



Patrick J. Farmer

Bioinorganic Chemistry

Professor and Chair
Department of Chemistry and Biochemistry
Baylor University Sciences Building
One Bear Place #97348
Waco, TX 76706
(254)710-2746

Education

B.S. in Chemistry, at University of Texas at San Antonio, 1988
Judy Walmsley, advisor
Ph.D. in Inorganic Chemistry, at Texas A&M University, 1993
Marcetta Darensbourg, advisor

Professional Experience

Ecole Normale Supérieure, Paris <i>Christian Amatore, advisor</i>	Postdoctoral Researcher	1993 - 1994
California Institute of Technology <i>Harry Gray, advisor</i>	Postdoctoral Researcher	1994 - 1995
University of California, Irvine	Assistant Professor	1995 - 2001
	Associate Professor	2001 - 2005
	Professor	2005 - 2009
Baylor University	Professor & Chair	2009 -

Honors and Awards

Research Scholar Award, American Cancer Society, 2003
Chancellor's Award for Excellence in Undergraduate Research, 1999
NSF CAREER Award, 1997
NSF Postdoctoral Fellowship, 1994
NSF-NATO Postdoctoral Fellowship, 1993
Hoechst Celanese Research Excellence Award, 1993
IUCCP Fellow, Texas A&M University

Professional Affiliations

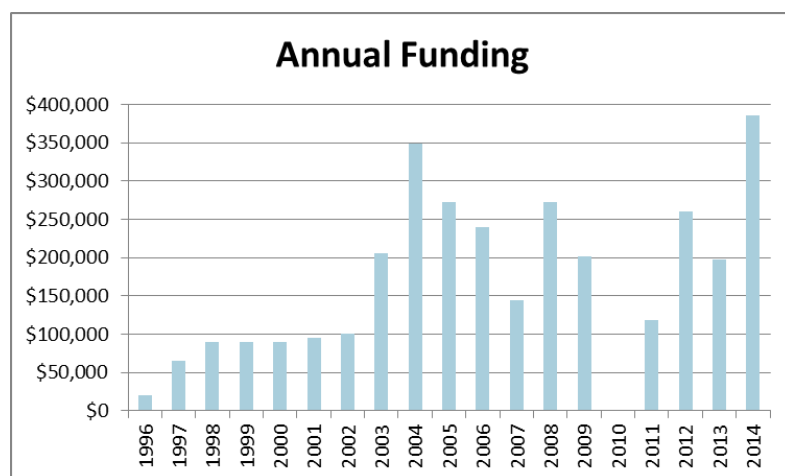
American Chemical Society
 Society for Free Radical Biology and Medicine
 PanAmerican Society of Pigment Cell Researcher

Professional Service

Organizer of "Baylor Biomedical Research Collaborative"	2016
Co-organizer of PASPCR meeting, Anaheim	2015
Co-organizer of ACS SWRM, Waco	2013
Organizer "Enhancing Research through Collaboration Retreat"	2013
Co-editor special edition <i>J. Inorg. Chem.</i>	2012-13
Organizer/Host Stone Symposium at Baylor	2010-12
Panelist NIH MSFA Study Section	2010
Organizer/Session Co-chair, Pacificchem, Honolulu	2010
Organizer/Session Co-chair, ACS National Meeting, Salt Lake City	2009
Session Chair, Gordon-Kenan Graduate Seminar in Bioinorganic Chemistry	2008
Panelist NIH MSFA Study Section	2008
Organizer/Session Chair, PASPCR, Newport Beach	2004
Organizer and Session Chair, ACS Western Regional, Ontario	1999

University Service

Chair, Department of Chemistry and Biochemistry	2009-
Global Challenges Committee	2015-
STEM & Humanities Symposium Committee	2104-
Search committee for Biology Chair	2012-14
Carnegie VHR committee	2012-
Search committee for Microscopy Center Director	2013-14
Led Summer Undergraduate Research Program	2012-14
Co-Director, Translational Oncology / Structural Biology Chao Family Cancer Center	2005- 09
COSMOS cluster organizer/teacher	2004- 05
Chair of EPR Oversight Committee	2003- 09
Chair of Laser Facility Oversight Committee	2002- 05
Inorganic Graduate Advisor	2000- 08
Departmental Undergraduate Academic Advisor	1997- 00
Departmental Assemblyman	1995- 97

Research Support**ACTIVE**

CHE 1359231 (Charles Garner PI, Kevin Klausmeyer, Patrick Farmer coPIs)
 National Science Foundation 9/1/14 – 8/31/17
 Title: An Advanced Instrumentation Emphasis REU – Baylor University
 Project Goal: to fund summer undergraduate research program at Baylor.
 \$269,285

