Professor of Chemistry
Haverford College

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Professional Appointments and Honors

2002 - present	Professor of Chemistry, Haverford College.
1995 - 2002	Associate Professor of Chemistry, Haverford College.
1988 - 1995	Assistant Professor of Chemistry, Haverford College.
1985 - 1988	National Institutes of Health (1985) and American Cancer Society (1986-1988) Postdoctoral Fellow with Prof. Lawrence Que, Jr., Department of Chemistry, University of Minnesota.
1980 - 1983:	National Science Foundation Graduate Fellow.

Education

Ph.D., 1985	University of California, Berkeley (Inorganic Chemistry, Prof. Kenneth Raymond).
A. B., 1980	Oberlin College (Ohio), with Highest Honors in Chemistry.

Current Research Interests: Structure and Reactivity of Metalloprotein Active Sites.

My research group studies synthetic chemical models to better understand the role of metal ions in the oxygenation and hydrolytic reactions catalyzed by metalloenzymes. I am particularly interested in the role of hydrogen-bonds in modulating reactivity, and in factors influencing bond lengths and angles in transition metal coordination complexes. My students and I frequently use X-ray spectroscopy (EXAFS and XANES) to study the coordination environments of transition metals in metalloproteins, biomimetic coordination complexes, and synthetic polymeric materials.

Recent Teaching and Administrative Duties at Haverford College

Courses taught: General Chemistry, Inorganic Chemistry, Bioinorganic Chemistry, Topics in Biophysical Chemistry, Laboratory in Chemical Structure and Reactivity (for junior Chemistry majors), Research in Bioinorganic Chemistry (tutorial).

Chair: Department of Chemistry (2000-2002), hiring committees for tenure-track Assistant Professors of Biology (1998, 2001 & 2003), college Laboratory Safety Committee (since 2003); webmaster, Department of Chemistry (since 1998); member, coordinating committee for Concentrations in Biochemistry and Biophysics (since 1992).

Service to the Wider Scientific Community (since 1999)

Instructor, "EXAFS Data Collection and Analysis Course," National Synchrotron Light Source, 2002.

Review Panels: NSF Graduate Fellowship program (1998-2000), National Synchrotron Light Source General User Program (2000 - 2002). Individual proposal reviews: National Science Foundation, Research Corporation, Petroleum Research Fund. Chemistry Department reviewer for Dickinson College (2001) and Gettysburg College (2003). Frequent reviewer for *Inorganic Chemistry*, *Journal of the American Chemical Society, Biochemistry* and *Journal of Bioinorganic Chemistry.*

Recent and Current Research Support

Andrew W. Mellon Foundation: New Directions Fellowship for Teacher-Scholars. "Change in research and teaching toward synthetic and physical inorganic coordination chemistry." 2002-2003. Sabbatical salary support (1 semester) + $5,000.

Consortium member as X-ray spectroscopist for "Catalytic Metallo-Biomimetic Sites in Porous Hosts", National Institutes of Health grant 1 RO1 GM 58680-01 (P.I.: Andrew S. Borovik, University of Kansas). 1999 - 2003. $41,946 consortium/contractual costs.

National Synchrotron Light Source, General User proposals #96-X-1246, #3046, #3412, #4294, #4340, #4741, #4975, #5126 (U.S. DOE, #DE-AC02-76CH00016). 1996 - 2005. 116 days of X-ray beam time.

National Science Foundation grant # 0420620 "Acquisition of an LC/MS System to Support the Integrated Teaching and Research Program at Haverford College." $235,953, 2004 (co-PI).

Peer-Reviewed Publications 1999-2004 (names of undergraduate Co-authors are underlined)

1. "Development of porous materials for heterogeneous catalysis: kinetic resolution of epoxides." Welbes, L. L.; Scarrow, R. C.; Borovik, A. S. *Chem. Commun.*, **2004**, 2544-2545.
2. "How does cyanide inhibit superoxide reductase? Insight from synthetic $Fe^{III}N_4S$ model complexes." Shearer, J.; Fitch, S. B.; Kaminsky, W.; Benedict, J.; Scarrow, R. C.; Kovacs, J. A., *Proc. Natl. Acad. Sci. U.S.A.* **2003**, *100*, 3671-3676.
3. "A dihydroxo-bridged Fe(II)-Fe(III) complex: A new member of the diiron diamond core family." Egdal, R. K.; Hazell, A.; Larsen, F. B.; McKenzie, C. J.; Scarrow, R. C. *J. Am. Chem. Soc.* **2003**, *125*, 32-33.
4. "Synthetic Models For the Cysteinate–Ligated Non–Heme Iron Enzyme Superoxide Reductase: Observation and Structural Characterization by XAS of an Fe^{III}-OOH Intermediate." Shearer, J.; Scarrow, R. C.; Kovacs, J. A. *J. Am. Chem. Soc.* **2002**, *124*, 11709-11717.
5. "The First Example of a Nitrile Hydratase Model Complex that Reversibly Binds Nitriles." Shearer, J.; Jackson, H. L.; Schweitzer, D.; Rittenberg, D. K.; Leavy, T. M.; Kaminsky, W.; Scarrow, R. C.; Kovacs, J. A. *J. Am. Chem. Soc.* **2002**, *124*, 11417-11428.
6. "Probing the Structure of Immobilized Metal Sites in Porous Organic Hosts by X-ray Absorption Spectroscopy." Padden, K. M.; Krebs, J. F.; Trafford, K. T., Yap, G. P. A.; Rheingold, A. H.; Borovik, A. S.; Scarrow, R. C. *Chem. Mater.* **2001**, *13*, 4305-4313.
7. "Immobilized Metal Complexes in Porous Organic Hosts: Development of a Material for the Selective and Reversible Binding of Nitric Oxide." Padden, K. M.; Krebs, J. F.; MacBeth, C. E.; Scarrow, R. C.; Borovik, A. S. *J. Am. Chem. Soc.* **2001**, *123*, 1072-1079.
8. "Porphobilinogen synthase from pea: expression from an artificial gene, kinetic characterization, and novel implications for subunit interactions." Kervinen, J.; Dunbrack, R. L., Jr.; Litwin, S.; Martins, J.; Scarrow, R. C.; Volin, M.; Yeung, A. T.; Yoon, E.; Jaffe, E. K. *Biochemistry* **2000**, *39*, 9018-9029.
9. "Protonation of porphyrin in iron-free cytochrome c: Identification of monocation free base porphyrin, a charge analogue of ferric heme." Zentko, S.; Scarrow, R. C.; Wright, W. W.; Vanderkooi, J. M. *Biospectroscopy* **1999**, *5*, 141-150.