

Full List of Publications for Luther E. Erickson

1. Erickson, L. E.; Alberty, R. A. "Kinetics and Mechanism of the Base-Catalyzed Hydration from Fumarate to Malate", *J. Phys. Chem.*, **1959**, *63*, 705.
2. Erickson, L. E.; Hammes, G. G. "Kinetic Studies of Systems at Equilibrium", *J. Chem. Ed.*, **1958**, *35*, 611.
3. Erickson, L. E.; Alberty, R. A. "Evidence from Nuclear Magnetic Resonance for Complexing of Malate by Alkali Metal Cations", *J. Phys. Chem.*, **1962**, *66*, 1702.
4. Erickson, L. E.; Denbo, J. A. "Dissociation Constants of Alkali Metal Malate Complexes", *J. Phys. Chem.*, **1963**, *67*, 707.
5. Erickson, L. E. "Applications of Nuclear Magnetic Resonance and Electron Spin Resonance to Enzymology", in *Methods of Enzymology*; Colowick, S. P. and Kaplan, N. O., Ed.; Academic Press: New York, 1963.
6. Erickson, L. E. "Proton Nuclear Magnetic Resonance Spectra of Substituted Succinic Anhydrides, Acids, Esters, and Salts", *J. Am. Chem. Soc.*, **1965**, *87*, 1967.
7. Clow, R. P.; Erickson, L. E.; Howie, J. K.; McDonald, J. W. "Proton Magnetic Resonance Studies of Amino Acid Complexes of Platinum(II). I. Synthesis, Spectral Interpretation, and Conformational Implications", *J. Am. Chem. Soc.*, **1968**, *90*, 6371.
8. Dappen, A. J.; Erickson, L. E.; Uhlenhopp, J. C. "Proton Magnetic Resonance Studies of Amino Acid Complexes of Pt(II). II. Kinetics of N-H and C-H Proton Exchange", *J. Am. Chem. Soc.*, **1969**, *91*, 2510.
9. Erickson, L. E.; Fritz, H. L.; May, R. J.; Wright, D. A. "Proton Magnetic Resonance Studies of Amino Acid Complexes of Pt(II). III. Isomerization, Proton Exchange and Inversion at Asymmetric Coordinated Nitrogens", *J. Am. Chem. Soc.*, **1969**, *91*, 2513.
10. Two experiments in *Laboratory Physical Chemistry*; Oelke, W. C., Ed.; Van Nostrand-Reinhold Co., New York, 1969.
11. Erickson, L. E. "A Computer Program for the Analysis of the N₂O₄ Dissociation Equilibrium" *J. Chem. Ed.* **1969**, *46*, 383.
12. Erickson, L. E. "NMR Studies of N-H Proton Dissociation and Inversion of Pt(II) Complexes of Substituted Ethylenediamines", *J. Am. Chem. Soc.*, **1969**, *91*, 6284.

13. Erickson, L. E.; Ho, F. F. L.; Reilley, C. N.; Watkins, S. "NMR Studies of Configuration and Ligand Conformation in Paramagnetic Octahedral Complexes of Nickel(II). III. Amino Acid and Mixed Amino Acid EDDA Complexes", *Inorg. Chem.*, **1970**, *9*, 1139.
14. Erickson, L. E.; Ho, F. F. L.; Reilley, C. N. "NMR Studies of Configuration...IV. Iminodiacetic Acid, N-Methyl Iminodiacetic Acid and Nitriloacetic Acid Complexes", *Inorg. Chem.*, **1970**, *9*, 1148.
15. Erickson, L.E.; Ho, F. F. L.; Reilley, C. N.; Terrill, J. B.; Watkins, S.; Young, D. C. "NMR Studies of Configuration...V. Complexes with EDTA and Related Ligands", *Inorg. Chem.*, **1971**, *10*, 441.
16. Erickson, L. E.; Erickson, M.; Smith, B. "Conformational Effects on Three-Bond and Four-Bond Platinum-Hydrogen Coupling Constants in Platinum Complexes of Methylglycines", *Inorg. Chem.*, **1973**, *12*, 412.
17. Erickson, L. E.; Reilley, C. N.; Sarneski, J. "Carbon-13 NMR Studies of Platinum(II) Complexes. I. Five-membered Rings Formed by Substituted 1,2-Diamino Propanes", *Inorg. Chem.*, **1975**, *14*, 3007.
18. Albrecht, N. G.; Cartmell, J. W.; Erickson, L. E. "A Proton NMR Study of the Stereochemistry and Kinetics of the Reactions of DMSO with $K[Pt(\text{glycinate})C1_2]$ and its Methyl Derivatives", *J. Coord. Chem*, **1976**, *5*, 135.
19. Erickson, L. E.; Hahne, W. F. "Stereochemistry of the Reaction of Dimethylsulfoxide with Dichloroglycinatoplatinate(II) and Similar Amino Acids", *Inorg. Chem.*, **1976**, *15*, 2941.
20. Erickson, L. E.; Reilley, C. N.; Sarneski, J. "Structural Characterization of a Novel Platinum(IV) Complex Produced by Depronation of Coordinated Amino Groups of the Rigid Ligand cis,cis-1,3,5-triaminocyclohexane," *J. Am. Chem. Soc.*, **1977**, *99*, 7376.
21. Erickson, L. E.; Reilley, C. N.; Sarneski, J. "Carbon-13 NMR Studies of Platinum(II) Complexes. 2. Chelate Ring Conformation and Internal Rotamer Distributions of Complexes of Methyl-Substituted Glycines", *Inorg. Chem.*, **1978**, *17*, 1701.
22. Erickson, L. E.; Reilley, C. N.; Sarneski, J. "Platinum(II) Complexes. 3. Investigation of the Configuration and Ligand Conformation of Complexes of the Cyclic α -Amino Acids Proline and Pípecolic Acid", *Inorg. Chem.*, **1978**, *17*, 1711.