IDBR (Touradj Solouki, PI; Kevin Chambliss, Patrick Farmer co-PIs)
 National Science Foundation 1/1/15 – 12/31/18
 Title: TYPE A Ultrahigh Spatial Resolution Sub-organelle Molecular Mass Spectrometry Imaging
 Using Liquid Metal Ion Beam Desorption and Radiofrequency Ionization
 Project Goal: to couple ion beam to RFI ICR MS for biomedical applications
 \$236,382

COMPLETED

ACS PRF 51921-ND3 (Patrick Farmer, PI)
 ACS Petroleum Research Fund 7/01/2012-8/31/2015 (no cost extension)
 Title: Photochemistry and Reactivity of Heterosubstituted Maltol Chelates
 Project Goal: to synthesize new family of photoactive metal complexes using maltol-derivatives as
 electron-donors.
 \$100,000

CHE 1057942 (Patrick Farmer, PI)
 National Science Foundation 06/01/2011 – 05/31/2015 (no cost extension)
 Title: Heme protein catalysis and the biocoordination chemistry of HNO
 Project Goal: to examine the chemical reactivity of HNO with metalloproteins and metal complexes.
 \$420,000

CHE 1428729 (Patrick Farmer, PI, with others)
 National Science Foundation 1/1/15 – 12/31/15
 Title: MRI: Acquisition of Bruker EMXplus series EPR Spectrometer
 Project Goal: to purchase EPR spectrometer to support departmental research.
 \$241,989

Synergistic Activities

- **Strongly committed to undergraduate research;** received the UC Irvine Chancellor's Award for Excellence in Undergraduate Research in 1999 for accomplishment in fostering undergraduate research. I have sponsored over fifty undergraduate grants supporting undergraduates' research from the Undergraduate Research Opportunities, Beckman Scholar, Minority Biomedical Research Support (MBRS) and Chao Cancer Center programs at UCI, and the Glasscock Fellowship in Renewable Energy at Baylor. Many of my undergraduate researchers have gone onto graduate studies in chemistry: Jonathan Keim, Chemistry, Fullbright Fellow U. Nottingham, England (14); Veronica Lyons, Chemistry, TTU (14); Jarett Martin, Chemistry, TAMU (13); LaTraia Scott, Medicine, Uniformed Services U (13); Emily Schmidt, Biochemistry, Tulane (12); Paul Derry, Chemistry, Rice (11); Philip Yuen, Chemistry, UC Davis (10); Alyssia Lilio, Chemistry, UCSD (08); Jaheed Momand, Chemistry UIUC (07); Patrick Erwin, Chemistry, USC (07); Mikael Backlund, Chemistry, Stanford (07); Alex Lichtscheidl, Chemistry, MIT (06); Kristine Tanabe, Chemistry, UCSD (06, now at Argonne National Lab); Beth Pineles, Medicine, Wayne St. (05); Kian Kolahi, Chemistry, CSULB (04); Ilia Korboukh, Biochemistry, Penn State (03); Jason Midyett, Chemistry, UCI (03); Sarah Mutch, Chemistry, U Washington (02); Michelle Tran, Chemistry, Boston College (01); Philip Kong, Pharm D., UCSF (01); Gregory Qushair, Chemistry, U Barcelona (00); Mike Cohen, Biochemistry, UCSF (00, now an Asst. Prof. at Oregon Health Sciences University).

Researchers and advisees

Ph.D. dissertations: Rong Lin, **2000** (research scientist, Dionex); Chad Immoos, **2001** (Assoc. Professor at CalPoly, San Luis Obispo); Shirley Gidanian, **2003**; Filip Sulc, **2006** (research consultant, Bioedge, Inc.); Szeman Ng, **2006**; Dan Brayton, **2006** (U. Hawai'i at Manoa), Emek Blair, **2006** (R&D chemist - Hach Ultra Analytics); Dmitry Pervitsky, **2008** (staff scientist, Walter Reed Army Institute); Malin Backlund, **2009** (consultant, ALEKS); Britain Bruner, **2104** (Chemist, Office of Hazardous Materials, US-DOT); Adrian Zapata, **2106** (Asst. Prof. Schriener U.)

Current graduate students: Carrie Poe, Xiaozhen Han, Michael Spiegel, Ottis Scrivner.

M.S. degrees: Dan Brayton, **2002**; Chrissie Moore, **2003**; Mallory Mentelle, **2007**; Bob Shahandeh, **2007**; Lan Chen, **2008**; Rebecca Younger, **2009**; Patricia Diamond **2011**, Long Dao, **2013**, Tara Clover, Michelle del'Homme, **2014**.

B.S. Honors Theses: Zach Sartor, **2012**; Don Gray, **2012**, Azaan Ramani, **2013**, Jonathan Keim, **2014**.

Current postdoctoral researchers: Dr. Muganesson Ravi Kumar.

