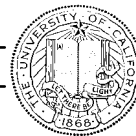


## UNIVERSITY OF CALIFORNIA, IRVINE

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SANTA BARBARA • SANTA CRUZ

## Patrick J. Farmer

### *Bioinorganic and Redox Chemistry*

Professor of Chemistry  
 University of California, Irvine  
 Irvine, CA 92697-2025  
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### 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 -

### Honors and Awards

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

### Professional Affiliations

- American Chemical Society
- Electrochemical Society
- Chao Family Cancer Center
- Society for Free Radical Biology and Medicine
- American Society of Pigment Cell Researchers

**University and Professional Service**

Co-Director, Translational Oncology / Structural Biology Chao Family Cancer Center	2005 - present
COSMOS cluster organizer/teacher	2004 - 2006
Organizer/Session Chair, PASPCR, Newport Beach	2004
Chair of EPR Oversight Committee	2003 - present
Chair of Laser Facility Oversight Committee	2002 - 2005
Inorganic Graduate Advisor	2000 - present
Organizer and Session Chair, Western Regional ACS Meeting, Ontario	1999
Departmental Undergraduate Academic Advisor	1997 - 2000
Departmental Assemblyman	1995-97

**Current Funding**

“Targeting Melanoma by Metal-Induced Oxidative Stress”  
American Cancer Society, 7/01/03-6/30/07

“S-Oxygenation of Dithiocarbamate Metal Complexes”  
Agency: Petroleum Research Fund, 6/1/03-12/31/06

“Reductive Heme Protein Catalysis”  
National Science Foundation, 9/30/05-10/01/08

“Application of Solid State NMR to the Structure of Melanin”  
Agency: UCI/CORCLR, 7/1/06-6/30/07

**Invited Lectures****2006 *upcoming***

ACS Western Regional Meeting, Anaheim  
Osher Lifelong Learning Institute  
California State University, Fullerton  
University of Texas, San Antonio  
*International Conference of Porphyrins and  
Phthalocyanines, Rome*  
*XIII Brazilian Meeting on Inorganic Chemistry*  
*University of Arizona*

California State University, Los Angeles  
University of Wisconsin-Madison  
University of Wisconsin-Milwaukee  
Marquette University  
University of Puerto Rico  
ACS National Meeting, Washington  
International Pigment Cell Conference,  
Reston, Virginia

**2005**

San Diego State University  
Inorganic Reaction Mechanisms, GRC  
University of California, San Diego  
University of California, Riverside  
ACS National Meeting, San Diego  
Georgia Tech University  
Vanderbilt University  
University of Louisville

**2004**

NIOSH Conference on Metal Toxicity and  
Carcinogenesis  
International Conference of Porphyrins and  
Phthalocyanines, New Orleans  
Stouffer Symposium, USC  
Mesilla Chemistry Workshop on NO  
PanAmerican Soc. Pigment Cell Res.  
University of California, Irvine  
California State University, Long Beach

**2003**

Cleveland State University  
Kent University  
University of Akron  
National Meeting of the ECS, Orlando  
ACS National Meeting, New York  
NSF Inorganic Workshop, Moran, Wyoming  
Inter. Symp. Applied Bioinorganic Chemistry,  
Guanajuato, Mexico  
University of California, Santa Cruz

**2002**

Chao Cancer Center Conference, Palm Springs  
Inter. Pigment Cell Society Meeting, Egmond  
aan Zee, Holland

**2001**

ACS Pacific Regional Meeting, Santa Barbara  
ACS National Meeting, San Diego  
Chao Family Cancer Center Retreat, Oxnard  
National Meeting of the ECS, San Francisco  
University of Washington

**2000**

California Institute of Technology  
University of California, Irvine  
Duke University  
University of North Carolina, Chapel Hill  
University of South Carolina  
International Conference of Porphyrins and  
Phthalocyanines, Dijon  
University of Chicago  
Iowa State University  
University of Illinois, Urbana/Champaign  
ACS National Meeting, San Francisco  
Arizona State University  
Johns Hopkins University

**Publications**

53) "Oxygenation of Zinc Dialkyldithiocarbamate Complexes: isolation, characterization and reactivity of the stoichiometric oxygenates" Brayton, D; Tanabe, K; Khiterer, M; Kolahi, K; Ziller, J; Greaves, J; Farmer, P.J. *in press Inorg. Chem.*

52) "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** online Feb 22.

