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Professional Experience

- 2023 – Present Research Scientist, Carl Sagan Center, The SETI Institute, Mountain View, CA 94043
- 2015 – Present Owner, Simon Scientific (Sole Proprietor Scientific Consultancy), Richmond CA 94801
- 2010 – 2014 Full Project Scientist, Department of Chemistry / Department of Applied Science, University of California Davis, Davis CA 95616
- 2002 – 2010 Scientist, Physical Biosciences Division, Lawrence Berkeley Laboratory, Berkeley CA 94702
- 1999 – 2006 Honorary Lecturer (Adjunct Faculty), School of Chemical Sciences and Pharmacy, University of East Anglia, Norwich, U.K.
- 1998 – 2002 Senior Scientist, Department of Biological Chemistry, John Innes Centre, Norwich, U.K.
- 1994 – 1998 Scientist, Nitrogen Fixation Laboratory, John Innes Centre, Norwich, U.K. / Brighton, U.K.
- 1993 – 1998 Consultant: Structural Molecular Biology Group, Stanford Synchrotron Radiation Laboratory (SSRL), Menlo Park, CA
- 1991 – 1993 Assistant Researcher, Department of Applied Science, University of California Davis, Davis CA 95616
- 1990 – 1991 Visiting Scientist, National Synchrotron Light Source, Brookhaven National Laboratory, Upton, NY 11973
- 1988 – 1991 Staff Research Officer, School of Chemical Sciences, University of East Anglia, Norwich, U.K.
- 1986 – 1988 Postdoctoral Assistant, School of Chemical Sciences, University of East Anglia, Norwich, U.K.
- 1980 – 1982 *3 × 12-Week Summer Appointments*
Researcher, Propellants Explosives and Rocket Motor Establishment, Waltham Abbey, U.K.

Education

- 1982 – 1986 Doctor of Philosophy (Ph.D.) in Chemistry, University of East Anglia, U.K.
Thesis: “Magnetic Circular Dichroism of Iron-Sulphur Proteins”
Advisor: Prof. Andrew J. Thomson FRS, OBE
- 1979 – 1982 Bachelor of Science (B.Sc., Hons.) in Chemistry, Kings College, University of London, U.K.

Grants and Funding (recent)

Simon J. George (PI), “Laboratory Bench-Top EXAFS with STJ Spectrometer”: **\$1,283,491**

NIH 2R44GM122163-02 (SBIR Phase 2) to STAR Cryoelectronics, Santa Fe NM, Sept 15, 2019 – Mar 31, 2022

Professional Memberships

American Chemical Society
Society for Biological Inorganic Chemistry
American Association of Advancement of Science
Sigma Xi

Publication Summary

Total publications (May 27, 2025):	102
Citations (Google Scholar):	6063
<i>h</i> -index (Google Scholar):	48