23. Erickson, L. E.; Reilley, C. N.; Sarneski, J. "Additive Multipath Coupling between Platinum and Carbon in the Framework of Small Ring Systems", *J. Mag. Res.*, **1980**, *37*, 155.
24. Erickson, L. E.; Reilley, C. N.; Sarneski, J. "Conformations of 1,3-Diamine Platinum(II) Chelates as Studied by ^{13}C and ^1H NMR Spectroscopy", *Inorg. Chem.*, **1981**, *20*, 2173.
25. Brower, D.; Erickson, L. E. "NMR Evidence for Thermodynamic Preference of Cis (N-Olefin) over Trans Isomers of Mixed Amino Acid-Olefin Complexes of Platinum(II)", *Inorg. Chem.*, **1982**, *21*, 840.
26. Buhse, C. F.; Erickson, L. E.; Ferrett, T. A. "Kinetics and Mechanisms of Ligand Exchange Substitution and Isomerization of DMSO-Amino acid Complexes of Pt(II): Evidence for a Pseudorotation Mechanism", *Inorg. Chem.*, **1983**, *22*, 1461.
27. Erickson, L. E. "The Importance of Tradition", **1983** Catalyst Awards, Chemical Manufacturing Association, Washington, D.C., p. 11.
28. Erickson, L. E.; Godfrey, M.; Larsen, R. G. "Equilibrium and Kinetic Studies of Mono-Aquo Complexes of Platinum(II). 1. Formation from Corresponding Chloro Complexes by Hydrolysis", *Inorg. Chem.*, **1987**, *26*, 992.
29. Erickson, H. L.; Erickson, L. E.; Meyer, T. Y. "Equilibrium and Kinetic Studies of Mono-Aquo Complexes of Platinum(II). 2. The Dimerization of Pt (dien) $(\text{H}_2\text{O})^{2+}$.", *Inorg. Chem.*, **1987**, *26*, 997.
30. Burgeson, I. E.; Eidsmoe, E.; Erickson, L. E.; Larsen, R. G. "Equilibrium and Kinetic Studies of Monoaqua Complexes of Platinum(II). 3. Acid-Base Properties and Dimerization of Pt (amino acid) $(\text{Me}_2\text{SO})(\text{OH}_2)^{2+}$ Species", *Inorg. Chem.*, **1989**, *28*, 1315.
31. Cook, D. J.; Erickson, L. E.; Evans, G. D.; Okarma, P. J.; Sabatelli, A. D.; Sarneski, J. E. "Multinuclear NMR Studies of Platinum(IV) Complexes. 1. Acid Dissociation, Anation, and Intramolecular Catalysis of Bipyridyl Proton Exchange in [Aquabipyridine (1,3,5-triaminocyclohexane)platinum (IV)] $^{4+}$ ", *Inorg. Chem.*, **1990**, *29*, 1958.
32. Ahmed, K. J.; Blanchard, J. L.; Erickson, L. E.; Jones, G. S. "NMR and Crystallographic Determination of Stereoselectivity in the Coordination of Prochiral Olefinic Alcohols in Mixed Olefin-Amino Acid Complexes of Platinum(II)", *Inorg. Chem.*, **1991**, *30*, 3147-3155.