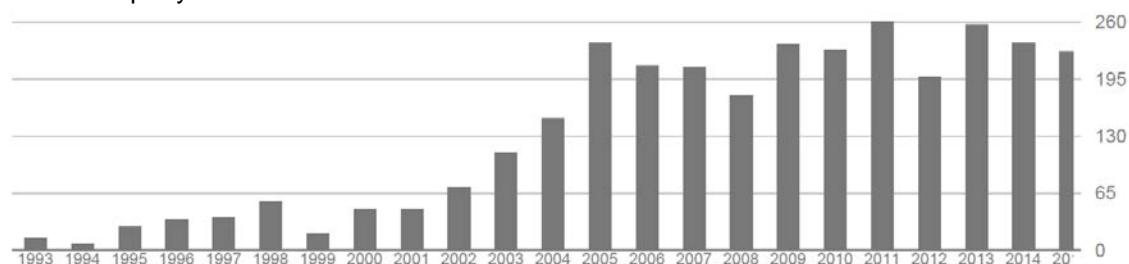
Former postdocs: Mekki Bayachou (Professor, Cleveland State U.), Wei Liu (Assoc. Professor, Chinese National Academy of Sciences), Lei Chen, Joann You, Ju Chou (Asst. Professor, Southeastern Mississippi U.), Fabio de Silva Miranda (Asst. Professor, U. Federal Fluminense, Brazil), Elky Almaraz, Weigang Lu, Jagannath Bhuyan (Asst. Professor, North East Regional Institute of Science and Technology Nirjuli, India).

Publication Record

Google Scholar report as of September 8, 2016

Citation indices	All	Since 2011
Citations	3355	1368
h-index	34	21
i10-index	56	40

Citations per year



Peer-reviewed Journal Articles

- 76) "Characterization of the Initial Intermediate Formed during Photoinduced Oxygenation of the Ruthenium(II) Bis(bipyridyl)flavonolate Complex" Han, X.; Klausmeyer, K.K.; Farmer, P.J. *Inorg. Chem.* **2016** *55*, 7320-7322.
- 75) "Nitroxygenation of quercetin by HNO" Han, X.; Kumar, M.R.; Farmer, P.J. *Tet. Lett.* **2016** *57*, 399-402.
- 74) "Viewpoint: Amyloids, Melanins and Oxidative Stress in Melanomagenesis" Liu-Smith, F.; Poe, C.; Farmer, P.J.; Meyskens, F.L., Jr. *Exper. Dermatol.* **2015** *24*, 171-174.
- 73) "Ligand-based Photooxidations of [Ru(bpy)₂(ttma)]⁺ and Zn(ttma)₂" Bruner, B.; Walker, M. B.; Zhang, D.; Selke, M.; Ghimire, M. M. M.; Omary, M. A.; Klausmeyer, K.; Farmer, P. J. *Dalton Trans.* **2014**, 43,11548-11557.
- 72) "A singular variable decomposition approach for kinetic analysis of reactions of HNO with myoglobin" Zapata, A.; Pervitsky, D.; Kumar, M.R.; Farmer, P.J. *J. Inorg. Biochem.* **2013**, *118*, 171-178.
- 70) "Synthesis and characterization of lithium oxonitrate (LiNO)" Switzer, C.H.; Miller, T.W.; Farmer, P.J.; Fukuto, J.M. *J. Inorg. Biochem.* **2013**, *118*, 128-133.
- 69) "Kinetic Characterization of a Slow-Binding Inhibitor of Bla2: Thiomaltol" Schlesinger, S.R.; Bruner, B.; Farmer, P.; Kim, S.-K. *J. Enz. Inhib. Med. Chem.* **2013**, *28*, 137-142.
- 68) "Studies on synthetic and natural melanin and its affinity for Fe(III) ion" Costa, T. G.; Younger, R.; Poe, C.; Farmer, P.J.; Szpoganicz, B. *Bioinorg. Chem. Appl.* **2012**, 712840, 9 pp.
- 67) "Direct Oxygen Imaging in Titania Nanocrystals" Lu, W.; Bruner, B.; Garcia, G.-C.; Rosales, S.J.M.; Farmer, P.J.; Jose-Yacaman, M. *Nanotechnology* **2012**, *23*, 335706.
- 66) "Probing motional behavior of eumelanin and pheomelanin by solid-state NMR: new insights into the pigment properties" Thureau, P.; Ziarelli, F.; Thévand, A.; Martin, R.W.; Farmer, P.J.; Viel, S.; Mollica, G. *Chem. Euro. J.* **2012**, *18*: 10689–10700.
- 65) "Large scale synthesis of V-shaped rutile twinned nanorods" Lu, W.; Bruner, B.; Garcia, G.-C.; He, J.; Jose-Yacaman, M.; Farmer, P.J. *CrystEngComm*, **2012**, *14*, 3120-3124.