Publications

102. Carbon Monoxide Chemistry of α -V70I Mo-Nitrogenase: Evidence from EPR- and IR-Monitored Photolysis – or, what a Difference a Methyl Makes
Simon J. George, Leland B. Gee, Aubrey D. Scott, Lance C. Seefeldt, Stephen P. Cramer
ChemRxiv. **2025**; <https://doi.org/10.26434/chemrxiv-2025-r2fw2>
101. Temperature-Dependent Iron Motion in Extremophile Rubredoxins – No Need for ‘Corresponding States’
Francis E. Jenney Jr., Hongxin Wang, **Simon J. George**, Jin Xiong, Yisong Guo, Leland Gee, Juan José Marizcurrena, Susana Castro-Sowinski, Anna Staskiewicz, Yoshitaka Yoda, Michael Y. Hu, Kenji Tamasaku, Nobumoto Nagasawa, Lei Li, Hiroaki Matsuura, Tzanko Doukov, Stephen P. Cramer
Sci. Rep., **2024**, *14*, 12197. <https://doi.org/10.1038/s41598-024-62261-2>
100. Facile Electrocatalytic Proton Reduction by a [Fe-Fe]-Hydrogenase Bio-Inspired Synthetic Model Bearing a Terminal CN⁻ Ligand
Abhijit Nayek, Subal Dey, Suman Patra, Atanu Rana, Pauline N. Serrano, **Simon J. George**, Stephen P. Cramer, Somdatta Ghosh Dey, Abhishek Dey
Chem. Sci., **2024**, *15*, 2167-2180. <https://doi.org/10.1039/d3sc05397k>
99. Crystallization of Extremophile Rubredoxin Proteins
M. Rumley, **S. J. George**, S. P. Cramer, T. Doukov, F. Jenney
in *Compendium of Undergraduate Research in Astronomy and Space Science ASP Conference Series*, Joseph B. Jensen, Jonathan Barnes, and Beth Wardell, eds., **2023**, 525, pp. 105-107.
<https://doi.org/10.26624/qojt6211>
98. Sulfur X-ray Absorption and Emission Spectroscopy of Organic Sulfones
Linda I. Vogt, Julien J. H. Cotelesage, Natalia V. Dolgova, Curtis Boyes, Muhammad Qureshi, Dimosthenis Sokaras, Samin Sharifi, **Simon J. George**, Ingrid J. Pickering, Graham N. George
J. Phys. Chem. A. **2023** *127*, 3692-3704. <https://doi.org/10.1021/acs.jpca.2c08647>
97. Nitrogenase Chemistry at 10 Kelvin – Photo-tautomerization and Recombination of CO-Inhibited α -H195Q Enzyme
Leland B. Gee, William K. Meyers, Patrick A. Nack-Lehman, Aubrey D. Scott, Lifan Yan, **Simon J. George**, Weibing Dong, Christie H. Dapper, William E. Newton, Stephen P. Cramer
Inorg. Chem. **2022**, *61*, 11509-11513. <https://doi.org/10.1021/acs.inorgchem.2c00818>
96. Oxygen K-edge X-ray absorption spectra of liquids with minimization of window contamination
Linda I. Vogt, Julien J. H. Cotelesage, Charles J. Titus, Samin Sharifi, Albert E. Butterfield, Peter Hillman, Ingrid J. Pickering, Graham N. George, **Simon J. George**,
J. Synchr. Rad. **2021**, *28*, 1845-1849. <https://doi.org/10.1107/S1600577521009942>
95. Abridged spectral matrix inversion: parametric fitting of X-ray fluorescence spectra following integrative data reduction
Andrew M. Crawford, Ben Huntsman, Monica Y. Weng, Olena Ponomarenko, Cheyenne D. Kiani, **Simon J. George**, Graham N. George, Ingrid J. Pickering
J. Synchr. Rad. **2021**, *28*, 1881-1890. <https://doi.org/10.1107/S1600577521008419>