33. Swartz, J. E.; Vojta, G. M.; Erickson, L. E. "Hand-on Use of High-Field NMR without the NMR", *J. Chem. Ed.*, **1994**, *71*, 1069-1070.
34. Morris, K. F.; Erickson, L. E. "A Physical Chemistry Lab Project: NMR Determination of Internal Rotation Rates and Rotational Energy Barriers", *J. Chem. Ed.*, **1996**, *73*, 471.
35. Erickson, L. E.; Morris, K. F. "A Physical Chemistry Lab Project: The Effect of Composition on Several Physical Properties of Binary Mixtures of Common Liquids," *J. Chem. Ed.*, **1996**, *73*, 971-974.
36. Erickson, L. E.; Hayes, P.; Hooper, J. J.; Morris, K. F.; Newbrough, S. A.; Van Os, M.; Slangan, P. "Olefin-Amino Acid Complexes of Platinum(II). 2. An NMR Study of the Effect of Olefin Structure on the Stability and on the Stereoselectivity of Binding for η^2 -coordinated Pro-chiral Olefins", *Inorg. Chem.*, **1997**, *36*, 284-290.
37. Erickson, L. E.; Morris, K. F.; Panajotova, B. V.; Jiang, D. W.; Ding, F. "Olefin Amino Acid Complexes of Platinum (II). 3. NOE Difference and Low Temperature NMR Determinations of Rotamer Populations of Coordinated Olefins and the Stereoselectivity of Coordination of Prochiral Olefins," *Inorg. Chem.*, **1997**, *36*, 601-607.
38. Erickson, L. E.; Morris, K. F. "The Energy Profile for Rotation about the C-C Bond in Substituted Ethanes. A Multi-part Experimental and Computational Project for the Physical Chemistry Laboratory", *J. Chem. Ed.*, **1998**, *75*, 900-906.
39. Erickson, L. E.; Bailey, P. D.; Kimball, T. L.; Morgan, B. R. "Stereochemistry of platinum complexes of the neutral amino acids allylglycine, S-methylcysteine, methionine, and corresponding sulfoxides," *Inorganica Chimica Acta*, **2003**, *346*, 169-180.
40. Erickson, L. E.; Schneider, Y.; Takara, T. J.; Wezeman, A. S. "Aqueous solution chemistry of dichloro[S-methylcysteine(*N,S*)]platinum(II) isomers and their hydrolysis products" *Inorg. Chim. Acta*, **2007**, in press.

Lectures and Presentations (since 1970)

1. "An NMR Study of Ring Conformation of Platinum(II) Complexes of Methyl Substituted Glycines", 162nd National ACS Meeting, Washington, DC, Sept. 1971.
2. "Conformational Effects on 3-Bond and 4-Bond Pt-H Coupling Constants in Platinum Complexes of Methyl Glycines", 14th International Conference on Coordination Chemistry, Toronto, June 1972.
3. "An NMR Study of Displacement of Chloride Ion by Dimethylsulfoxide in Amino and Complexes of Platinum (II)", Midwest Regional Meeting of American Chemical Society, Nov. 1974.
4. "Carbon-13 and Proton NMR Studies of Platinum Complexes of Amino Acids and Diamines", U. of Arizona, March 1976.
5. "Proton and Carbon-13 NMR Studies of Platinum Chelates", Chemistry Colloquium, Central College, Jan. 1977.
6. "A Carbon-13 NMR Study of the Stereochemistry of Platinum(II) Complexes of Proline, Pípecolic Acid, and N-Methyl Alanine", National Spring ACS meeting, New Orleans, April 1977.
7. "Proton and Carbon-13 NMR Studies of Platinum Complexes", Chemistry Colloquium, St. Olaf College, Oct. 1978.
8. "NMR Studies of Pt (amino acid) (olefin) Cl", Midwest Regional ACS meeting, Fayetteville, Arkansas, Oct. 1978.
9. "Platinum(II) Complexes of S-Methyl-L-cysteine Sulfoxide", Iowa Academy of Sciences, Mt. Vernon, IA, April 1979.
10. "The Stereochemistry of the Reaction of Amino Acids with Olefin Complexes of Platinum(II)", National Spring ACS Meeting, Houston, April 1980.
11. "Stereochemistry and Kinetics of Reactions of Water-Soluble Olefins and DMSO with Platinum Complexes of Amino Acids", National Spring ACS Meeting, Atlanta, April 1981.
12. "Kinetics and Mechanisms for Isomerization of trans-[Pt(glycine)(p-Ligand)Cl]", Iowa Academy of Sciences, Coe College, April 1981.
13. "NMR Studies of Platinum Complexes" Chemistry Colloquium, N. Dakota State University, Fargo, Oct. 1981.

