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EDUCATION

Oregon Graduate Center: Postdoctoral Research Associate, James K. Hurst, Bacterial Toxicity of Hypochlorous acid. 1987.

Oregon Graduate Center: Postdoctoral Research Associate, Thomas M. Loehr and Joann Sanders-Loehr, Resonance Raman spectroscopy of transition metal complexes and metalloproteins. 1984-1987.

Washington State University: Ph.D., Inorganic Chemistry, Deuterium NMR of para-magnetic Cr(III) complexes, with additional background in computational chemistry. 1978-1984.

Northern Arizona University: B.S., Chemistry (ACS), Earth Science (minor). Synthesis and X-ray diffraction studies on the ice nucleation properties of small organic compounds. 1975-1978.

PRESENT POSITION

1994 - Present: Research Scientist: NMR Laboratory Manager, Chemistry computer facility system administrator, in addition to my other duties.

1988 - 1993: Scientific Instrumentation Specialist: Major instrumentation supervisor, Chemistry Department.

PRESENT DUTIES

NMR Facility: I manage and maintain the Chemistry Department NMR facility. This currently consists of a Bruker DRX-700 and a Bruker DRX-400 NMR spectrometer. In addition, I am also involved in maintaining a TecMag Discovery 400 MHz solid's instrument, belonging to a faculty member (Dr. Jeff Yarger). This is also available to the department for research. My main duties include, providing training for the faculty and students, on demand problem solving, diagnoses and repair of hardware and software difficulties, writing and publishing helpful documentation, assistance to researchers in the design and implementation of appropriate NMR experiments, and implementing new NMR methods. Additional duties include, periodic billing of users for NMR time used, updating hardware and software and other routine maintenance and mediating resource conflicts.

Computer Facility: I am the manager for the Chemistry Department computing facility. This currently consists of a four-processor Silicon Graphics Origin200 Server, two SGI O² workstations and two SGI Indy workstations. I maintain a great deal of software including the Gaussian98, GaussView, Matlab, Mathematica applications and the Cambridge Crystallographic data base. I have programmed various utilities in C and Bourne shell and developed other application in collaboration with users. I assist users to establish remote connections. Other duties include, managing users, introducing new users to the system, system accounting, maintaining Unix system security, periodic system backups, diagnoses and repair of hardware and software difficulties, mediation of resource conflicts, updating hardware and software and assisting users with advanced computations.

Additional Instrumentation: Responsible for a Perkin Elmer FTIR and a Perkin Elmer UV/Vis/NIR.

Programing: I have developed a program in Matlab to process one and two-dimensional NMR data. This program is both user friendly and flexible enough to allow for expanded capabilities. I also developed a computer interface with MS-Windows software to replace the original PDP-11 computer on the JEOL NMR data system with an IBM compatible computer. I also consult with the faculty on specific projects, for instance, I designed a computer interface to replace the data acquisition system on a laser lifetime instrument, with a digital oscilloscope and MS-Windows software. I assist researchers with interfacing instruments to computers, programming in C++, C, Matlab, ASYST and FORTRAN languages and MS-Windows programming.

OTHER EXPERIENCE

Resonance Raman Spectroscopy: The effect of ligand complement on the resonance enhancement of Oxo bridged binuclear Fe(III) complexes and its application to binuclear iron centers in metalloproteins. Resonance Raman of blue copper proteins, model compounds of blue copper proteins and site directed mutants of cytochrome c.

Computational Chemistry: The electronic structure of transition metal complexes by the X-alpha Scattered Wave Method and use of other molecular orbital programs. Normal Coordinate Analysis of oxo bridged binuclear Fe(III) compounds. Installation, modification and use of large programs for quantum chemical calculations and normal coordinate analysis.

Structural Chemistry: Development of deuterium Nuclear Magnetic Resonance as a structural probe of Cr(III) complexes. The solution structure of Cr(III) complexes by deuterium NMR spectroscopy. Assignment of the deuterium NMR spectra of Cr(edta)⁻ and related complexes by stereo specific isotopic substitution. Use of EPR, UV-visible, FT-IR and resonance Raman spectroscopy.