94. X-ray absorption spectroscopy of organic sulfoxides
Linda I. Vogt, Julien J. H. Cotelesage, Natalia V. Dolgova, Charles J. Titus, Samin Sharifi, **Simon J. George**, Ingrid J. Pickering, Graham N. George, *RSC Adv.* **2020**, *10*, 26229-26238
<https://doi.org/10.1039/d0ra04653a>
93. Feasibility of Laboratory-Based EXAFS Spectroscopy with Cryogenic Detectors
Simon J. George, Matthew H. Carpenter, Stephan Friedrich, Robin Cantor
J. Low. Temp. Phys. **2020**, *200*, 479-484. <https://doi.org/10.1007/s10909-020-02474-7>
92. EXAFS reveals two Mo environments in the nitrogenase iron-molybdenum cofactor biosynthetic protein NifQ
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Chem. Commun. **2016**, *52*, 11811-11814. <https://doi.org/10.1039/c6cc06370e>
91. Interaction of Gd-DTPA with phosphate and phosphite: Toward the reaction intermediate in Nephrogenic Systemic Fibrosis
Song Gao, **Simon J. George**, Zhao-Hui Zhou
Dalton Trans. **2016**, *45*, 5388-5394. <https://doi.org/10.1039/c5dt04172d>
90. Structural characterization of CO-Inhibited Mo-nitrogenase by combined application of NRVS, EXAFS, and DFT: New insights into the effects of CO binding and the role of the interstitial atom
Aubrey D. Scott, Vladimir Pelmeshnikov, Yisong Guo, Lifan Yan, Hongxin Wang, **Simon J. George**, Christie H. Dapper, William E. Newton, Yoshitaka Yoda, Yoshihito Tanaka, Stephen P. Cramer
J. Am. Chem. Soc. **2014**, *136*, 15942-15954. <https://doi.org/10.1021/ja505720m>
89. The HydG enzyme generates an Fe(CO)₂(CN) synthon in the biosynthesis of the FeFe hydrogenase H-Cluster
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Science **2014**, *343*, 424-427. <https://doi.org/10.1126/science.1246572>
88. Fe-S cluster biogenesis in gram-positive bacteria: SufU is a zinc-dependent sulfur transfer protein
Bruna P. Selbach, Alexander H. Chung, Aubrey D. Scott, **Simon J. George**, Stephen P. Cramer, Patricia C. Dos Santos
Biochemistry **2014**, *53*, 152-160. <https://doi.org/10.1021/bi4011978>
87. Nuclear resonance vibrational spectroscopy (NRVS) of rubredoxin and MoFe protein crystals
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Hyperfine Interact., **2013**, *222*, S77-S90. <https://doi.org/10.1007/s10751-012-0643-2>
86. A Radical Intermediate in Tyrosine Scission to the CO and CN⁻ Ligands of FeFe] Hydrogenase
Jon M. Kuchenreuther, William K. Myers, Troy A. Stich, **Simon J. George**, Yaser NejatyJahromy, James R. Swartz, R. David Britt
Science **2013**, *342*, 472-475. <https://doi.org/10.1126/science.1241859>
85. Characterization of [4Fe-4S] Cluster Vibrations and Structure in Nitrogenase Fe Protein at Three Oxidation Levels via Combined NRVS, EXAFS and DFT Analyses
Devrani Mitra, **Simon J. George**, Yisong Guo, Saeed Kamali, Stephen Keable, John W. Peters, Vladimir Pelmeshnikov, David A. Case, Stephen P. Cramer
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84. NRVS and EPR Spectroscopy of 57Fe-enriched FeFe] Hydrogenase Indicate Stepwise Assembly of the H-cluster