- 64) "Nitrosyl hydride (HNO) replaces dioxygen in nitroxygenase activity of manganese quercetin dioxygenase" Kumar, M.R.; Zapata, A.; Ramirez, A.J.; Bowen, S.K.; Francisco, W.A.; Farmer, P.J. *PNAS USA*, **2011**, 108, 18926-31.
- 63) "The Coordination Chemistry of HNO: From Warren Roper to Hemoglobin" Farmer, P.J.; Kumar, M.R.; Almaraz, E. *Comm. Inorg. Chem.* **2010**, 31, 1–14.
- 62) "Reactions of HNO with Heme Proteins: New Routes to HNO–Heme Complexes and Insight into Physiological Effects" Kumar, M.R.; Fukuto, J.M.; Miranda, K.M.; Farmer, P.J. *Inorg. Chem.* **2010**, 6283–6292.
- 61) "Pattern of Expression and Substrate Specificity of Pattern of Expression and Substrate Specificity of Chlamydomonas Chloroplast Ferredoxins" Aimee Terauchi, A.; Lu, S.F.; Zaffagno, M.; Tappa, S.; Hirasawa, M.; Tripathy, J.N.; Knaff, D.B.; Farmer, P.J.; Lemaire, S.; Hase, T.; Merchant, S.S. *J. Biol. Chem.* **2009**, 284, 21788-21796.
- 60) "The effects of nitroxyl (HNO) on soluble guanylate cyclase activity: Interactions at ferrous heme and cysteine thiols" Miller, T.M.; Cherney, M.E.; Franco, N.; Farmer, P.J.; King, S.B.; Hobbs, A.J.; Miranda, K.; Burstyn, J.N.; Fukuto, J.M. *J. Biol. Chem.* **2009**, 284, 21788-21796.
- 59) "Disulfiram, metals and melanoma" Backlund, M.; Edwards, K.; Farmer, P.J.; *J. Chem. Ed.* **2009**, 86, 1224-1226.
- 58) "Photo- and thermal-induced linkage isomerizations in a peroxydithiocarbamate-Ru complex" Ng, S.; Walker, M.B.; Farmer, P.J. *Inorg. Chim. Acta* **2009**, 362, 4013-4016.
- 57) "Nitrosyl hydride (HNO) as an O₂ analogue: long-lived HNO-adducts of ferrous globins" Kumar, M.R.; Pervitsky, D.; Chen, L.; Poulos, T.L.; Kundu, S.; Hargrove, M.S.; Rivera, E.J.; Colón, J.M.; Farmer, P.J. *Biochemistry*, **2009**, 48, 5018–5025.
- 56) "Genome-wide siRNAi-based Functional Genomics of Pigmentation Identifies Regulatory Networks Governing Melanogenesis in Human Cells" Ganesan, A.K.; Ho, H.; Bodemann, B.; Petersen, S.; Aruri, J.; Koshy, S.; Richardson, Z.; Le, L.Q.; Krasieva, T.; Roth, M.G.; Farmer, P.J.; White, M.A. *PLoS Genetics*, **2008** 4, e1000298.
- 55) "Melanosomal damage in normal human melanocytes induced by UVB and metal uptake, a basis for the pro-oxidant state of melanoma" Gidanian, S.; Mentelle, M.; Meyskens, F.L. Jr., Farmer, P.J. *Photochem. Photobio.* **2008**, 84, 556-564.
- 54) "Unexpected C-H activation of Ru(II)-dithiomaltol complexes upon oxidation" Backlund, M.; Ziller, J.; Farmer, P.J. *Inorg. Chem.* **2008**, 47, 2864-2870.
- 53) "New Perspectives on Melanoma Pathogenesis and Chemoprevention" Meyskens, F.L.; Farmer, P.J.; Yang, S.; Anton-Culver, H. *Rec. Res. Cancer Research*, **2007**, 174, 191-195.
- 52) "Photolysis of the HNO Adduct of Myoglobin: Transient Generation of the Aminoxyl Radical" Pervitsky, D.; Immoos, C.; van der Veer, W.; Farmer, P.J. *J. Am. Chem. Soc.* **2007**, 129, 9590-9591.
- 51) "Oxygenation of Zinc Dialkyldithiocarbamate Complexes: Isolation, Characterization, and Reactivity of the Stoichiometric Oxygenates" Brayton, D.F.; Tanabe, K.; Khiterer, M.; Kolahi, K.; Ziller, J.; Greaves, J.; Farmer, P.J. *Inorg. Chem.* **2006**, 45, 6064 – 6072.
- 50) "The interaction of nitric oxide with distinct hemoglobins differentially amplifies endothelial heme uptake and heme oxygenase-1 expression" Foresti, R.; Bains, S.; Sulc, F.; Farmer, P.J.; Green, C.J.; Motterlini, R. *J Pharmacol Exp Ther.* **2006**, 317, 1125-1133.
- 49) "A novel heterocyclic atom exchange reaction with Lawesson's reagent: one-pot synthesis of dithiomaltol" Brayton, D.; Faith E. Jacobsen, F.E.; Cohen, S.M.; Farmer, P.J. *Chem. Comm.*, **2006**, 206 – 208.
- 48) "C₂-Symmetric nitroxides and their potential as enantioselective oxidants" Graetz, Benjamin; Rychnovsky, Scott; Leu, Wen-Hao; Farmer, Patrick; Lin, Rong. *Tetrahedron: Asymmetry* **2005**, 16, 3584-3598.

