

Erich S. Uffelman

Date of Birth: August 5, 1962

Education:

- 2006 Sabbatical leave with Professor M.G. Finn, The Scripps Research Institute
- 2001 Sabbatical leave with Professor M.G. Finn, The Scripps Research Institute
- 1991-1993 NIH Postdoctoral Fellow, Professor James P. Collman, Stanford University
- 1991 Ph.D., NSF Predoctoral Fellow, Chemistry, California Institute of Technology, Professor Terrence J. Collins; Thesis Topic: Macrocyclic Tetraamido-*N* Ligands that Stabilize High-Valent Complexes of Chromium, Manganese, Iron, Cobalt, Nickel, and Copper
- 1984 B.S., magna cum laude, Chemistry, Bucknell University

Professional Positions:

- 1999- Associate Professor of Chemistry, Washington and Lee University
- 1993-1999 Assistant Professor of Chemistry, Washington and Lee University

Awards and Fellowships:

- 2004 Washington and Lee Class of '65 Excellence in Teaching Award
- 1999 Certificate for Dr. Terrence Collins' Presidential Green Chemistry Challenge Award
- 1999 Washington and Lee Class of '65 Excellence in Teaching Award
- 1996 Washington and Lee Class of '65 Excellence in Teaching Award
- 1991-1993 National Institutes of Health Postdoctoral Fellow, Stanford University
- 1984-1987 National Science Foundation Predoctoral Fellowship, California Institute of Technology
- 1984 ACS Susquehanna Valley Section: Outstanding Senior Chemistry Major
- 1984 Alpha Chi Sigma Senior Major with Highest Scholastic Standing
- 1984 Elizabeth M. Oliphant Prize for Highest Class Average in Chemistry or Biological Science
- 1984 Phi Beta Kappa
- 1984 Sigma Xi
- 1983 First Place Seminar in Inorganic Chemistry, ISC Convention at Temple University

Publications and Patents (not including meeting abstracts):

- (25) Uffelman, E. S. "Teaching Science in Art: Technical Examination of 17th-Century Dutch Painting as Interdisciplinary Coursework for Science Majors and Nonmajors" *J. Chem. Educ.* **2007**, *83*, 1617-1624.
- (24) Uffelman, E. S. "A Review of Materials for Teaching Science in Art: Technical Examination of 17th-Century Dutch Painting as Interdisciplinary Course Work for Non-Science and Science Majors" *J. Chem. Educ.* **2007**, October Web Online, 38 pages.
<http://www.jce.divched.org/Journal/Supplements/index.html>.
- (23) Uffelman, E. S. "NMR Studies of Polyamide Macrocyclic Tetradentate Ligands and Their Complexes Relevant to Green Chemistry (with Other Inorganic/Organometallic Experiments)" in *Modern NMR Spectroscopy in Education*; Stockland, R. A.; Rovnyak, D.; Eds.; ACS Symposium Series 969; American Chemical Society: Washington, DC, **2007** 300-316.
- (22) Uffelman, E. S. "News from Online: Renewable Resources" *J. Chem. Educ.* **2007**, *83*, 220-222.

