

Summary:

I retired from the Chemistry Department at Earlham College in June, 2006. My primary teaching was in physical chemistry and inorganic chemistry. I also taught general chemistry, analytical chemistry and several non-majors classes which emphasized environmental issues in chemistry.

Research:

I have been interested in aspects of chemical kinetics for most of my career, beginning with graduate studies of reactive intermediates produced by radiation in low-temperature materials. I have studied several reactions of gas-phase radicals which are of interest in atmospheric chemistry (with C. J. Hochanadel at Oak Ridge National Laboratory, and with E. Allen at the National Center for Atmospheric Research). More recently, I have worked with J. P. Hessler at Argonne National Laboratory on a number of reactions of fundamental interest in combustion chemistry.

I have also pursued interests related to data analysis (curve fitting, spreadsheets, non-linear analysis), laboratory data acquisition through the National Instruments LabVIEW™ system, and in spectroscopy with lasers and with FT NMR and IR. Most recently, I have worked with the use of imaging technology to recover quantitative information from TLC plates, electrophoresis gels, and kinetic systems, and with problems concerning uncertainty estimation in generalized least-squares analyses.

Recent publications

Ogren, P.J.; Duer, W.C.; Meetze, A. "The Limit of Detection in Generalized Least-Squares Calibrations: An Example using Alprazolam LC/MS/MS Data", *J. Anal. Tox.*, *in press*.

Duer, W.C.; Ogren, P.J.; Meetze, A.; Kitchen, C. J.; Von Lindern, R.; Yaworsky, D. C.; Boden, C.; Gayer, J. A. "Comparison of Ordinary, Weighted, and Generalized Least-Squares Straight-Line Calibrations for LC-MS-MS, GC-MS, HPLC, GC, and Enzymatic Assay", *J. Anal. Tox.*, **2008**, *32*, 329-338.

Ogren, P.J.; Deibel, M.; Kelly, I.; Mulnix, A.B.; Peck, C. "Use of a Web Camera in Developmental Biology, Molecular Biology and Biochemistry Laboratories" *Amer. Biol. Teach.*, **2004**, *66*, 57-63.

Stocksdale, M.G.; Fletcher, S.E.S.; Henry, I.; Ogren, P.J.; Berg, M.A.G.; Pointer, R.D.; Benson, B.W. "Developing Investigation Skills in an Introductory Multistep Synthesis Using Fluorene Oxidation and Reduction", *J. Chem. Educ.*, **2004**, *81*, 388-390.

Craft, D.T.; Arcella, S.M.; McDowell, S.M.; Storhoff, B. N.; Gay, A.E.; Deibel, M.A.; Ogren, P.J.; Fanwick, P.E. "An Improved Synthetic Method for Diphenyl-1-pyrenylphosphine and the Properties and Structure of its Borane Adduct", *Phosphorus, Sulfur, Silicon and the Related Elements*, **2004**, *179*, 1365-1371.

FULL CURRICULUM VITAE

Paul Joseph Ogren

Education

Earlham College, Richmond, Indiana, B.A. Chemistry, Math, 1963

University of Wisconsin, Madison, Ph.D. Chemistry (Physical), 1968

Experience

Assistant/Associate Professor of Chemistry, Maryville College, Maryville, Tennessee, 1967-1970.

Associate Professor of Chemistry, Central College, Pella, Iowa, 1972-1979.

Professor (1983) of Chemistry, Earlham College, 1979-present.

Major responsibilities have been in undergraduate teaching, with particular responsibilities in physical, general and inorganic chemistry. Have also taught some analytical chemistry, have participated in developing and teaching interdisciplinary courses, and have been involved in various administrative committees.

Postdoctoral Research

Oak Ridge National Laboratory: 1968-1980, during some summers and other periods.
Pulse radiolysis and flash photolysis of gases.

National Center for Atmospheric Research: Sept. 1971 - Sept. 1972.
Photochemistry of simulated air pollution systems.

Director of on-campus undergraduate summer research:
In aluminum halide-ether complex chemistry, 1969, 1971, 1973-1978. Funded by Research Corporation
In NO_x photochemistry. Funded by NSF, 1975.
In flash photolysis. Funded by Research Corporation 1985-86.