- 47) "The Putidaredoxin Reductase-Putidaredoxin Electron Transfer Complex: Theoretical and Experimental Study" Kuznetsov, V. Y.; Blair, E.; Farmer, P. J.; Poulos, T.L.; Pifferitti, A.; Sevrioukova, I.F. *J. Biol. Chem.* **2005**, *280*, 16135-16142.
- 46) "The Effect of Stacking and Redox State on Optical Absorption Spectra of Melanins- a comparison of theoretical and experimental results." Stark, K.B.; Gallas, J.M.; Zajac G.W.; Golab, J.T.; Gidanian, S.; McIntire, T.; Farmer, P.J. *J. Phys. Chem. B.* **2005**, *109*, 1970-1977.
- 45) "Bonding in HNO-Myoglobin as Characterized by X-Ray Absorbance and Resonance Raman Spectroscopies" Immoos, C.E.; Sulc, F.; Farmer, P.J.; Czarnecki, K.; Bocian, D.F.; Levina, A.; Aitken, J.B.; Armstrong, R.S.; Lay, P.A. *J. Am. Chem. Soc.*; **2005**, *127*, 814 – 815.
- 44) "Coordination Chemistry of the HNO Ligand with Hemes and Synthetic Coordination Complexes" Farmer, P.J.; Sulc, F. *J. Inorg. Biochem.* **2005**, *99*, 166-184.
- 43) "Multiple pathways for the oxygenation of a Ru(II) dithiocarbamate complex: S-Oxygenation and S-Extrusion" Ng, S.; Ziller, J.; Farmer, P.J. *Inorg. Chem.* **2004**, *43*, 8301-8309.
- 42) "Disulfiram causes intracellular Cu uptake and induces apoptosis in human melanoma cells" Cen, D.; Brayton, D.; Shahandeh, B.; Meyskens, F.L.; Farmer, P.J. *J. Med. Chem.* **2004**, *47*, 6914-6920.
- 41) "High Temperature Electrocatalysis Using Thermophilic P450 CYP119: Dehalogenation of CCl₄ to CH₄" Blair, E.; Greaves, J.; Farmer, P.J. *J. Am. Chem. Soc.* **2004**, *126*, 8632-8633.
- 40) "Electron Transfer Chemistry of Ru-linker-(heme)-modified Myoglobin: Rapid Intraprotein Reduction of a Photogenerated Porphyrin Cation Radical" Immoos, C.E.; Di Bilio, A.J.; Cohen, M.S.; Van der Veer, W.; Gray, H.B.; Farmer, P.J. *Inorg. Chem.* **2004**, *43*, 3593 – 3596.
- 39) "Electrocatalytic reductions of nitrite, nitric oxide and nitrous oxide by Cytochrome P450 CYP 119" Immoos, C.E.; Chou, J.; Bayachou, M.; Blair, E.; Greaves, J.; Farmer, P.J. *J. Am. Chem. Soc.* **2004**, *126*, 4934-4942.
- 38) "Etiologic Pathogenesis of Melanoma: A Unifying Hypothesis for the Missing Attributable Risk" Meyskens, F.L.; Farmer, P.J.; Anton-Culver, H. *Clin. Canc. Res.* **2004**, *10*, 2581-2583.
- 37) "Efficient Trapping of HNO by Deoxymyoglobin" Sulc, F.; Immoos, C.; Pervitsky, D. Farmer, P.J. *J. Amer. Chem. Soc.* **2004**, *125*, 1096-1101.
- 36) "Melanin as a target for melanoma chemotherapy: pro-oxidant effect of oxygen and metals on melanoma viability." Farmer, P.J.; Gidanian, S.; Shahandeh, B.; Di Bilio, A.J.; Tohidian, N.; Meyskens, F.L.; *Pigment Cell. Res.* **2003**, *16*, 273-279.
- 35) "A Novel Heme and Peroxide-Dependent Tryptophan-Tyrosine Cross-link in a Mutant of Cytochrome c Peroxidase" Bhaskar, B.; Immoos, C.E.; Shimizu, H.; Sulc, F.; Farmer, P.J.; Poulos, T.L. *J. Mol. Biol.* **2003**, *328*, 157-166.
- 34) "¹H NMR Structure of the Heme Pocket of HNO-Myoglobin" Sulc, F.; Fleischer, E.; Farmer, P.J.; Ma, D.; La Mar, G. *J. Biol. Inorg. Chem.* **2003**, *8*, 348-352.
- 33) "Direct Assessment of the Reduction Potential of the [4Fe-4S]^{1+/0} Couple of the Nitrogenase Fe Protein from *Azotobacter vinelandii*" Guo, M.; Sulc, F.; Ribbe, M.W.; Immoos, C.E.; Farmer, P.J.; Burgess, B.K. *J. Amer. Chem. Soc.* **2002**, *124*, 2100-2120.
- 32) "The reduction potential of nitric oxide (NO) and its importance to NO biochemistry" Bartberger, M.D.; Liu, W.; Ford, E.; Miranda, K.M.; Switzer, C.; Fukuto, J.M.; Farmer, P.J.; Wink, D.A.; Houk K. N. *Proc. Nat. Acad. Sci.* **2002**, *99*, 10958-10963.
- 31) "Mesopone Cytochrome C Peroxidase: Functional Model of Heme Oxygenated Oxidases" Immoos, C.E.; Bhaskar, B.; Cohen, M.S.; Barrows, T.P.; Farmer, P.J.; Poulos, T.L. *J. Inorg. Biochem.* **2002**, *91*, 635-643.
- 30) "Enhanced electron transfer and lauric acid hydroxylation by site-directed mutagenesis of CYP119" Koo, L.S.; Immoos, C.E.; Cohen, M.S.; Farmer, P.J.; de Montellano, P.R.O. *J. Am. Chem. Soc.* **2002**, *124*, 5684-5691.
- 29) "Redox Behavior of Melanins: Direct Electrochemistry of DHI-melanin and its Cu and Zn Adducts " Gidanian, S.; Farmer, P.J. *J. Inorg. Biochem.* **2002**, *89*, 54-60.