- (21) Weng, T-C.; Hsieh, W-Y.; Uffelman, E. S.; Gordon-Wylie, S. W.; Collins, T. J.; Pecoraro, V. L.; Penner-Hahn, J. E. "XANES Evidence Against a Manganyl Species in the S3 state of the Oxygen Evolving Complex" *J. Am. Chem. Soc.* **2004**, *126*, 8070-8071.
- (20) Uffelman, E. S. "News from Online: Green Chemistry" *J. Chem. Educ.* **2004**, *81*, 172-176.
- (19) Uffelman, E. S.; Doherty, J. R.; Schulze, C.; Burke, A. L.; Bonnema, K.; Watson, T. T.; Lee, D. W., III "Microscale Syntheses, Reactions, and ^1H NMR Spectroscopic Investigations of Square Planar Macrocyclic Tetraamido-N Co(III) Complexes Relevant to Green Chemistry" *J. Chem. Educ.* **2004**, *81*, 325-329.
- (18) Uffelman, E. S.; Doherty, J. R.; Schulze, C.; Burke, A. L.; Bonnema, K.; Watson, T. T.; Lee, D. W., III "Microscale Syntheses, Reactions, and ^1H NMR Spectroscopic Investigations of Square Planar Macrocyclic Tetraamido-N Cu(III) Complexes Relevant to Green Chemistry" *J. Chem. Educ.* **2004**, *81*, 182-185.
- (17) Uffelman, E. S.; Cox, E. H.; Goehring, J. B.; Lorig, T. S.; Davis, C. M. "An NMR-Smell Module for the First Semester General Chemistry Laboratory" *J. Chem. Educ.*, **2003**, *80*, 1368-1371.
- (16) Rorrer, L. C.; Hopkins, S. D.; Connors, M. K.; Lee, D. W.; Smith, M. V.; Rhodes, H. J.; Uffelman, E. S. "A Convenient New Route to Tetradentate and Pentadentate Macrocyclic Ligands" *Organic Letters* **1999**, *1*, 1157-1159.
- (15) France, M. B.; Uffelman, E. S. "Ring-Opening Metathesis Polymerization with a Well-Defined Ruthenium Carbene Complex: An Experiment for the Undergraduate Inorganic or Polymer Laboratory" *J. Chem. Educ.*, **1999**, *76*, 661-665.
- (14) Bartos, M. J.; Gordon-Wylie, S. W.; Fox, B. G.; Wright, L. J.; Weintraub, S. T.; Kauffmann, K. E.; Münck, E.; Kostka, K. L.; Uffelman, E. S.; Rickard, C. E. F.; Noon, K. R.; Collins, T. J. "Designing Ligands to Achieve Robust Oxidation Catalysts. Iron Based Systems" *Coord. Chem. Rev.* **1998**, *174*, 361-390.
- (13) Collins, T. J.; Gordon-Wylie, S. W.; Woomer, C. G.; Horwitz, C. P.; Uffelman, E. S. "Oxidation Catalysis" PCT Int. Appl. (1998), 62 pp. CODEN: PIXXD2 WO 9858735 A1 19981230 CAN 130:111826 AN 1999:27764
- (12) Zhang, X.; Uffelman, E. S.; Collman, J. P. "Bridged, crown-containing tetraphenylporphyrin metal complexes as water-soluble oxygen carriers." U.S. (1995), 24 pp. Cont.-in-part of U.S. 5,274,090. CODEN: USXXAM US 5384397 A 19950124 CAN 123:143544 AN 1995:383026
- (11) Collins, T. J.; Bartos, M. J.; Gordon-Wylie, S. W.; Fox, B. G.; Kauffmann, K. E.; Münck, E.; Rickard, C. E. F.; Weintraub, S. T.; Uffelman, E. S.; Wright, L. "Designing Ligands to Achieve Robust Atom-Transfer Oxidation Catalysts," *J. Inorg. Biochem.* **1995**, *59*, 318-319.
- (10) Collman, J. P.; Zhang, X.; Herrmann, P. C.; Uffelman, E. S.; Boitrel, B.; Straumanis, A.; Brauman, J. I. "Congruent Multiple Michael Addition for the Synthesis of Biomimetic Heme Analogues," *J. Am. Chem. Soc.* **1994**, *116*, 2681-2682.
- (9) Collman, J. P.; Zhang, X.; Lee, V. J.; Uffelman, E. S.; Brauman, J. I. "Regioselective and Enantioselective Epoxidation Catalyzed by Metalloporphyrins," *Science (Washington, D.C.)* **1993**, *261*, 1404-1411.
- (8) Collman, J. P.; Zhang, X.; Uffelman, E. S. U. S. Patent 5 274 090: **1993**.
- (7) Collins, T. J.; Kostka, K. L.; Uffelman, E. S.; Weinberger, T. "Design, Synthesis, and Structure of a Macrocyclic Tetraamide That Stabilizes High-Valent Middle and Later Transition Metals," *Inorg. Chem.* **1991**, *30*, 4204-4210.
- (6) Collins, T. J.; Nichols, T. R.; Uffelman, E. S. "A Square-Planar Nickel(III) Complex of an Innocent Ligand System," *J. Am. Chem. Soc.* **1991**, *113*, 4708-4709.
- (5) Collins, T. J.; Powell, R. D.; Sledobnick, C.; Uffelman, E. S. "Stable Highly Oxidizing Cobalt Complexes of Macrocyclic Tetraamide Ligands," *J. Am. Chem. Soc.* **1991**, *113*, 8419-8425.