Princeton University  
University of Delaware  
California State University, Los Angeles  
University of California, Berkeley  
University of California, Davis  
Stanford University  
University of California, Los Angeles

**1999**

University of Texas, San Antonio  
Texas Tech University  
Oklahoma State University  
University of Oklahoma  
San Diego State University  
University of Houston  
Texas A&M University  
Rice University  
National Meeting of the ECS, Seattle  
ACS National Meeting, Anaheim  
University of California, San Diego  
University of California, Santa Barbara

**1998**

Occidental College  
University of California, Irvine  
California State University at Long Beach  
ICCC, Electrochemistry Satellite Meeting,  
Siena

**1997**

University of Southern California  
Pacific Conference on Chemistry and  
Spectroscopy, Irvine  
ACS National Meeting, Las Vegas  
NSF Organometallic Workshop  
Polymer Science Lecture Series, University  
of Akron

- 51) "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. Commun.* **2006**, 206 – 208.
- 49) "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 CCl<sub>4</sub> to CH<sub>4</sub>" 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) "<sup>1</sup>H 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]<sup>1+/0</sup> 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*, 2100-2101.
- 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  $\beta$ - and  $\gamma$ -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.; Verpeux, 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 O<sub>2</sub> 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) "Axial Ligation of Diazacyclooctanenickel and -Zinc Complexes" Goodman, D.C.; Tuntulani, T.; Farmer, P.J.; Darensbourg, M.Y.; Reibenspies, J.H. *Angew. Chem.* **1993**, *32*, 116.

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]<sub>2</sub> and {(BME-DACO)Ni}<sub>3</sub>[ZnCl]<sub>2</sub>} {BF<sub>4</sub>}<sub>2</sub>" 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 N<sub>2</sub>S<sub>2</sub> Ligand, N,N'-Bis(mercaptoethyl)-1,5-diazacyclooctane, toward the Formation of Bi- and Heterometallics: [(BME-DACO)Fe]<sub>2</sub> and [(BME-DACO)NiFeCl<sub>2</sub>]<sub>2</sub>" 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.* **1991**, *10*, 619.

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 Letters and Notes**

1. "Properties of Melanin and Melanosomes" Pat Farmer, notes on the XIIth Annual Meeting of the PanAmerican Society of Pigment Cell Researchers, Newport Beach, in the PASPCR Newsletter **2004**, *3*, 12.

2. “Diet and Melanoma in a Case-control Study” Frank L. Meyskens, F.L.; Farmer, P. J.; Anton-Culver, H. *Cancer Epidemiology, Biomarkers & Prevention* **2005** 14, 293.

### **Published Book Chapters**

1. “Biomimetic NO<sub>x</sub> Reductions by Heme Models and Proteins” Blair, E.; Sulc, F.; Farmer, P.J. invited chapter in N<sub>4</sub>-Macrocyclic Metal Complexes, Kluwer, J. Zagal, F. Bedioui & J. P. Dodelet, eds. *accepted*.
2. “Targeting Melanoma via Metal-based Stress” Farmer, P.J.; Brayton, D.; Moore, C.; Williams, D.; Shahandeh, B.; Cen, D.; Meyskens, F.L. 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.

### **Published Meeting Abstracts**

1. “Synthesis and design of metal based drugs: targeting melanoma cancer” Daniel F. Brayton, Patrick J. Farmer Abstracts of Papers, 40th Western Regional Meeting Anaheim/Orange, California January 22-25, **2006**.
2. “Kinetic Analysis of the Reactions of HNO and Nitrite with Deoxymyoglobin and Thiols” Patrick J. Farmer, Filip Sulc Abstracts of Papers, 40th Western Regional Meeting Anaheim/Orange, California January 22-25, **2006**.
3. “Electrochemical Degradation of C1 and C2 Halocarbon by Immobilized P450 CYP119 in Extreme Temperature and pH Environments” Emek Blair, Patrick Farmer Abstracts of Papers, 40th Western Regional Meeting Anaheim/Orange, California January 22-25, **2006**.
4. “Synthesis of cumertilin derivatives for the treatment of melanoma cancerous cells” Alejandro Lichtscheidl, Malin M. Backlund, and Patrick J. Farmer. Abstracts of Papers, 40th Western Regional Meeting Anaheim/Orange, California January 22-25, **2006**.
5. \* “Reactivity studies related to metal-based drugs” Malin Backlund and Patrick J. Farmer. Abstracts of Papers, 40th Western Regional Meeting Anaheim/Orange, California January 22-25, **2006**.
6. “Copper dependence of selective DSF toxicity towards melanoma” Daniel F. Brayton, Patrick J. Farmer, Babbak Shahandeh, Dazhi Cen, Frank Meyskens, Jr., AACR 96<sup>th</sup> annual meeting, Anaheim, CA, April 16 - 20, **2005**.
7. “Possible contribution of copper to UVB induced carcinogenesis in melanocytes by amplifying oxidative effect of UVB on melanosomes” Gidanian, S., Farmer, P.J. and Meyskens, F.L. AACR 96<sup>th</sup> annual meeting, Anaheim, CA, April 16-20, **2005**.
8. “Metallo-thione compounds that target melanoma” Patrick J. Farmer, Daniel F. Brayton, Babbak Shahandeh, and Frank Meyskens Jr., AACR 96<sup>th</sup> annual meeting, Anaheim, CA, April 16 - 20, **2005**.
9. “Physical properties and reactivity with small molecules of nitroxyl myoglobin (Mb-HNO).” Sulc, Filip; Bariya, Arpita; Farmer, Patrick J. Abstracts of Papers, 229th ACS National Meeting, San Diego, CA, United States, March 13-17, **2005**, INOR-297.
10. “Potential dependant phase transition in surfactant film-modified electrodes.” Blair, Emek; Farmer, Patrick J. Abstracts of Papers, 229th ACS National Meeting, San Diego, CA, United States, March 13-17, **2005**, INOR-214.
11. “Metallo-thione compounds that target melanoma.” Farmer, Patrick J.; Brayton, Daniel F.; Shahandeh, Babbak; Meyskens, Frank. Abstracts of Papers, 229th ACS National Meeting, San Diego, CA, United States, March 13-17, **2005**, INOR-121.
12. “Copper specificity: Targeting melanoma via metal-based stress.” Brayton, Daniel F.; Farmer, Patrick J.; Shahandeh, Babbak; Cen, Dazhi; Meyskens, Frank. Abstracts of Papers, 229th ACS National Meeting, San Diego, CA, United States, March 13-17, **2005**, INOR-120.