14. "Kinetics of Ligand Exchanges and Isomerization of Pt (amino acid)(DMSO)Cl", Iowa Academy of Sciences, Iowa Central College, Ft. Dodge, 1982.
15. "Kinetics and Mechanisms of Ligand Exchange and Isomerization of DMSO Complexes of Platinum(II): Evidence for Pseudo-Rotation Mechanisms", National Fall ACS Meeting, Kansas City, Sept. 1982.
16. "Reflections on Two Decades of Undergraduate Research at Grinnell College", National Fall ACS Meeting, Kansas City, Sept. 1982.
17. "NMR Studies of Substitution, Isomerization and Ligand Exchange in Platinum(II) Complexes of Amino Acids and Olefins or DMSO", Inorganic Chemistry Seminar, University of Iowa, Iowa City, October 1982.
18. "NMR Studies of Substitution, Isomerization, and Ligand Exchange in Platinum(II) Complexes of Amino Acids and Olefins or Dimethyl Sulfoxide", Inorganic Chemistry Seminar, U. of Wisconsin, Feb. 1983.
19. Baccalaureate Address, Grinnell College 1984.
20. "Attempts to Synthesize 5-Coordinate Dimethyl Sulfoxide Complexes of Platinum(II)", International Coordination Chemistry Conference, Boulder, CO, July 1984.
21. "Preparation and Solution Chemistry of Some Aquo Complexes of Platinum(II) and DMSO", C.N. Reilley Memorial Symposium, NE Regional ACS Meeting, Raleigh, NC, Oct. 1984.
22. "String Statistics: An Elementary Exercise for Students of Analytical Chemistry", Iowa Academy of Sciences, Pella, IA, April 1985.
23. "Equilibrium and Kinetic Studies of Aqueous Solutions of Chloro and Aquo Complexes of Platinum", Midwest Regional ACS Meeting, Milwaukee, WI, June 1986.
24. "Forty Years of NMR", Alumni College, Grinnell College, May 1986.
25. "Multi-Nuclear NMR Investigation of Ligand-Centered vs. Metal-Centered Isomers of Platinum(II) Complexes", Spring ACS meeting, Denver, CO, April 1987 (also presented at Chemistry in Iowa Poster Session at Grinnell College, April, 1987).
26. "Equilibrium and Kinetic Studies of the Formation and Dimerization of Aquo Complexes of Platinum(II)", Chemistry Department Seminar, Iowa State University, June 1987.

27. "An NMR Study of Acid-Base Properties of [Aqua(bipyridine)(1,3,5-triaminocyclohexane)platinum(IV)] Chloride", Fall ACS Meeting, Los Angeles, September, 1988.
28. "Aqueous Solution Chemistry of Platinum Complexes", Invited paper for symposium on undergraduate research in inorganic chemistry, ACS Midwest Regional Meeting, Iowa City, November 1988.
29. "Kinetics of Ligand Exchange and Isomerization of Some Chiral Olefin Complexes of Platinum(II)", Iowa Academy of Sciences Meeting, Buena Vista College, April 1989.
30. "NMR Investigation of the Interaction between Ligand-centered and Metal-centered (cis/trans) Stereochemistry in Platinum Complexes of Amino Acids", Fourth International Conference on Bioinorganic Chemistry, MIT, Boston, July 1989. (Abstract in J. Inorg. Biochem., 1989, 36, 256.
31. "NMR Studies of Stereochemical and Kinetic Properties of Olefin Complexes of Platinum", University of New Hampshire, March 1990.
32. "Kinetics of Exchange between Ethylene and Zeise's Salt", Spring ACS Meeting, Boston 1990.
33. "Stereochemistry of Platinum Complexes: From Cancer Chemotherapy to Homogeneous Catalysis", Chemistry Colloquium, Oct. 1990.
34. "Aqueous Solution Chemistry of Platinum Complexes", Chemistry Seminar, Carleton College, Nov. 1990.
35. "Free Energy Profile for Internal Rotation of Coordinated Olefins in Platinum Complexes", Annual Meeting of Iowa Academy of Science, Dubuque, IA, 1991.
36. "Aqueous Solution Chemistry of Mixed Olefin-Amino Acid Complexes of Platinum", Midwest Regional Meeting, Omaha, NB, Oct. 1992.
37. "Free Energy Profile for Internal Rotation of Coordinated Olefins in Platinum Complexes", Spring ACS Meeting, San Francisco, April, 1992.
38. Presiding officer for Iowa Academy of Science sponsored symposium on possible health effects of emfs associated with electric power generation and distribution, Des Moines, IA February 12, 1992.
39. L. E. Erickson and P. Vikesland, "Kinetics of Exchange between Free and Metal Coordinated Olefins in Platinum Complexes", PEW Midstates Consortium, Grinnell College, Oct., 1992.