- (4) Collins, T. J.; Kostka, K. L.; Münck, E.; Uffelman, E. S. "Stabilization of Mononuclear Five-Coordinate Iron(IV)," *J. Am. Chem. Soc.* **1990**, *112*, 5637-5639.
- (3) Collins, T. J.; Powell, R. D.; Slobodnick, C.; Uffelman, E. S. "A Water-Stable Manganese(V)-Oxo Complex: Definitive Assignment of a $\nu(\text{Mn-O})$ Triple Bond Infrared Vibration," *J. Am. Chem. Soc.* **1990**, *112*, 899-901.
- (2) Collins, T. J.; Slobodnick, C.; Uffelman, E. S. "Chromium(V)-Oxo Complexes of Macrocyclic Tetraamido-*N* Ligands Tailored for Highly Oxidized Middle Transition Metal Complexes: A ^{18}O -Labelling Reagent and a Structure with Four Nonplanar Amides," *Inorg. Chem.* **1990**, *29*, 3432-3436.
- (1) Collins, T. J.; Uffelman, E. S. "The First Macrocyclic Square-Planar Cobalt(III) Complex Relieves Ring Strain by Forming a Nonplanar Amide," *Angew. Chem. Int. Ed. Engl.* **1989**, *28*, 1509-1511.

Invited Presentations and Posters: Many. A listing may be provided upon request.

Courses Currently Taught:

Chem 111	General Chemistry
Chem 250	Intermediate Inorganic Chemistry
Chem 252	Inorganic Chemistry Laboratory
Chem 254	Bioinorganic Chemistry
Chem 350	Advanced Inorganic Chemistry
Univ 202	Science in Art
Art 380	Seminar in 17th Century Dutch Art

Courses Previously Taught:

Chem 206	Survey of the Periodic Table
Chem 207	Synthesis of Inorganic Complexes
Chem 241	Organic Chemistry Lecture
Chem 242	Organic Chemistry Lecture
Chem 241L	Organic Chemistry Laboratory
Chem 242L	Organic Chemistry Laboratory
Chem 243L	Organic Spectroscopy Laboratory
Chem 295	Special Topics in Solid State Chemistry
Chem 297A	Materials of 17th Century Dutch Art
Chem 297B	Instrumental Methods in Art Conservation

Research Interests: The Uffelman group is developing a set of novel polyamide macrocyclic ligands in order to expand the fundamental chemistry and Green Chemistry applications of iron-catalyzed oxidation reactions. Currently we are in our third iteration of ligand syntheses, which has been highly successful. This research program has, to date, involved forty-two different undergraduates, who gain experience in various NMR techniques, IR spectroscopy, inert atmosphere synthetic methods, and organic and inorganic synthesis. Sixteen of these students have done more than one summer of research in the group.

Pedagogical Research:

Novel undergraduate experiments involving NMR methodology or Green Chemistry are developed.

In addition, technical analysis of 17th century Dutch painting is used to teach an interdisciplinary non-science majors course at the interface of chemistry, physics, analytical instrumentation, history, economics, and religion. The course takes students abroad to The Netherlands for three weeks.