- 28) "Metal Binding by Melanins: Studies of Colloidal DHI-Melanin, and its Complexation by Cu(II), and Zn(II) Ions " Szpoganicz, B.; Gidanian, S.; Kong, P.; Farmer, P.J. *J. Inorg. Biochem.* **2002**, *89*, 45-53.
- 27) "The influence of β - and γ -Cyclodextrin cavity size on the association constant with Decanoate and Octanoate anions" Meier, M.M.; Bordignon-Luiz, M.T.; Farmer, P.J.; Szpoganicz, B. *J. Inclusion Phenomena* **2001**, *1*, 291-295.
- 26) "Redox Regulation in Human Melanocytes and Melanoma" Meyskens, F.L.; Farmer, P.J.; Fruehauf, J. *Pigment Cell Res.*, **2001**, *14*, 148-154.
- 25) "O-Atom Transfer from Nitric Oxide Catalyzed by Fe(TPP)" Lin, R.; Farmer, P.J. *J. Am. Chem. Soc.* **2001**, *123*, 1143 -1150.
- 24) "Unusual voltammetry of manganese-substituted myoglobin in surfactant film: evidence for two redox pathways" Lin, R.; Immoos, C.; Farmer, P.J. *J. Biol. Inorg. Chem.* **2000**, *5*, 738-747.
- 23) "Electron Transfer in the Ruthenated Heme Domain of Cytochrome P450BM-3" Sevrioukova, I.F.; Immoos, C.E.; Poulos, T.L.; Farmer, P.J. *Isr. J. Chem.* **2000**, *40*, 47-53.
- 22) "The HNO Adduct of Myoglobin: Synthesis and Characterization" Lin, R.; Farmer, P.J. *J. Am. Chem. Soc.* **2000**, *122*, 2393 -2394.
- 21) "Catalytic Two-electron Reductions of N_2O and N_3^- by Myoglobin in Surfactant Film" Bayachou, M.; Elkbir, L.; Farmer, P.J. *Inorg. Chem.* **2000**, *39*, 289-293.
- 20) "AM1-SM2 calculations model the redox potential of nitroxyl radicals such as TEMPO" Rychnovsky, S. D.; Vaidyanathan, R.; Beauchamp, T.; Lin, R.; Farmer, P. J. *J. Org. Chem.* **1999**, *64*, 6745-6749.
- 19) "Electrochemical Reduction of NO by Myoglobin in Surfactant Film: Characterization and Reactivity of the Nitroxyl (NO-) Adduct" Bayachou, M.; Lin, R.; Cho, W.; Farmer, P. J. *J. Am. Chem. Soc.* **1998**, *120*, 9888-9893.
- 18) "1,5-Diazacyclooctane, Pendant Arm Thiolato Derivatives and [N,N'Bis(2-Mercaptoethyl)-1,5-Diazacyclooctanato]Nickel(II)" Mills, D.K.; Font, I.; Farmer, P.J.; Hsiao, Y.-M.; Tuntulani, T.; Buonomo, R.M.; Goodman, D.C.; Musie, G.; Grapperhaus, C.A.; Maguire, J.J.; Lai, C.-H.; Hatley, M.L.; Smee, J.J.; Bellefeuille, J.A.; Darensbourg, M.Y. *Inorg. Synth.* **1998**, *32*, 89.
- 17) "Electrochemistry and catalysis by myoglobin in surfactant films." Farmer, PJ; Lin, R; Bayachou, M. *Comm. Inorg. Chem.* **1998**, *20*, 101-120.
- 16) "Nitrite Reduction by Myoglobin in Surfactant Films," Lin, R.; Bayachou, M.; Farmer, P.J. *J. Am. Chem. Soc.* **1997**, *119*, 12689-12690.
- 15) "A Coordination Polymer of Nickel(II) Based on a Pentadentate N,S, and O donor Ligand" Goodman, D.C.; Farmer, P.J.; Darensbourg, M.Y.; Reibenspies, J.H. *Inorg. Chem.* **1996**, *35*, 4989.
- 14) "Polydentate N_2S_2O and $N_2S_2O_2$ Ligands as Alcoholic Derivatives of (N,N'-Bis(2-mercaptoethyl)-1,5-diazacyclooctane)nickel(II) and of (N,N'-Bis(2-mercapto-92-methylpropane)-1,5-diazacyclooctane)nickel(II)" Goodman, D.C.; Buonomo, P.M.; Farmer, P.J.; Reibenspies, J.H.; Darensbourg, M.Y. *Inorg. Chem.* **1996**, *35*, 4029.
- 13) "Intramolecular Electron-Transfer in Cyanide-Bridged Ruthenium Dimers" Ponce, A.; Bachrach, M.; Farmer, P.J.; Winkler, J.R. *Inorg. Chim. Acta* **1996**, *243*, 135.
- 12) "Influence of Sulfur Metallation on the Accessibility of the NiII/I Couple in N,N'-Bis[mercaptoethyl]-1,5-diazacyclooctanenickel(II): Insight into the Redox Properties of [NiFe]-Hydrogenase" Musie, G.; Farmer, P.J.; Tuntulani, T.; Reibenspies, J.H.; Darensbourg, M.Y. *Inorg. Chem.* **1996**, *35*, 2176.
- 11) "Strategies for the Generation of Ferryl Heme Intermediates by Photoinduced Electron Transfer" Berglund, J.; Farmer, P.J.; Low, D.W.; Pascher, T.; Winkler, J.R.; Gray, H.B. *J. Inorg. Biochem.* **1995**, *59*, 467.
- 10) "Reduction-Promoted Sulfur-Oxygen Bond Cleavage in a Nickel Sulfenate as a Model for the Activation of [NiFe] Hydrogenase" Farmer, P.J.; Verpequx, J.N.; Amatore, C.; Darensbourg, M.Y.; Musie, G. *J. Am. Chem. Soc.* **1994**, *116*, 9355.