40. L. E. Erickson and M. van Os, "Effects of Substituents on the Stereoselectivity of Olefin Coordination in Chiral Amino Acid Complexes of Pt(II).", Spring ACS Meeting, Denver, April, 1993.
41. L. E. Erickson, "Departmental Initiatives that Advance Undergraduate Research", Spring ACS Meeting, San Diego, April, 1994.
42. K. F. Morris and L. E. Erickson, "NOE and Variable Temperature NMR Studies of the Stereochemistry and Internal Rotation in Olefin Complexes of Platinum(II)," Spring ACS Meeting, San Diego, April, 1994.
43. Erickson, L. E. "NMR Studies of the Stereochemistry of Mixed Olefin-Amino Acid Complexes of Platinum(II), Lawrence Dahl Symposium, University of Wisconsin, Sept. 17, 1994. (Poster Paper)
44. Erickson, L. E. "The Stereochemistry of Mixed Amino Acid-Olefin Complexes of Platinum(II)", invited lecture, Chemistry Department, Trinity University, March 20, 1995
45. Newbrough, S.; Erickson, L. E. "The Stereoselectivity of Coordination and Reactions of Coordinated Olefins in Pt(II) Complexes", Iowa Academy of Sciences Annual Meeting, Wartburg College, April 22, 1995. (Newbrough presented)
46. Erickson, L. E.; Aspleaf, D.; Boie, M. "Molecular Mechanics and NMR Studies of the Stereochemistry of Platinum(II) Complexes", Iowa Academy of Sciences Annual Meeting, Wartburg College, April 22, 1995. (Erickson presented)
47. Morris, K. F.; Erickson, L. E. "NOE Difference and Low-Temperature NMR Studies of the Stereochemistry and Internal Rotation of Olefin Complexes of Pt(II)", ACS Regional Meeting, Lacrosse, WI, June 6, 1995. (Poster Paper; Morris presented)
48. Erickson, L. E.; Morris, K. F.; Hooper, J.; Ding, F; "The Free Energy Profile for Internal Rotation of Coordinated Olefins in Amino Acid-Olefin Complexes of Pt(II)", ACS National Meeting, New Orleans, LA, March, 1996. (Poster Paper; Erickson presented).
49. Erickson, L. E.; Morris, K. F. "The Energy Profile for Internal Rotation about the C-C Bond in Substituted Ethanes. A Multi-Part Experimental and Computational Project for the Physical Chemistry Laboratory", ACS National Meeting, San Francisco, CA, April, 1997. (Poster Paper; Erickson presented).
50. Erickson, L. E.; Jaffer, M. A.; Ruttan, G. C. "Effect of Olefin-Platinum(II) Complex Formation on Amide Bond Rotational Energy Profiles of Unsaturated

- Amides”, ACS National Meeting, Anaheim, March, 1999. (Poster Paper; Erickson presented.)
51. Erickson, L. E.; Bailey, P. D. “Kinetics and mechanism of formation of platinum(II) complexes of olefinic analogs of methionine and *S*-methionine”, ACS National Meeting, San Francisco, March, 2000. (Poster Paper; Bailey presented.)
 52. Erickson, L. E.; Bailey, P. D.; Onderstal, I. H. “Stereochemistry and ligand conformation of platinum(II) complexes of olefinic analogs of methionine and *S*-methionine”, ACS National Meeting, San Francisco, March, 2000. (Poster Paper; Erickson presented.)
 53. Marzluff, E. F.; Erickson, L. E.; Lyons, L.; Minelli, M.; Mines, G.; Sharpe, L. :From one modular course to modules for everyone”, ACS National Meeting, San Francisco, March, 2000. (Chem Ed Division, Marzluff presented.)
 53. Morgan, B. R.; Erickson, L. E. “Kinetics and mechanism of reaction of sulfur containing amino acids with tetrachloroplatinate(II),” ACS National Meeting, San Diego, April, 2001. (Poster presented by Morgan)
 54. Kimball, Todd L.; Erickson, L. E. “The Stereochemistry of Platinum Complexes of *S*-methyl Cysteine, methionine and Corresponding Sulfoxides” , ACS National Meeting, Orlando, April, 2002. (Poster presented by Kimball.)
 55. Thelen, A. C.; Erickson, L. E. “Kinetics and mechanisms of the reaction of tetrachloroplatinate(II) with sulfur containing amino acids: Effects of pH”, ACS National Meeting, Orlando, April, 2002. (Poster presented by Thelen.)

