
Stephen M. Contakes

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Education

Postdoctoral: California Institute of Technology, June 2001- August 2006

Advisor: Harry B. Gray

Ph.D.: University of Illinois at Urbana-Champaign, October 2001

Thesis Title: Synthesis and Characterization of Novel Organometallic Phthalocyanines and Cyanometallates

Thesis Advisor: Thomas B. Rauchfuss

GPA: 4.00/4.00

B.S. Chemistry. Highest Honors, Lehigh University, May, 1995

B.S. Chemical Engineering. Highest Honors, Lehigh University, May, 1995

GPA: 3.99/4.00

Experience

Visitor, California Institute of Technology, August 2007-present: Consulted on the development of molecular wires for probing the active sites of methyl-CoM reductase, cytochrome P450BM3, and lipoxygenases.

Assistant Professor of Chemistry (1-year leave replacement), Azusa Pacific University, August 2006-May 2007: Taught *Biochemistry, Organic & Biochemistry,* and *Nonmajors General Chemistry.*

Consultant, OhmX Corporation, June 2005- May 2007: Provided technical expertise related to the development of protein biosensors.

Postdoctoral Scholar, California Institute of Technology, June 2001- August, 2006: Bioinorganic and biophysical chemistry research under Prof. Harry B. Gray.

Consultant, Jet Propulsion Laboratory, July 2005 – June 2006: Advised Dr. Adrian Ponce and his group on the design of synthetic receptor sites for spore detection.

Research Assistant, University of Illinois. January 1996 – May 2001: Conducted original research in synthetic organometallic chemistry under Prof. T. B. Rauchfuss.

Teaching Assistant, University of Illinois. August 1996 - May 1997, Jan. – Dec. 1999: Courses included *General Chemistry & Lab* and *Industrial Inorganic Chemistry.*

Summer Researcher, Sandia National Labs. May 1995 - August 1995, May 1994 – August 1994: Conducted original research in sol-gel science under Dr. C.J. Brinker.

Publications

1. Langley, D. B.; Contakes, S. M.; Chereuzel, L.; Brown, D.; Gray, H. B.; Dooley, D. M.; Guss, J. M.; Freeman, H. C. "Structural studies of copper amine oxidase in complex with channel-blocking ruthenium(II) and rhenium(I) molecular wires", submitted.
2. Contakes, S. M.; Cable, M. L.; Kirby, J. P.; Ponce, A. P. "Engineering receptor sites for luminescent molecular sensors" in *Bottom-Up Nanofabrication: Supramolecules, Self-Assemblies, and Organized Films*, Ariga, K. Ed., Academic Publishers, *in press*.
3. Contakes, S.M.; Nguyen, Y-H L.; ;Udit, A. K.; Gray, H. B. "Conjugates of heme-thiolate enzymes with Photoactive Metal-diimine wires" in Yam, W.W. Ed. *Structure & Bonding: Photofunctional Transition Metal Complexes* **2007**, 123, 177-203.
4. Udit, A. K.; Contakes, S.M.; Gray, H. B. "P450 electron-transfer reactions" in Sigel, A.; Sigel, H.; Sigel, Eds. *Met. Ions Life Sci.* **2007**, 3, 157-186.

