



John T. Groves

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Professional Experience:

- 1988-1993 Chair, Department of Chemistry, Princeton University
- 1985- Professor of Chemistry, Princeton University
- 1982-1985 Director, Michigan Center for Catalysis and Surface Science
- 1979-1985 Professor of Chemistry, The University of Michigan
- 1976-1979 Associate Professor of Chemistry, The University of Michigan
- 1969-1976 Assistant Professor of Chemistry, The University of Michigan
- 1966-1969 National Institutes of Health Predoctoral Fellow, Columbia University
- 1965-1969 Columbia University Faculty Fellow

Education:

- Columbia University, Ph.D. 1969; Research with Prof. Ronald Breslow
- Massachusetts Institute of Technology, B.S. 1965; Research with Prof. Frederick Greene

Honors:

- Fellow of the Royal Society of Chemistry, 2009-
- Frontiers in Biological Chemistry Award, Max Planck Institute, 2009
- Grand Prix, Maison de la Chimie (Paris) Laureate, 2008
- National Science Foundation Extension Award for Special Creativity, 2008-2010
- National Institute of General Medical Sciences, NIH, MERIT Award, 2007-
- Cady Distinguished Lecturer, University of Washington, 2007
- Distinguished Visiting Professor University of Hong Kong, 2003
- Distinguished Lecturer in Inorganic Chemistry, Northwestern University, 2000
- Abbott Distinguished Lecturer in Organic Chemistry, Colorado State University, 2000
- Alfred Bader Award in Bioorganic and Bioinorganic Chemistry, American Chemical Society, 1996
- Eli Lilly Distinguished Lecturer, Indiana University, 1997
- Bergmann Lectureship, Yale University, 1997
- Fellow, Japan Society for the Promotion of Science, 1997 and 1987
- Fellow, American Academy of Arts and Sciences, 1993-
- Morris S. Kharasch Visiting Professor, University of Chicago, 1993
- Hugh Stott Taylor Chair in Chemistry, Princeton University, 1991-
- A. C. Cope Scholar Award, American Chemical Society, 1991
- National Science Foundation Extension Award for Special Creativity, 1990-1992
- Nichols Distinguished Lecturer, 1989
- Fellow, American Association for the Advancement of Science, 1984
- Phi Lambda Upsilon Award for Teaching and Leadership, 1978
- L. P. Hammett Award for Outstanding Graduate Research, Columbia University, 1969

Professional Societies:

- American Chemical Society
- American Association for the Advancement of Science
- American Academy of Arts and Sciences
- New York Academy of Sciences
- Sigma Xi
- Phi Lambda Upsilon

Professional Activities:

- Member, Metallobiochemistry Study Section, National Institutes of Health, 1979-1983
- Selection Committee, National Science Foundation Workshops, 1984, 1985, 1989
- Contributing Author to the "Pimentel Committee" Report to Congress, 1985
- Board of Editors, *Bioorganic Chemistry*, 1983-present
- International Advisory Board, Symposium on Homogeneous Catalysis, 1984-
- US-USSR Joint Symposium and Workshop on Environmentally Related Catalysis, Moscow, 1985, US Organizer
- National Advisory General Medical Sciences Council, ad hoc Consultant, 1986
- DOE Evaluation Committee - Lawrence Berkeley Laboratory, 1986
- International Advisory Committee, International Symposium on the Activation of Dioxygen and Homogeneous Catalytic Oxidations, 1988-98
- Editorial Board, *Reaction Kinetics and Catalysis Letters*, 1989-present
- Visiting Committee, Vanderbilt University, Program in Toxicology, 1989-92
- Visiting Committee, Department of Chemistry, University of Chicago, 1990.
- Visiting Committee, University of California, Irvine, Graduate Science Program, 1992.
- American Chemical Society, Selection Committee for ----- Award, 1989-92.
- Board of Editors, *Bioorganic and Medicinal Chemistry*, 1993-2005
- Board of Editors, *Bioorganic and Medicinal Chemistry Letters*, 1993-2005
- Board of Editors, *Inorganic Chemistry*, 1994-1997
- Chairman, Metals in Biology Gordon Research Conference, 1994
- Member, Physical Biochemistry Study Section, NIH, 1995
- Board of Editors, *Journal of Biological Inorganic Chemistry*, 1995-2000
- Board of Editors, *Journal of Inorganic Biochemistry*, 2006-
- Co-chair, 10th International Symposium on Homogeneous Catalysis, Princeton University, 1996
- Member, Metallobiochemistry Study Section, NIH, 1999, 2002
- Member, Council of the Society for Biological Inorganic Chemistry, 1998-2002
- Chair, ACS Canvassing Committee for the Ronald Breslow Award, 2001-3
- Member, Special Study Section, NIH 2004, 2006
- Chair, NIH Special Emphasis Panel on Bioorganic and Synthetic Chemistry, 2005
- Co-Chair, ACS-NSF Committee and Workshop on the Molecular Basis of Life Processes, 2004-5
- External Examiner in Chemistry, University of Hong Kong, 2003-6
- Member MSFA Study Section, NIH 2006-7.