Undergraduate Research Students Supervised:

Forty-two at W&L---several for more than one summer or semester (Tamara Hopkins, T. R. Kinsey, Ryan Aday, Matthew Smith, Robert Eison, Anna Mirk, Hilary Rhodes, Jesse Taylor, Holly Layman, Charity Forstmann, Daniel Lee, Anne McElhaney, Jon Doherty, Leonard Rorrer, Carl Schulze, Stephen Hopkins, Michele Connors, Robert Hughes, Alison Cartwright, Ashley Shreves, Tom Stoklasek, Kristen Bonnema, Amy Burke, Gary Davis, Mac Everist, Tanya Watson, Ashley Acker, Bryan Carmody, Andrew Thomas, Marisa Meyer, Johnathan Coleman, Nana Ohene-Baah, Jessica Lloyd, Matthew Reilley, Jared Meyer, Emily Binns, Christopher Diebold, Carly Levin, Scot Pittman, Robert Whitener, Kehvon Clark, Elizabeth Webb)

Grants Awarded:

Jeffress Research Grant Renewal---“ ^1H - ^{15}N HMBC Spectroscopy of Complexes Relevant to Green Chemistry” Awarded July, 2007---\$10,000

Washington and Lee University---Class of '63 Lecture Series, “Recent Developments in Art Conservation and Conservation Science: Considering the Works of Rembrandt and Other Master Painters.” A symposium featuring Jaap Boon (AMOLF-FOM, Amsterdam), Melanie Gifford (National Gallery of Art, Washington, DC), Petria Noble (The Mauritshuis, The Hague) October 30, 2006---\$10,000

Jeffress Research Grant Renewal---“ ^1H - ^{15}N HMBC Spectroscopy of Complexes Relevant to Green Chemistry” Awarded July, 2005---\$10,000

Washington and Lee University---Class of '65 Excellence in Teaching, "Codifying Materials for the Presentation of Scientific Investigations into 17th Century Dutch Art" Awarded May, 2004---\$6,000

Associated Colleges of the South Mini-Keck Grant---“Codifying Materials for the Presentation of Scientific Investigations into 17th Century Dutch Art” Awarded May, 2004---\$7,500

Global Stewardship Course Development Grant---“Science in Art” Awarded March, 2004---\$2,500

National Science Foundation---Major Research Instrumentation, "Multinuclear Gradient Inverse Probe, Amplifier, and Overnight Low Temperature Dewar for High-field NMR Spectroscopy in the Chemistry Department at Washington and Lee University" Awarded August, 2003---\$70,830

Jeffress Research Grant---¹H-¹⁵N HMBC Spectroscopy of Complexes Relevant to Green Chemistry" Awarded July, 2003---\$25,000

Hewlett-Packard Company---University Donation, "Gel Permeation Chromatography in Undergraduate Education at Washington and Lee University"
Awarded August, 1999---\$25,646

Washington and Lee University---Class of '65 Excellence in Teaching, "Development of New Cross Disciplinary Experiments for Chem 112 and Chem 252"
Awarded April 1999---\$5,044

Hewlett-Packard Company---University Grants, "UV-Vis Spectroscopy in Undergraduate Education at Washington and Lee University" Awarded November, 1997---\$15,788

National Science Foundation---Instrumentation and Laboratory Improvement, "High Field Multinuclear NMR in Undergraduate Education at Washington and Lee University"
Awarded May, 1996---\$99,500

Washington and Lee University---Class of '65 Excellence in Teaching, "Development of New Cross-Disciplinary Laboratory Experiments for the New Inorganic Courses at Washington and Lee University" Awarded April, 1996---\$4,375

American Chemical Society---Petroleum Research Fund Type G, "Novel Ligands for Transition Metal and Lanthanide Complexes" Awarded April, 1995---\$20,000

Research Corporation---Cottrell College Science Award, "Novel Macrocyclic Polyamide Ligands for Lanthanide Chemistry" Awarded May, 1995---\$27,000