5. Contakes, S. M.; Juda, G. A.; Langley, D. B.; Halpern-Manners, N. W.; Duff, A. P.; Dunn, A. R.; Gray, H. B.; Dooley, D. M.; Guss, J. M.; Freeman, H. C. "Reversible inhibition of copper amine oxidase activity by channel-blocking ruthenium(II) and rhenium(I) molecular wires", *Proc. National Acad. Sci. USA* **2005**, *102*(38), 13451-6.
6. Contakes, S. M.; Klausmeyer, K. K.; Rauchfuss, T. B. "Cyanide compounds. Tricyanometalate building blocks and organometallic cyanide cages." *Inorganic Syntheses*, **2004**, *34*, 166-171. (invited contribution)
7. Contakes, S. M.; Kuhlman, M. L., Ramesh, M., Wilson, S. R., Rauchfuss, T. B. "Systematic assembly of the double molecular boxes: {Cs[CpCo(CN)₃]₄[Cp*Ru]₃} as a tridentate ligand" *Proc. National Acad. Sci. USA*, **2002**, *99*, 4889-4893 (invited contribution, supramolecular chemistry and self-assembly special feature, and cover article).
8. Contakes, S. M.; Hsu, S. C. N.; Rauchfuss, T. B.; Wilson, S. R. "Preparative and structural studies on the carbonyl cyanides of iron, manganese, and ruthenium: Fundamentals relevant to the Hydrogenases" *Inorg. Chem.*, **2002**, *41*(6), 1670-1678.
9. Rauchfuss, T. B.; Contakes, S. M.; Hsu, S. C. N.; Reynolds, M. A.; Wilson, S. R. "The influence of cyanide on the carbonylation of iron(II): synthesis of Fe-SR-CN-CO centers related to the Hydrogenase active sites" *J. Am. Chem. Soc.* **2001**; *123*(28); 6933-6934.
10. Contakes, S. M.; Rauchfuss, T. B. "Alkali metal-templated assembly of the tetrahedral cyanometallate cages [M₄Mo₄(μ-CN)₆(CO)₁₂]⁵⁻ (M = Li, Na)", *Chem. Commun.*, **2001**, 553-554.
11. Contakes, S. M.; Beatty, S. T.; Dailey, K. K.; Rauchfuss, T. B.; Fenske, D. "II- complexes of phthalocyanines and metallophthalocyanines" *Organometallics*, **2000**; *19*, 4767-4774.
12. Contakes, S. M.; Rauchfuss, T. B. "{K₄[Mo(CO)₃]₆(CN)₉}⁸⁻: A trigonal-prismatic cyanometallate cage" *Angew. Chem. Int. Ed. Engl.* **2000**, *39*, 1984-1986.
13. Contakes, S. M.; Klausmeyer, K. K.; Rauchfuss, T. B. "Coordination solids derived from Cp*M(CN)₃⁻ (M = Rh, Ir)" *Inorg. Chem.* **2000**, *39*, 2069-2075.
14. Schmidt, M.; Contakes, S. M.; Rauchfuss, T. B. "First generation synthetic analogues of all-Fe hydrogenases: synthesis and oxidation of Fe₂(SR)₂(CO)₄(CN)₂²⁻" *J. Am. Chem. Soc.* **1999**, *121*, 9736-9737.
15. Contakes, S. M.; Schmidt, M.; Rauchfuss, T. B. "Synthesis of organometallic solids by protonation of Cp*M(CN)₃ⁿ⁻ (M = Rh, Ir, Ru)" *Chem. Commun.* **1999**, 1183.
16. Contakes, S. M.; Klausmeyer, K. K.; Milberg, R. M.; Wilson, S. R.; Rauchfuss, T. B. "The seven-component assembly of the bowl-shaped cages Cp*₇Rh₇(CN)₁₂²⁺ and Cp*₇Rh₃Ir₄²⁺" *Organometallics* **1998**, *17*, 3633-3655.
17. Samuel, J.; Hurd, A. J.; van Swol, F.; Fink, L.; Douglas, J.; Brinker, C. J.; Contakes, S. "Preparation of microporous films with sub-nanometer pores and their characterization using stress and FTIR measurements" *Mater. Res. Soc. Symp. Proc.* **1996**, *431*, 185-190.
18. Brinker, C. J.; Wallace, S.; Raman, N. K.; Sehgal, R.; Samuel, J.; Contakes, S. M. "Sol-gel processing of amorphous nanoporous silicas: thin film and bulk" *Access Nanoporous Mater.*, [Proc. Symp.] **1995**, 123-139.

Selected Honors

National Institutes of Health Postdoctoral Fellow, 2002 – 2004, *T.S. Piper Award in Inorganic Chemistry*, University of Illinois, 2000, *National Science Foundation Predoctoral Fellow*, 1995 to 1998, *Barry Goldwater Scholar*, 1994 to 1995

Professional Affiliations

American Chemical Society, Tau Beta Pi, Sigma Xi, Omicron Delta Kappa.

Professional Activities

Westmont American Chemical Society Student Affiliates Chapter Advisor, 2007-present.
Summer Undergraduate Research Fellow Mentor, 2002-2005.
Educating Tomorrow's Chemists Volunteer, 1998.