Grants (since 1970)

1. NSF Research Grant, GP-19229, "Studies of Metal Chelates", \$25,000, 1970-73.
2. Several small summer grants from departmental NSF-URP programs or Science Division Grant Funds for partial support of research program noted in 1.
3. NSF Research Equipment Grant for support of new nuclear magnetic resonance spectrometer for the Chemistry Department, \$20,000, 1974.
4. Research Corporation Grant in support of research program, "NMR Studies of Metal Chelates", \$8,860, 1974-75.
5. Petroleum Research Grant, "Stereochemistry of Metal Chelates", \$11,000, 1976-78.

6. Petroleum Research Grant, "Stereochemistry of Metal Chelates", \$12,000, 1978-80.
7. Research Corporation Grant, "Structural and Kinetic Studies of Platinum(II) Complexes of Amino Acids and π -Donor Ligands", \$9,770, 1980-83.
8. NSF equipment grant in support of Perkin Elmer R-600 NMR spectrometer, \$25,000, 1970.
9. NSF/LOCI Grant, "Revision of a Physical Chemistry Course and Laboratory", \$14,866, 1979.
10. NSF/CSIP Program Grant, "Construction of a Nanosecond Laser Spectrometer for the Physical Chemistry Lab", \$46,000, 1985.
11. Petroleum Research Fund Grant, "Structural, Equilibrium, and Kinetic Studies of Platinum Complexes", \$17,000, 1984-86.
12. NSF Equipment Grant, "Multi-nuclear NMR Spectrometer", \$95,000, 1986.
13. Petroleum Research Fund Grant, "Structural, Equilibrium, and Kinetic Studies of Platinum Complexes", \$20,000, 1987-89.
14. Petroleum Research Fund Grant, "Structural, Equilibrium, and Kinetic Studies of Platinum Complexes", \$20,000, 1989-91.
15. Petroleum Research Fund Grant, "Structural, Equilibrium, and Kinetic Studies of Platinum Complexes", \$20,000, 1991-93.
16. NSF/REU Grant, "Undergraduate Research in Chemistry at Grinnell College", \$120,000, 1990-93. Project Director for 3-year grant to support ten students/year for 3 summers.
17. Carver Foundation Grant for equipment and renovation of chemistry facilities, \$100,000, 1992.
18. National Science Foundation ILI grant, "A Computational Chemistry/Molecular Modeling Laboratory, \$29,800, 1992. Project director for the grant.
19. Camille and Henry Dreyfus Foundation grant, "Scholar/Fellow Program Grant for Post-doctoral Research Associate", \$60,000, 1993-95.
20. NSF/REU Grant, "Undergraduate Research in Chemistry at Grinnell College", \$120,000, 1993-95. One of project directors for 3-year grant to support ten students/year for 3 summers.

21. Petroleum Research Fund Grant, "Structural, Equilibrium, and Kinetic Studies of Platinum Complexes", \$25,000, 1994-6.
22. NSF/Chem Research Equipment Grant, "Up-grade of Computer system for Bruker 300 MHz NMR Spectrometer", \$40,000, 1996-98.
23. NSF/REU Grant, "Undergraduate Research in Chemistry at Grinnell College", \$120,000, 1997-99. One of project directors for 3-year grant to support eight students/year for 3 summers.
24. Petroleum Research Fund Grant, "Stereochemistry and Dynamic Properties of Platinum Complexes", \$25,000, 1997-9.
25. Fund for Excellence Grant, Grinnell College, for new high-field nmr spectrometer, \$307,000, 1999-2000
26. Camille and Henry Dreyfus Foundation Senior Scientist Mentor Grant, \$20,000, 2000-2002.