Teaching at Princeton

I have designed the Advanced Organic Chemistry course, CHM 403, that is aimed at junior and senior Chemistry majors and Chemical Engineers. This course weaves together elements of synthetic organic chemistry, biosynthetic pathways and modern drug design. I was pleased to see the enthusiastic evaluation of this course by the students: 4.4-4.8 for the five items most related to the quality of the lectures, stimulating independent thinking and the overall quality of the course.

I have contributed to the planning and teaching of the new Integrated Quantitative Science Curriculum in collaboration with colleagues in Chemistry, Molecular Biology, Physics and Computer Science. I have also designed and taught Metals in Biology, CHM 544, with colleague Ed Stieffel. This is a course for beginning graduate students and advanced undergraduates.

Research Program

The major thrust of our research program is at the interface of organic, inorganic, and biological chemistry. Many biochemical transformations, as well as important synthetic and industrial processes are catalyzed by metals. Recent efforts have focused on the design of new, biomimetic catalysts and the molecular mechanisms of metal-catalyzed redox processes, the design and assembly of large scale membrane-protein-small molecule constructs, strategies for the assembly of biogenic hard materials, molecular probes of peroxynitrite-mediated protein nitration, pharmaceutical strategies for protection against peroxynitrite-mediated pathologies, and mechanisms by which pathogens acquire metabolic iron from host cells.

Selected Most Significant and Influential Publications

1. J. T. Groves and G. A. McClusky, "Aliphatic Hydroxylation via Oxygen Rebound. Oxygen Transfer Catalyzed by Iron", *J. Am. Chem. Soc.*, **1976**, *98*, 859-861. 216 citations
2. J. T. Groves, G. A. McClusky, R. White and M. J. Coon, "Aliphatic Hydroxylation by Highly Purified Liver Microsomal Cytochrome P-450. Evidence for a Free Radical Intermediate", *Biochem. Biophys. Res. Commun.*, **1978**, *81*, 154-160. 414 citations
3. J. T. Groves, T. E. Nemo and R. S. Myers, "Hydroxylation and Epoxidation Catalyzed by Iron-Porphine Complexes", *J. Am. Chem. Soc.*, **1979**, *101*, 1032-1033. 660 citations
4. J. T. Groves, R. C. Haushalter, M. Nakamura, T. E. Nemo, B. J. Evans, "High-Valent Iron-Porphyrin Complexes Related to Peroxidase and Cytochrome P-450", *J. Am. Chem. Soc.*, **1981**, *102*, 2884-2886. 637 citations
5. J. T. Groves and T. E. Nemo, "Epoxidation Reactions Catalyzed by Ferric Porphyrins. Oxygen Transfer from Iodosylbenzene", *J. Am. Chem. Soc.*, **1983**, *105*, 5786-5791. 486 citations
6. J. T. Groves and T. E. Nemo, "Aliphatic Hydroxylation Catalyzed by Ferric Porphyrins", *J. Am. Chem. Soc.*, **1983**, *105*, 6243-6248. 366 citations
7. J. T. Groves and R. S. Myers, "Catalytic Asymmetric Epoxidation with Chiral Iron Porphyrins", *J. Am. Chem. Soc.*, **1983**, *105*, 5791-5796. 431 citations

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8. J. T. Groves and R. Quinn, "Aerobic Epoxidation of Olefins with Ruthenium Porphyrin Catalysts", *J. Am. Chem. Soc.*, **1985**, *107*, 5790-92. 419 citations
9. J. T. Groves and P. Viski, "Asymmetric Hydroxylation, Epoxidation, and Sulfoxidation Catalyzed by Vaulted Binaphthyl Metalloporphyrins", *J. Org. Chem.*, **1990**, *55*, 3628-3634. 263 citations
10. J. T. Groves, J. Lee and S. Marla, "Detection and Characterization of an Oxo-Manganese(V) Porphyrin Complex by Rapid-Mixing Stopped-Flow Spectrophotometry" *J. Am. Chem. Soc.*, **1997**, *119*, 6269-6273. 216 citations
11. S. S. Marla, J. Lee and J. T. Groves, "Peroxynitrite Rapidly Permeates Phospholipid Membranes", *Proc. Nat. Acad. Sci. U.S.A.*, **1997**, *94*, 14243-14248. 151 citations
12. N. Jin and J. T. Groves, "Unusual Kinetic Stability of a Ground State Singlet Oxomanganese(V) Porphyrin. Evidence for a Spin State Crossing Effect", *J. Am. Chem. Soc.*, **1999**, *121*, 2923-2924. 115 citations