13. "Phase Dynamics of DDAB Films" Emek Blair, Patrick J. Farmer ECS National Meeting, Honolulu, October 4, **2004**.
14. "Ligand reactivity in inert Ruthenium(II) complexes: Model of the metalation of melanin and of thiol nitration." Ng, Szeman; Ziller, Joseph W.; Farmer, Patrick. Abstracts of Papers, 229th ACS National Meeting, San Diego, CA, United States, March 13-17, **2005**, INOR-551.
15. "Electrocatalysis by Thermophilic Cytochrome P450 CYP119 in Surface-Modified Electrodes" Blair, Emek; Greaves, John; Farmer, Patrick J. TSR&TP 17th Annual Research Symposium, San Diego, CA April 23-24, **2004**.
16. "Trapping of nitroxyl by deoxy myoglobin." Sulc, Filip; Farmer, Patrick J.; Immoos, Chad E.; Pervitsky, Dmitry. 227th ACS National Meeting, Anaheim, CA, United States, March 28-April 1, **2004**, INOR-525.
17. "Melanin oxidation and possible relation to melanosomal abnormalities: effect of UVB and metals on melanosome ultrastructure and chemical properties" Gidanian, S., Farmer, P.J. and Meyskens, F.L. The XII<sup>th</sup> Annual Meeting of the Pan American Society for Pigment Cell Research, Newport Beach, CA, June 24-27, **2004**.
18. "Effect of ultraviolet B induced oxidative stress in conjugation with copper on human melanocytes and melanosomal properties" Gidanian, S., Farmer, P.J. and Meyskens, F.L. SFRBM's 11<sup>th</sup> Annual Meeting, St. Thomas, Virgin Islands, November 17-21 **2004**.
19. "Structural Investigations of DHI-Melanin Aggregates" Farmer, Patrick J.; Gidanian, Shirley; McIntire, Theresa; Moore, Christina ECS National Meeting, Orlando, October 13, **2003**.
20. "Electrocatalysis by Thermophilic Cytochrome P450 CYP119 in Surface-Modified Electrodes" Farmer, Patrick J.; Blair, Emek; Immoos, Chad; Chou, Ju ECS National Meeting, Orlando, October 14, **2003**.
21. "Trapping of nitroxyl by deoxy myoglobin." Sulc, Filip; Immoos, Chad; Pervitsky, Dmitry; Farmer, Patrick J. Abstracts, 38th Western Regional Meeting of the American Chemical Society, Long Beach, CA, **2003** 85.
22. "Sulfur-oxygenation of Ru(II) dithiocarbamate." Ng, Szeman; Farmer, Patrick J.. Abstracts, 38th Western Regional Meeting of the American Chemical Society, Long Beach, CA, **2003** 35.
23. "Targeting melanoma via metal-based oxidative stress." Farmer, Patrick J.; Brayton, Dan; Shanadaheh, Babbak; Meyskens, Frank; Cen, Dahzi. Abstracts, 38th Western Regional Meeting of the American Chemical Society, Long Beach, CA, **2003** 34.
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