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Stephen W. Ragsdale, Li Yi, Güneş Bender, Nirupama Gupta, Yan Kung, Lifan Yan, Troy A. Stich, Tzanko Doukov, Lars Leichert, Paul M. Jenkins, Christopher M. Bianchetti, **Simon J. George**, Stephen P. Cramer, R. David Britt, Ursula Jakob, Jeffrey R. Martens, George N. Phillips, Jr, Catherine L. Drennan
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Jon M. Kuchenreuther, **Simon J. George**, Celestine S. Grady-Smith, Stephen P. Cramer, James R. Swartz
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80. The Consequences of Interface Mixing on Organic Photovoltaic Device Characteristics
David M. Huang, Scott A. Mauger, Stephan Friedrich, **Simon J. George**, Daniela Dumitriu-LaGrange, Sook Yoon, Adam J. Moulé
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79. Photolysis of Hi-CO Nitrogenase – Observation of a Plethora of Distinct CO Species using Infrared Spectroscopy
Lifan Yan, Christie H. Dapper, **Simon J. George**, Hongxin Wang, Devrani Mitra, Weibing Dong, William E. Newton, Stephen P. Cramer
Eur. J. Inorg. Chem., **2011**, *2011*, 2064-2074. <https://doi.org/10.1002/ejic.201100029>
78. Steric Control of the Hi-CO MoFe Nitrogenase Complex Revealed by Stopped-Flow Infra-red Spectroscopy
Zhi-Yong Yang, Lance C. Seefeldt, Dennis R. Dean, Stephen P. Cramer, **Simon J. George**
Angew. Chem. Int. Ed., **2011**, *50*, 272-275. <https://doi.org/10.1002/anie.201005145>
77. High-yield expression of heterologous [FeFe] hydrogenases in Escherichia coli
Jon M. Kuchenreuther, Celestine S. Grady-Smith, Alyssa S. Bingham, **Simon J. George**, Stephen P. Cramer, James R. Swartz
PLoS ONE **2010**, *5*, e15491. <https://doi.org/10.1371/journal.pone.0015491>
76. Synchrotron X-ray analyses indicate phosphate-bound gadolinium in nephrogenic systemic fibrosis
Simon J. George, Samuel M. Webb, Jerrold L. Abraham, Stephen P. Cramer
Brit. J. Dermatol., **2010**, *163*, 1077-1081. <https://doi.org/10.1111/j.1365-2133.2010.09918.x>
75. [FeFe]-Hydrogenase Maturation: HydG-Catalyzed Synthesis of Carbon Monoxide
Eric M. Shepard, Benjamin R. Duffus, **Simon J. George**, Shawn E. McGlynn, Martin R. Challand, Kevin D. Swanson, Peter L. Roach, Stephen P. Cramer, John W. Peters, Joan B. Broderick
J. Am. Chem. Soc., **2010**, *132*, 9247-9249. <https://doi.org/10.1021/ja1012273>
74. Synthesis of the 2Fe subcluster of the [FeFe]-hydrogenase H cluster on the HydF scaffold
Eric M. Shepard, Shawn E. McGlynn, Alexandra L. Bueling, Celestine S. Grady-Smith, **Simon J. George**, Mark A. Winslow, Stephen P. Cramer, John W. Peters, Joan B. Broderick
Proc. Natl. Acad. Sci. U.S.A., **2010**, *107*, 10448-10453. <https://doi.org/10.1073/pnas.1001937107>
73. A Star-Shaped Heteronuclear (CrMn₃^{II})-Mn^{III} Species and Its Precise Electronic and Magnetic Structure: Spin Frustration Studied by X-Ray Spectroscopic, Magnetic, and Theoretical Methods
Manuel Prinz, Karsten Kuepper, Christian Taubitz, Michael Raekers, Sumit Khanra, Biplab Biswas, Thomas Weyhermüller, Marc Uhlarz, Joachim Wosnitza, Jürgen Schnack, Andrei V. Postnikov, Christian Schröder, **Simon J. George**, Manfred Neumann, Phalguni Chaudhuri
Inorg. Chem., **2010**, *49*, 2093-2102. <https://doi.org/10.1021/ic9012119>

