chem13 News***, **324**, 6-11, November, 2004.
64. "Microscale Gas Chemistry, Part 25. Mystery Gas", Mattson, B.; and Pottebaum, D.; ***Chem13 News***, **318**, February, 2004, 10 - 11.
63. "Microscale Gas Chemistry, Part 24. Percent Composition of Calcium Carbonate in Tums[®]. A chemistry laboratory experiment.", Mattson, B.; and Saunders, E., ***Chem13 News***, **313**, September, 2003.
62. "Demonstrating Heterogeneous Gas Phase Catalysis with the Gas Reaction Catalyst Tube," Mattson, B., Fujita, J., Catahan, R., Cheng, C., Greimann, J., Hoette, T., Khandhar, P., Mattson, A., Rajani, A., Sullivan, P., Perkins, R", ***Journal of Chemical Education***, 2003, **80**, 768 - 773.
61. "Microscale Gas Chemistry, Part 23. Improved Chlorine Preparation", Mattson, B.; Eskestrand, S.; and Mordechai Livneh, M., ***Chem13 News***, **312**, May, 2003.
60. "Microscale Gas Chemistry, Part 22. Ziploc[®] Bags for Temporary Gas Storage and Transfer"; Bruce Mattson, B.; and Meyer, A., ***Chem13 News***, **311**, April, 2003, 13 – 15.

59. "Microscale Gas Chemistry, Part 21. The Limiting Reagent. A chemistry laboratory experiment," Mattson, B., Eskestrand, S., Meyer, A., **Chem13 News**, **305**, October, 2002.
58. "Microscale Gas Chemistry, Part 20. Reversible Oxidation of Metallic Copper. A laboratory experiment in a pipette." Mattson, B., Saunders, E., DiSapio, C., Hamilton, R., **Chem13 News**, **304**, September, 2002.
57. "Microscale Gas Chemistry, Part 19. Formation of Elemental Iron. A laboratory experiment in a pipette," Mattson, B., Saunders, E., **Chem13 News**, **303**, May, 2002.
56. "Celebrating Chemistry and Art: Bicentennial of a Famous Caricature," Kauffman, G. B., Mattson, B., Swanson, R. P., **Chem13 News**, **299**, January, 2002.
55. "Microscale Gas Chemistry, Part 18. Experiments with Nitrous Oxide," Mattson, B., Sullivan, P., Fujita, J., Pound, K., Cheng, W., Eskestrand, S., Obendrauf, V., **Chem13 News**, **299**, January, 2002.
54. "Microscale Gas Chemistry, Part 17. Molar Mass of Gas Determination. A chemistry laboratory experiment;" Mattson, B. M., Greimann, J., Dedhia, R., Saunders, E., **Chem13 News**, **295**, September, 2001.
53. "Microscale Gas Chemistry, Part 16. Generating Gases in a Microwave Oven" Mattson, B. M., Pound, K., **Chem13 News**, **292**, March, 2001.
52. "Ion-Molecular Reactions of Free Phenylum Ions, Generated by Tritium B-decay, with Group V-VII Elements," Shchepina, N. E., Nefedov, V. D., Toropova, M. A., Avrorin, V. V., Lewis, S. B., Mattson, B. M., **Tetrahedron Letters**, 2000, **41** (28) 5303 – 5306
51. **BOOK: "Microscale Gas Chemistry,"** Educational Innovations, 2000, ISBN #0-9701077-0-6.
50. "Microscale Gas Chemistry, Part 15. Experiments with Methane" Mattson, B. M., Catahan, R., Nguyen, J., Patel, A., Khandhar, P., Mattson, A. and Anand Rajani, A., **Chem13 News**, **284**, April, 2000.
49. "Ion-Molecular Reactions of Free Phenylum Ions, Generated by Tritium B-decay, with Bidentate Arenes," Shchepina, N. E., Nefedov, V. D., Toropova, M. A., Avrorin, V. V., Lewis, S. B., Mattson, B. M., **Tetrahedron Letters**, 2000, **41** (1) 25-27.