Recent Conferences, Symposia and Major Lectureships

157. Middle Atlantic Regional ACS Meeting, University of Delaware, May, 2000, invited speaker.
158. First International Symposium on Porphyrins and Phthalocyanines, Symposium on Catalysis, Dijon, France, June, 2000, invited speaker.
159. First International Symposium on Porphyrins and Phthalocyanines, Symposium on High Valent Intermediates, Dijon, France, June, 2000, invited speaker.
160. International Conference on Coordination Chemistry, Edinburgh, July 2000, invited speaker.
161. 5th European Biological Inorganic Chemistry Conference, Toulouse, France, July 2000, plenary lecturer.
162. Center for Environmental Bioinorganic Chemistry Summer Conference, Princeton University, June, 2001, invited speaker.
163. Symposium on Free Radicals in Biology, Washington ACS Meeting August 2000
164. Distinguished Lecturer in Inorganic Chemistry Northwestern, August 2000.
165. Distinguished Lecturer in Organic Chemistry, Colorado State University, October 2000.
166. Princeton Materials Institute Soiree Series, September, 2000, invited speaker.
167. Symposium on Metals in Biological Systems, Pacificchem 2000, Honolulu, December, 2000, invited speaker.

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168. RSC Symposium on Inorganic Reaction Mechanisms, Galway, January, 2001, invited speaker.
169. Symposium in Honor of Ronald Breslow, Columbia University, March 2001, chair and speaker.
170. 3rd International Conference on Peroxynitrite and Reactive Nitrogen Species in Biology and Medicine, Asilomar, CA, May, 2001, invited speaker.
171. Center for Environmental Bioinorganic Chemistry Summer Conference, Princeton University, June, 2001, invited speaker.
172. ES2001 – 13th Annual Workshop on Recent Developments in Electronic Structure Algorithms, Princeton University, June, 2001, invited speaker.
173. Self-Assembling Peptides and Proteins in Biology, Medicine and Engineering, Crete, Greece, July 2001, invited speaker.
174. 10th International Conference on Bioinorganic Chemistry, Florence, Italy, August, 2001, invited speaker.
175. 12th Int Conference on Cytochrome P450, Biochemistry, Biophysics and Molecular Biology, La Grande Motte, France, September, 2001, invited speaker.
176. Princeton American Chemical Society Fall Organic Chemistry Symposium, September 2001, invited speaker.
177. Metals in Biology Gordon Research Conference, Ventura CA, January, 2002, invited speaker.
178. Symposium on Environmental Bioinorganic Chemistry, National ACS Meeting, Orlando, Florida, April, 2002, invited speaker.
179. Alfred Bader Award Symposium, National CS Meeting, Orlando, Florida, April, 2002, invited speaker.
180. International Symposium on Oxygen Activation and Homogeneous Catalytic Oxidations, ADHOC, Atlanta Georgia, June, 2002, plenary lecturer.
181. First Gordon Research Conference on Environmental Bioinorganic Chemistry, Proctor Academy, June, 2002, invited speaker.
182. 2nd International Conference on Porphyrins and Phthalocyanines, Symposium on Catalytic Oxidations, Kyoto, Japan, July, 2002, invited speaker.
183. 2nd International Conference on Porphyrins and Phthalocyanines, Symposium on Biological and Biomimetic Systems, Kyoto, Japan, July, 2002, invited speaker.
184. First Gordon Research Conference on Metals in Medicine, Colby-Sawyer College, July, 2002, session leader and speaker.
185. Department of Energy, Basic Energy Sciences Meeting, Chicago, September, 2002, invited speaker.