- 9) "Divergent Pathways for the Addition of Dioxygen to Sulfur in Nickel cis-Dithiolates: An Isotopomeric Analysis" Farmer, P.J.; Solouki, T.; Soma, T.; Russell, D.H.; Darensbourg, M.Y. *Inorg. Chem.* **1993**, *32*, 4171.
- 8) "The Mechanism of O₂ Addition to Ni-bound Thiolates" Darensbourg, M.Y.; Farmer, P.J.; Soma, T.; Russell, D.H.; Solouki, T.; Reibenspies, J.H. in *The Activation of Dioxygen and Homogeneous Catalytic Oxidation*; D.H.R. Barton, A.E. Martell, and D.T. Sawyer, Ed.; Plenum Press: New York, **1993** p. 209.
- 7) "Effects of Sulfur-Site Modification on the Redox Potentials of Derivatives of N,N'-Bis[mercaptoethyl]-1,5-diazacyclooctanenickel(II)" Farmer, P.J.; Reibenspies, J.H.; Lindahl, P.A.; Darensbourg, M.Y. *J. Am. Chem. Soc.* **1993**, *115*, 4665.
- 6) "Introduction of Axial Ligation into Diazacyclooctane nickel and -Zinc Complexes" Goodman, D.C.; Tuntulani, T.; Farmer, P.J.; Darensbourg, M.Y.; Reibenspies, J.H. *Angew. Chem. Int. Ed. Engl.*, **1993**, *32*, 69-72.
- 5) "Preparation and Structures of a Zinc(II) Dimer and Zinc(II) Pentanuclear Derivatives of N,N'-Bis(mercaptoethyl)-1,5-diazacyclooctane: [(BME-DACO)Zn]₂ and {[(BME-DACO)Ni]₃[ZnCl]₂}{BF₄]₂" Tuntulani, T.; Reibenspies, J.H.; Farmer, P.J.; Darensbourg, M.Y. *Inorg. Chem.* **1992**, *31*, 3497.
- 4) "Isotopic Labeling Investigation of the Oxygenation of Nickel-Bound Thiolates by Molecular Oxygen" Farmer, P.J.; Solouki, T.S.; Mills, D.K.; Soma, T.; Russell, D.H.; Reibenspies, J.H.; Darensbourg, M.Y. *J. Am. Chem. Soc.* **1992**, *114*, 4601.
- 3) "Applications of the N₂S₂ Ligand, N,N'-Bis(mercaptoethyl)-1,5-diazacyclooctane, toward the Formation of Bi- and Heterometallics: [(BME-DACO)Fe]₂ and [(BME-DACO)NiFeCl₂]₂" Mills, D.K.; Hsiao, Y.M.; Farmer, P.J.; Atnip, E.V.; Reibenspies, J.H.; Darensbourg, M.Y. *J. Am. Chem. Soc.* **1991**, *113*, 1421.
- 2) "Cation-Dependence of the Self-Association Behavior of Guanylyl-(3'-5')-Guanosine" Walmsley, J.A.; Schneider, M.L.; Farmer, P.J.; Cave, J.R.; Toth, C.R.; Wilson, R.M. *J. Biomol. Struct.* **1992**, *10*, 619-638.
- 1) "Hydrogen Bonding between Guanosine 5'-Monophosphate and Coordinatively Saturated Cobalt(III) and Platinum (II) Ammine and Ethylenediamine Complex Cations" Farmer, P.J.; Cave, J.R.; Fletcher, T.M.; Rhubottom, J.A.; Walmsley, J.A. *Inorg. Chem.* **1991**, *30*, 3414.