48. "Microscale Gas Chemistry, Part 14. Experiments with Silane" Mattson, B. M., Anderson, M. P., Nguyen, J., Bansal, M., **Chem13 News**, **281**, January, 2000.
47. "Cubic Unit Cell Construction Kit," **Journal of Chemical Education**, 2000, **77**, 622.
46. "Microscale Gas Chemistry, Part 13. Experiments with Ethene" Mattson, B. M., Hulce, M., Fujita, J., Anderson, M. P., Catahan, R., Bansal, M., Khandhar, P.,

- Mattson, A., Rajani, A., Worth, L., Obendrauf, V., **Chem13 News**, **277**, September, 1999.
45. **BOOK:** "The Chemistry of Gases, A Microscale Approach," Mattson, B. M., Anderson, M. P., Schwennsen, Cece, Flinn Scientific, 1999, ISBN #1-877991-54-6.
 44. "Microscale Gas Chemistry, Part 12. Experiments with Carbon Monoxide" Mattson, B. M., Anderson, M. P., Catahan, R., Bansal, M., Khandhar, P., Mattson, A., Rajani, A., Obendrauf, V., Vaitkus, R., **Chem13 News**, **274**, March, 1999.
 43. "Microscale Gas Chemistry, Part 11. Experiments with Hydrogen Chloride" Mattson, B. M.; Catahan, R.; Vaitkus, R., **Chem13 News**, **266**, April, 1998.
 42. "Percent Composition of CaCO₃ in Office Paper," Mattson, B. M., **Chem13 News**, **261**, November, 1997.
 41. "Microscale Gas Chemistry, Part 10. Experiments with Chlorine" Mattson, B. M.; Harrison, B.; Lannan, J., **Chem13 News**, **260**, October, 1997.
 40. "Microscale Gas Chemistry, Part 9. Experiments with Sulfur Dioxide" Mattson, B.; Anderson, M.; Nguyen J; Lannan, J., **Chem13 News**, **259**, September, 1997.
 39. "Microscale Gas Chemistry, Part 8. Experiments with Hydrogen Sulfide" Mattson, B. M.; Anderson, M.; Nguyen J; Lannan, J., **Chem13 News**, **258**, May, 1997.
 38. "Microscale Gas Chemistry, Part 7. Experiments with Hydrocarbons" Mattson, B. M.; Anderson, M.; Nguyen, J; Harrison, B., **Chem13 News**, **257**, April, 1997.
 37. "Microscale Gas Chemistry, Part 6. Experiments with Ammonia" Mattson, B. M., **Chem13 News**, **256**, March, 1997.
 36. "Microscale Gas Chemistry, Part 5. Experiments with Nitrogen Oxides" Mattson, B. M.; Lannan, J. **Chem13 News**, **255**, February, 1997.
 35. "Microscale Gas Chemistry, Part 4. Experiments with Oxygen and Nitrogen" Mattson, B. M.; Lannan, J. **Chem13 News**, **254**, January, 1997.
 34. **BOOK:** "Classroom Demonstration Aids That You Can Build!" Mattson, B. M., Kubovy, M. A., Hepburn, J., Lannan, J., Flinn Scientific, 1997, ISBN #1-877991-44-9.
 33. "Microscale Gas Chemistry, Part 3. Experiments with Hydrogen" Mattson, B. M., **Chem13 News**, **253**, December, 1996.
 32. "Microscale Gas Chemistry, Part 2. Experiments with Carbon Dioxide" Mattson, B. M., **Chem13 News**, **252**, November, 1996.

31. "Microscale Gas Chemistry: Generating Gases in Large Syringes" Mattson, B. M., *Chem13 News*, **251**, October, 1996.
30. "The Collapsing Bottle," Mattson, B. M., ChemFax!, Flinn Scientific, 1996.