Argonne National Laboratory 1986-99: sabbaticals '86-'87, '94, '00.
various summer and vacation period appointments. Chemical dynamics and high-temperature chemical kinetics studies using high-resolution lasers.

Publications

1. Hochanadel C. J.; Ghormley, J. A.; P.J. Ogren "Pulse Radiolysis of NO: Production of NO₂ and N₂O₃ and the Production and Relaxation of Vibrationally Excited NO" *J. Chem. Phys.* **1969**, *50*, 3072.

2. Stratton, W. J.; Ogren, P. J. "Metal Complexes with Azine Ligands, III. Biacetyl Oxime Azine with Nickel (II)" *Inorg. Chem.*, **1970**, 9, 2588.
3. Ogren, P. J.; Cannon, J. P.; Smith, Jr., C. F. "Complex Formation in Aluminum Iodide-Diethyl Ether Solutions" *J. Phys. Chem.* **1971**, 75, 282.
4. Eglund, R. J.; Ogren, P. J.; Willard, J. E. "Origin of Complex Electron Spin Resonance Spectra of γ -Irradiated Polycrystalline n-Alkyl Iodides with Even Number of Carbon Atoms per Molecule" *J. Phys. Chem.* **1971**, 75, 467.
5. Fenrick, H. W.; Nazhat, N. B.; Ogren, P. J.; Willard, J. E. "Growth and Decay of Alkyl Radicals in γ -Irradiated Alkyl Iodides at 77 K" *J. Phys. Chem.* **1971**, 75, 472.
6. Ogren, P. J.; Bunse, D. L. "An Interdisciplinary Course in Art and Chemistry" *J. Chem. Educ.* **1971**, 48, 681.
7. Ogren, P. J.; Willard, J. E. "Growth Patterns of Reaction Intermediates Produced by Self-Radiolysis of Tritiated Ethyl Iodide at 77 K" *J. Phys. Chem.* **1971**, 75, 3359.
8. C.J. Hochanadel, J.A. Ghormley and P.J. Ogren, "Absorption Spectrum and Reaction Kinetics of the HO₂ Radical in the Gas Phase" *J. Chem. Phys.* **1972**, 56, 4426.
9. Ogren, P. J. "Dynamics of Radical Growth in Irradiated Solid Systems: A Simple Model Involving Competitive Radical Production, Thermal Decay and Radiation-Induced Decay" *J. Phys. Chem.* **1972**, 76, 1324.
10. Ogren, P.J.; Steenhoek, L.; Greve, K.S.; Hutton, W.C. "Syntheses and NMR Characterizations of Representative Aluminum Iodide-Ether Complexes" *J. Inorg. Nucl. Chem.* **1972**, 37, 293.
11. Ogren, P. J. "Analytical Results for First-Order Kinetics in Flow Tube Reactors with Wall Reactions" *J. Phys. Chem.* **1975**, 79, 1749.
12. Koop, S. M.; Ogren, P. J. "HO₂ Kinetics in Simple Systems" *J. Chem. Educ.* **1976**, 53, 128.
13. Hochanadel, C J.; Ghormley, J. A.; Boyle, J. W.; Ogren, P. J. "Absorption spectrum and Rates of Formation and Decay of the CH₃O₂ Radical" *J. Phys. Chem.* **1977**, 81, 3.
14. Sworski, T. J.; Hochanadel, C. J.; Ogren, P. J. "The Flash Photolysis of H₂O Vapor in CH₄. H and OH Yields and Rate Constants for CH₃ Reaction with H and OH" *J. Phys. Chem.* **1980**, 84, 29.
15. Hochanadel, C. H.; Sworski, T. J.; Ogren, P. J. "The Ultraviolet Spectrum and Reaction Kinetics of the Formyl Radical" *J. Phys. Chem.* **1980**, 84, 231.
16. Hochanadel, C. J.; Sworski, T. J.; Ogren, P. J. "Rate Constants for the Reactions of HO₂ with OH and with HO₂" *J. Phys. Chem.*, **1980**, 84, 3274.