Published Book Chapters

1. "Spectroscopic NMR characterizations of HNO adducts of ferrous heme proteins" Kumar, M.R.; Farmer, P.J. The Chemistry and Biology of Nitroxyl (HNO), F. Doctorovich, P.J. Farmer, M. Marti eds., Elsevier, Amsterdam, Netherlands **2016**, Chp. 14, pp. 269-286.
2. "Global kinetic analysis and singular value decomposition methods applied to complex multicomponent reactions of HNO" Zapata, A.L.; Kumar, M.R.; Farmer, P.J. The Chemistry and Biology of Nitroxyl (HNO), F. Doctorovich, P.J. Farmer, M. Marti eds., Elsevier, Amsterdam, Netherlands **2016**, Chp. 15, pp. 287-304.
3. "HNO as an Oxygen Substitute in Enzymes" Han, X.; Farmer, P.J. The Chemistry and Biology of Nitroxyl (HNO), F. Doctorovich, P.J. Farmer, M. Marti eds., Elsevier, Amsterdam, Netherlands **2016**, Chp. 16, pp. 305-320.
4. "Bioinorganic Chemistry of the HNO ligand" Farmer, P.J.; Sulc, F. in The Smallest Biomolecules: Diatomics and their interactions with heme proteins, A. Ghosh, ed., Elsevier, Amsterdam, Netherlands **2007**, Chp. 16, pp. 429-462.
5. "Biomimetic NO_x Reductions by Heme Models and Proteins" Blair, E.; Sulc, F.; Farmer, P.J. N₄ Macrocyclic Metal Complexes, J. H. Zagal, F. Bedioui, J. P. Dodelet eds. Springer, **2006**, Chp. 4, pp. 149-190.
6. "Targeting Melanoma via Metal-based Stress" Farmer, P.J.; Brayton, D.; Moore, C.; Williams, D.; Shahandeh, B.; Cen, D.; Meyskens, F.L. in ACS Monograph Series 903, Medicinal Inorganic Chemistry, J. Sessler, S.R. Doctrow, T.J. McMurry, S. J. Lippard eds. Oxford University Press, **2005**, Chp. 22, pp. 400-413.

7. "Mechanism of dioxygen addition to nickel-bound thiolates" Darensbourg, M.Y.; Farmer, P.J.; Soma, T.; Russell, D.H.; Solouki, T.; Reibenspies, J.H. in Act. Dioxygen Homogeneous Catal. Oxid., Barton, D.H.R.; Martell, A.E.; Sawyer, D.T. eds. **1993**, pp. 209-23.

Patents

1. "Aldehyde dehydrogenase inhibitors as novel depigmenting agents" Ganesan, Anand; White, Michael A.; Farmer, Patrick J. *U.S. Pat. Appl. Publ.* **2013**, US 2013/0101535 A1.
2. "Aldehyde dehydrogenase inhibitors as novel depigmenting agents" Ganesan, Anand; White, Michael A.; Farmer, Patrick J. *U.S. Pat. Appl. Publ.* **2010**, US 2010/0227920 A1 20100909.

Published Letters and Reviews

1. "The Intricate Puzzle of HNO Chemistry" Patrick J. Farmer, Fabio Doctorovich. *J. Inorg. Biochem.* **2013**, 118, 107.
2. Advances in Inorganic Chemistry, Volume 42, ed. Sykes, A.G. (The University Newcastle-upon-Tyne). Farmer, P. book review, *J. Am. Chem. Soc.* **1997**, 119, 5771-5772.