29. "A Device for Making Classroom Molecular Models", B. M. Mattson, *Journal of Chemical Education*, 1994, **71**, 977.
28. "Metal Speciation Using Microbore Columns and Element Selective Detection", D. T. Gjerde, D. Wiederin, and B. Mattson, *Journal of Chromatography*. 1993, 73.
27. "Ammonia Balloon", B. Mattson, *Journal of Chemical Education*, 1992, **69**, 1029.
26. "Mechanism and Thermal Generation of Transient Re(0) Radicals. Reaction of a Triphenylmethyl Rhenium Complex with 2-Electron Ligands." L. S. Crocker, B. Mattson, and D. M. Heinekey, *Organometallics*, 1990, **9**, 1011.
25. "Synthesis and Structure of [Ir(C₅Me₅)(CO)]₂", R. G. Ball, W. A. G. Graham, D. M. Heinekey, J. K. Hoyano, A. D. McMaster, B. Mattson, and S. T. Michel, *Inorganic Chemistry*, 1990, **29**, 2023.
24. "Spectacular Classroom Demonstration of the Flame Test for Metal Ions", B. Mattson, R. Snipp, and G. Michels, *Journal of Chemical Education*, 1990, **67**, 791.
23. "Have a Chemistry Field Day in Your Area", B. Mattson and G. Michels, *Journal of Chemical Education*, 1989, **66**, 65.
22. "2-[Bis(diphenylphosphino)methyl]pyridine Complexes of Rhenium Carbonyl", B. Mattson and L. N. Ito, *Organometallics*, 1989, **8**, 391.
21. "Synthesis and Characterization of (h³-CPh₃)Re(CO)₄, A Thermal Precursor for Generation of Re(CO)₅ Radicals", L. S. Crocker, B. Mattson and D. M. Heinekey, *Inorganic Chemistry*, 1988, **27**, 3722.
20. "Rhodium and Iridium Complexes with the PN Donor Ligand (C₆H₅)₂P(CH₂)₂C₅H₄N. Crystal and Molecular Structures of Ir(PN)₂(CO)Cl, Ir(PN)(CO)Cl, and [Rh(PN)₂]PF₆, M. P. Anderson, A. L. Casalnuovo, B. J. Johnson, B. Mattson, A. M. Mueting, and L. H. Pignolet, *Inorganic Chemistry*, 1988, **27**, 1649.
19. "Quizmaker: A New Versatile Program for Chemistry Exams", T. R. Shepherd, B. Mattson and E. Carberry, *Journal of Chemical Education*, 1986, **63**, 839.
18. "Interfacing a Scanning Infrared Spectrophotometer to a Microcomputer", T. R. Shepherd, B. Mattson, and J. S. Solsky, *Journal of Chemical Education*, 1985, **62**, 690.

17. "Carbon-Nitrogen Bond Rotation in a Dithiocarbamate Complex of Rhodium(III)", B. Mattson, A. E. Madera, and M. C. Palazzotto, *Journal Coordination Chemistry*, 1984, **13**, 321.
16. "Rhodium and Iridium Complexes of 2-Bis(Diphenylphosphino)methylpyridine(PNP). X-ray Crystal and Molecular Structures of $[\text{Rh}_2(\text{CO})_2(\text{PNP})_2](\text{PF}_6)_2 \cdot \text{C}_3\text{H}_6\text{O}$ and $[\text{Ir}_2(\mu\text{-CO})(\text{CO})_2(\text{PNP})](\text{BF}_4)_2$ and Some Chemistry of These and Related Complexes", Michael P. Anderson, C. C. Tso, B. Mattson, and L. H. Pignolet, *Inorganic Chemistry*, 1983, **22**, 3267.
15. "Synthesis and X-ray Structural Characterization of a Rh(I) Complex of a Pyridyldiphosphine (PNP) Tridentate Ligand", M. P. Anderson, B. Mattson, and L. H. Pignolet, *Inorganic Chemistry*, 1983, **22**, 2644.