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186. University of Hong Kong, Center for Molecular Biology February, 2003.
187. Gordon Research Conference on Oxidative Stress, March, 2003, invited speaker.
188. Symposium on Redox Catalysis, University of Erlangen, March 2003, invited speaker.
189. Steenbock Symposium in honor of Perry Frey, University of Wisconsin, May, 2003, invited speaker.
190. CEBIC Summer Conference, Princeton University, June 2003, invited speaker.
191. Symposium on Metals in Medicine, 226th National ACS Meeting, New York, September 2003, invited speaker
192. Symposium on Modeling Spin Forbidden and Open-Shell Processes, 226th National ACS Meeting, New York, September 2003, invited speaker
193. Biomimetic Oxygenations of Cytochrome P-450, National Chung-Hsing University, Taichung Taiwan, September 2003, invited speaker.
194. Biomimetic Functions of Metalloporphyrins, National Chi Nan University, Nantou, Taiwan, October 2003, invited speaker
195. Taiwan Bioinorganic Chemistry Symposium 2003 in honor of Sunney Chan, October 2003, invited speaker.
196. Protein Derived Cofactors, Radicals and Quinones Gordon Research Conference, Ventura CA January, 2004, speaker.
197. Conference on the Chemistry of NO in Biological Signaling, Mesilla NM, February, 2004, invited speaker.
198. Symposium on Inorganic Reaction Mechanisms in honor of James Espensen, National ACS Meeting, Anaheim, CA. March 2004. Invited speaker.
199. International Conference on Porphyrins and Phthalocyanines, New Orleans, July, 2004, invited speaker.
200. Distinguished Visiting Professor Lecture, University of Hong Kong, December 2004.
201. Symposium in Honor of Tom Spiro, National ACS Meeting, San Diego, March, 2005, invited speaker.
202. Symposium on Green Chemistry, National ACS Meeting, San Diego, March, 2005, invited speaker.
203. Distinguished Speaker Series, Mercer County Community College, March 2005.
204. National Organic Symposium, Salt Lake City, Utah, June, 2005, plenary lecturer.

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205. NSF-EMSI Symposium, National ACS Meeting, Washington, DC, August, 2005, invited speaker.
206. Symposium on the Role of Metals in Metalloenzymes and Medicine, Pacificchem 2005, Honolulu, December 2005, invited speaker.
207. Oxygenase 50th Anniversary Symposium, Kyoto, April, 2006, invited speaker.
208. Symposium on the Chemical Biology of Redox Metalloenzymes, Spring-8, Harima, Japan, April, 2006, invited speaker.
209. Agouron Institute Conference on Oxygen, Santa Fe, NM, April 2006, invited speaker.
210. Fourth International Symposium on Porphyrins and Phthalocyanines, Rome, July, 2006, invited speaker.
211. Symposium in Honor of James P. Collman, "Bioinorganic and Organometallic Catalysis: What is the Connection" ASC National Meeting, San Francisco, September 2006, invited speaker.
212. Cady Distinguished Lectures, Department of Chemistry, University of Washington, May, 2007.
213. Center for Quantitative Biology Symposium, Princeton University, January 2008, invited speaker.
214. Metals in Biology Gordon Research Conference, Ventura, CA, January, 2008, invited speaker.
215. Isotope Effects Gordon Research Conference, Ventura, CA, February, 2008, invited speaker.
216. Symposium on Structure, Properties, and Function of Membranes and Membrane Related Biomolecules," 235th ACS National Meeting, New Orleans, LA, April, 2008, invited speaker.
217. Symposium on "Chemistry and Health", ACS Mid-Atlantic Regional Meeting, Queensborough College, NY, May, 2008, invited speaker.
218. Fifth International Symposium on Porphyrins and Phthalocyanines, Moscow, July, 2008, keynote speaker.
219. 10th International Scientific Symposium on Dioxygen Activation and Homogeneous Catalysis (ADHOC-2008), Venice, July, 2008, plenary lecturer.
220. Symposium on Siderophores: from Biogeochemistry to Medical Applications, National ACS Meeting, Philadelphia, August 2008, invited speaker.
221. Symposium on Visualizing Chemistry: Advances in Chemical Imaging, National ACS Meeting, Philadelphia, August 2008, invited speaker.
222. National Inorganic Chemistry Symposium, Kanazawa, Japan, September 2008, keynote speaker.
223. Colloque Chimie et Santé au service de l'Homme, Paris, October 2008, Grand Prix Award address.

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224. Frontiers in Biological Chemistry Award Address, Max Planck Institute, Mülheim, Germany, February, 2009.

225. F. Albert Cotton Award Symposium in honor of Kenneth Karlin, Salt Lake City, March, 2009, invited speaker.

226. 14th International Conference on Bioinorganic Chemistry, Nagoya, Japan, July, 2009, invited speaker.