17. Ogren, P. J.; Sworski, T. J.; Hochanadel, C. J.; Cassel, J. M. "Flash Photolysis of O₃ in O₂ and O₂+H₂ Mixtures. Kinetics of O₂(¹Σ_g⁺) + O₃ and O(¹D) + H₂ Reactions:" *J. Phys. Chem.* **1982**, *86*, 238.
18. Ontko, R. J.; Russell, R. N.; Ogren, P. J. "Microcomputer-Controlled Cyclic Voltammetry" *J. Chem. Educ.* **1986**, *63*, 325.
19. Holden, M. S; Ogren, P. J.; Lainhart, S. D. "A Simple Method for Drying an NMR Spinner Air Supply" *J. Chem. Educ.* **1990**, *67*, 445.
20. VonDrasek, W. A.; Okajima, S.; Kiefer, J. H.; Ogren, P. J.; Hessler, J. P. "Tunable Laser Flash Absorption: A New Technique Measuring Rates and Rates and Yields of Chemical Reactions at High Temperatures" *Applied Optics* **1990**, *29*, 4899-4906.
21. Ogren, P.J.; Norton, J.R. "Applying a Simple Linear Least-Squares Algorithm to Data with Uncertainties in Both Variables" *J. Chem. Educ.* **1992**, *69*, A130.
22. Hessler, J. P.; Ogren, P. J. "Correlation Analysis of Complex Kinetic Systems: A New Scheme Utilizing Sensitivity Coefficients" *J. Chem. Phys.*, **1992**, *97*, 6249.
23. Ogren, P.J. and Hessler, J.P., "Sensitivity and Correlation Analysis of the Physical Parameters in Absorption, Four-Wave Mixing, and Schlieren Experiments" *Int. J. Chem. Kinet.*, **1995**, *27*, 719.
24. Hessler, J.P., Current, D.H. and Ogren, P.J., "A new scheme for calculating weights and describing correlations in nonlinear least-squares fits", *Computers in Physics*, **1996**, *10*, 186.
25. Du, H., Hessler, J.P. and Ogren, P.J., "Recombination of Methyl Radicals: 1. New Data Between 1175 and 1750 K in the Falloff Region", *J. Phys. Chem.*, **1996**, *100*, 974.
26. Hessler, J.P. and Ogren, P.J., "Recombination of Methyl Radicals: 2. Global Fits of the Rate Coefficient", *J. Phys. Chem.*, **1996**, *100*, 984.
27. Ogren, P.J. and Jones, T. P., "Laboratory Interfacing using the LabVIEW Software Package", *J. Chem. Educ.*, **1996**, *73*, 1115.
28. Mowry, S. and Ogren, P.J., "Kinetics of Methylene Blue Reduction by Ascorbic Acid", *J. Chem. Educ.*, **1999**, *76*, 970.
29. Kalberg, C. and Ogren, P.J., "An Inexpensive Convenient Press for KBr and CsI Pellets in Infrared Studies", *J. Chem. Educ.* **2000**, *77*, 391.
30. Ogren, P.J., Nelson, S. and Henry, I. "Using a Diode Laser Pointer to Count Drops and Automate Titration Systems", *J. Chem. Educ.*, **2001**, *78*, 353.

31. Ogren, P.J., Davis, B. and Guy, N., "Curve Fitting, Confidence Intervals and Envelopes, Correlations, and Monte Carlo Visualizations for Multilinear Problems In Chemistry: A General Spreadsheet Approach" *J. Chem. Educ.*, **2001**, *78*, 827-836.
32. Ogren, P.J., "Using the Asymmetric Stretch Band of CO₂ to Obtain the C=O Bond Length" *J. Chem. Educ.*, **2001**, *78*, 353.
33. Ogren, P.J.; Henry, I.; Fletcher, S.E.S.; Kelly, I. " Chemical Applications of a Programmable Image Acquisition System " *J. Chem. Educ.*, **2003**, *80*, 699-703.
34. Ogren, P.J.; Deibel, M.; Kelly, I.; Mulnix, A.B.; Peck, C. "Use of a Web Camera in Developmental Biology, Molecular Biology and Biochemistry Laboratories" *Amer. Biol. Teach.*, **2004**, *66*, 57-63.
35. Stocksdale, M.G.; Fletcher, S.E.S.; Henry, I.; Ogren, P.J.; Berg, M.A.G.; Pointer, R.D.; Benson, B.W. " Developing Investigation Skills in an Introductory Multistep Synthesis Using Fluorene Oxidation and Reduction" , *J. Chem. Educ.*, **2004**, *81*, 388-390.
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