14. "Updated Student Use Programs for the Calculation of Mass Spectral Isotope Patterns", B. Mattson and E. Carberry, *Journal of Chemical Education*, 1983, **60**, 736.
13. "Computer Modeling of Thermodynamics and Economics of Solar Energy", B. Mattson and D. Watson, *Journal Chemical Education*, 1982, **59**, 597.
12. "Spectacular Gas Density Demonstration Using Methane Bubbles", R. Snipp, B. Mattson, and W. Hardy, *Journal of Chemical Education*, 1981, **58**, 354.
11. "Kinetics and Thermodynamics of Intramolecular Isomerization of $[\text{Fe}(\text{SCH}_3)(\text{CO})_3]_2$ ", A. Mueting and B. Mattson, *Journal of Inorganic and Nuclear Chemistry*, 1981, **43**, 749.
10. "Mechanism of Halide Abstraction from $\text{C}_5\text{H}_5\text{Fe}(\text{CO})_2\text{I}$ with AgBF_4 ", B. Mattson and W. A. G. Graham, *Inorganic Chemistry*, 1981, **20**, 3186.
9. "Hg Vapor Lamp From Streetlight", B. Mattson, *Journal of Chemical Education*, 1979, **56**, 542.
8. "Electrochemical and Chemical Properties of Dithiocarbamate Complexes of Ruthenium (II), (III), and (IV)", S. Wheeler, B. Mattson, G. Miessler, and L. H. Pignolet, *Inorganic Chemistry*, 1978, **17**, 340.
7. "Photochemical Reaction Pathways of Ruthenium(III) Complexes. Ultraviolet Irradiation of Tris-(N,N-dialkyldithiocarbamate) ruthenium(III)", K. W. Given, B. Mattson, M. F. McGuiggen, G. Miessler, and L. H. Pignolet, *Journal of the American Chemical Society*, 1977, **99**, 4855.
6. "Mass Spectrometry Data for Tris and Bis(N,N-dialkyldithiocarbamate) Complexes of Chromium, Iron, Cobalt, Ruthenium, Rhodium, and Thallium", K. Given, B. Mattson, G. Miessler, and L. H. Pignolet, *Journal of Inorganic and Nuclear Chemistry*, 1977, **39**, 1309.

5. "Synthesis and Characterization of a New Seven-Coordinate Ruthenium(IV) Complex. Crystal and Molecular Structure of Iodotrīs(N,N-dimethyldithiocarbamato)ruthenium(IV)·Iodine", B. Mattson and L. H. Pignolet, *Inorganic Chemistry*, 1977, **16**, 488.
4. "Synthesis, Properties and X-ray Structural Characterization of a Novel Seven-Coordinate Halogenotrīs(dithiocarbamato) Complex of Ruthenium(IV)", K. Given, B. Mattson, and L. H. Pignolet, *Inorganic Chemistry*, 1976, **15**, 3152.
3. "Oxidation of Trīs (N,N-disubstituted-dithiocarbamato) Complexes of Ruthenium(III). X-ray Structure Determination of Bis(N,N-diethyldithiocarbamato)- μ -trīs(N,N-diethyldithiocarbamato)diruthenium(III) Tetrafluoroborate, $\text{Ru}_2(\text{Et}_2\text{dtc})_5\text{BF}_4$ ", B. Mattson, J. Heiman, and L. H. Pignolet, *Inorganic Chemistry*, 1976, **15**, 564.
2. "X-ray Structure and Characterization of a Novel Dithiocarbamato Complex of Ruthenium(III) Containing a Metal-Metal Bond", L. Pignolet and B. Mattson, *Journal of the Chemical Society, Chemical Communications*, 1975, 49.
1. "New Program for the Calculation of Mass Spectrum Isotope Peaks", B. Mattson and E. Carberry, *Journal of Chemical Education*, 1973, **50**, 511.