72. Molybdenum Trafficking for Nitrogen Fixation
Jose A. Hernandez, **Simon J. George**, Luis M. Rubio
Biochemistry, **2009**, 48, 9711-972. <https://doi.org/10.1021/bi901217p>
71. Molybdenum X-ray absorption edges from 200 – 20,000 eV, The benefits of soft x-ray spectroscopy for chemical speciation
Simon J. George, Owen B. Drury, Juxia Fu, Stephan Friedrich, Christian J. Doonan, Graham N. George, Jonathan M. White, Charles G. Young, Stephen P. Cramer
J. Inorg. Biochem., **2009**, 103, 157–167. <https://doi.org/10.1016/j.jinorgbio.2008.09.008>
70. Star-shaped molecule of $\text{Mn}^{\text{II}}_4\text{O}_6$ core with a $S_t = 10$ high-spin state. A theoretical and experimental study with XPS, XMCD, and other magnetic methods.
Sumit Khanra, Karsten Kuepper, Thomas Weyhermüller, Manuel Prinz, Michael Raekers, Sebastian Voget, Andrei V. Postnikov, Frank M. F. de Groot, **Simon J. George**, Marin Coldea, Manfred Neumann, Phalguni Chaudhuri
Inorg. Chem. **2008**, 47, 4605-4617. <https://doi.org/10.1021/ic7023007>
69. EXAFS and NRVS reveal that NifB-co, a FeMo-co precursor, comprises a 6Fe core with an interstitial light atom
Simon J. George, Robert Y. Igarashi, Yuming Xiao, Jose A. Hernandez, Marie Demuez, Dehua Zhao, Yoshitaka Yoda, Paul W. Ludden, Luis M. Rubio, Stephen P. Cramer
J. Am. Chem. Soc. **2008**, 130, 5673-5680. <https://doi.org/10.1021/ja0755358>
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Simon J. George, Juxia Fu, Yisong Guo, Owen B. Drury, Stephan Friedrich, Thomas Rauchfuss, Phillip I. Volkers, Jonas C. Peters, Valerie Scott, Steven D. Brown, Christine M. Thomas, Stephen P. Cramer
Inorg. Chim. Acta **2008**, 361, 1157-1165. <https://doi.org/10.1016/j.ica.2007.10.039>
67. Protein voltammetry and spectroscopy: integrating approaches
Louise Male, Sophie J. Marritt, Ben C. Berks, Myles R. Cheesman, Jessica H. van Wonderen, **Simon J. George**, Julea N. Butt
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66. The superconducting high-resolution soft X-ray spectrometer at the advanced biological and environmental X-ray facility
Stephan Friedrich, Owen B. Drury, **Simon J. George**, Stephen P. Cramer
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65. Activation of the cytochrome *cd*₁ nitrite reductase from *Paracoccus pantotrophus* - Reaction of oxidized enzyme with substrate drives a ligand switch at heme c
Jessica H. van Wonderen, Christopher Knight, Vasily S. Oganessian, **Simon J. George**, Walter G. Zumft, Myles R. Cheesman
J. Biol. Chem. **2007**, 282, 28207-28215. <https://doi.org/10.1074/jbc.M701242200>
64. Identification of a Mo-Fe-S cluster on NifEN by Mo K-edge extended X-ray absorption fine structure
Simon J. George, Robert Y. Igarashi, Cinthia Piamonteze, Basem Soboh, Stephen P. Cramer, Luis M. Rubio
J. Am. Chem. Soc. **2007**, 129, 3060-3061. <https://doi.org/10.1021/ja0663428>
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Mishtu Dey, Ryan C. Kunz, Katherine M. Van Heuvelen, Jennifer L. Craft, Yih-Chern Horng, Qun Tang, David F. Bocian, **Simon J. George**, Thomas C. Brunold, Stephen W. Ragsdale
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Yuming Xiao, Karl Fisher, Matt C. Smith, William E. Newton, David A. Case, **Simon J. George**, Hongxin Wang, Wolfgang Sturhahn, Ercan E. Alp, Jiyong Zhao, Yoshitaka Yoda, Stephen P. Cramer
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60. Normal mode analysis of *Pyrococcus furiosus* rubredoxin via nuclear resonance vibrational spectroscopy (NRVS) and resonance Raman spectroscopy
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Matt C. Smith, Yuming Xiao, Hongxin Wang, **Simon J. George**, Dimitri Coucouvanis, Markos Koutmos, Wolfgang Sturhahn, Ercan E. Alp, Jiyong Zhao, Stephen P. Cramer
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55. Reductive activation of nitrate reductases
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Biochemistry **2004**, 43, 6808-6819. <https://doi.org/10.1021/bi049853k>
52. Stopped-flow Fourier transform infrared spectroscopy of nitromethane oxidation by the diiron(IV) intermediate of methane monooxygenase
Mylrajan Muthusamy, Edna A. Ambundo, **Simon J. George**, Stephen J. Lippard, Roger N. F. Thorneley
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D. M. Lawson, C. E. M. Stevenson, C. R. Andrew, **S. J. George**, R. R. Eady
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Simon J. George, Zhen Cui, Mathieu Razavet, Christopher J. Pickett, *Chem. Eur. J.* **2002**, *8*, 4037-4046.
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Mathieu Razavet, Stacey J. Borg, **Simon J. George**, Stephen P. Best, Shirley A. Fairhurst, Christopher J. Pickett
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- 48] Nitrogenase mechanism: can old lags teach us new tricks? (*book chapter/conference proceeding*)
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