Synthetic Chemistry: Synthesis of Cr(III) and Co(III) complexes of polyamine- carboxylate ligands and their specifically deuterium labeled analogues as well as the above ligands. Synthesis of oxo bridged binuclear Fe(III) complexes and model complexes of blue copper proteins. Vacuum line techniques.

Biochemistry: Use of ^{14}C labeled substrates to study membrane transport in bacteria.

Chromatography: Use of ion exchange, gel filtration and thin layer chromatography for the preparation and characterization of metal complexes and azo dyes.

SUPPLEMENTARY EDUCATION

Avance Spectrometer Maintenance and Service Course, September 23-26, 1997. Bruker Instruments, Billerica, MA.

Avance I Course, August 18-21, 1997. Bruker Instruments, Billerica, MA.

Electrical Engineering EE-4230, Digital Filter Design, Fall 1996, University of Wyoming, Laramie, WY.

Workshop on NMR and the Structure of Biomolecules, March 4-9, 1990. Interdisciplinary Center for Biotechnology Research, University of Florida, Gainesville, FL.

JEOL GX NMR System management Course, Fall 1990, JEOL Instruments, Peabody, MA.

HONORS

Nominated outstanding graduate student (Chemistry Department, Washington State University). Received the McAllister Award, for outstanding senior chemistry major (Chemistry Department, Northern Arizona University). Received a National Science Foundation Student Originated Studies grant to determine the trace metal content of soils near the Grand Canyon.

PUBLICATIONS

Connecting the Dots: Teaching the Basics of Multi-Dimensional NMR. An Undergraduate Bio-Chemistry or Bio-Organic Laboratory. B. J. Gross, W. D. Wheeler, A. Strickland, J. L. Yarger, Department of Chemistry, University of Wyoming, Laramie WY 82071. R. A. Nieman, S. K. Smith, B. Blankenship, Department of Chemistry, Arizona State University, Tempe, AZ 85287. To be submitted to The Journal of Chemical Education.

Electronic and Raman Spectroscopic Properties of Oxo-Bridged Dinuclear Iron Centers in Proteins and Model Compounds. Joann Sanders-Loehr, William D. Wheeler, Andrew K. Shiemke, Bruce A. Averill and Thomas M. Loehr. J.Am.Chem.Soc. **1989**, 111, 8084-8093.

General Mechanism for the Bacterial Toxicity of Hypochlorous acid: Abolition of ATP Production. William C. Barrette, Jr., Diane M. Hannum, William D. Wheeler and James K. Hurst. Biochemistry **1989**, 28, 9172-9178.

Viability and Metabolic Capability are Maintained by Escherichia coli, Pseudomonas aeruginosa and Streptococcus lactis at Very Low Adenylate Energy Charge. William C. Barrette, Jr., Diane M. Hannum, William D. Wheeler and James K. Hurst. J.Bacteriol. **1988**, 170, 3655-3659.

Resonance Raman Spectroscopy of Blue Copper Proteins: Ligand and Coenzyme Effects in Cu(II)-Substituted Liver Alcohol Dehydrogenase. Wolfgang Maret, Andrew K. Shiemke, William D. Wheeler, Thomas M. Loehr and Joann Sanders-Loehr. J.Am.Chem.Soc. **1986**, 108, 6351-6359.

The Electronic Structure of trans-[Cr(ox)₂(py)₂] by the X-alpha Scattered Wave Method. William D. Wheeler and Ronald D. Poshusta. Inorg.Chem. **1985**, 24, 3100-3106.

Assignment of the Deuteron NMR Spectra of Chromium(III) Complexes with edta and Related Ligands. William D. Wheeler and J. Ivan Legg. Inorg.Chem. **1985**, 24, 1292-1297.

Solution Structure of the Chromium(III) Complex with edta by Deuteron NMR Spectroscopy. William D. Wheeler and J. Ivan Legg. Inorg.Chem. **1984**, 23, 3798-3802.

A Direct Method for Determining the Structure of Chromium(III) Complexes in Solution by Deuteron Nuclear Magnetic Resonance. William D. Wheeler, Sumio Kaizaki and J. Ivan Legg. Inorg.Chem. **1982**, 21, 3248-3250.

PRESENTATIONS

Resonance Raman Spectra of oxo bridged binuclear Iron(III) complexes. William D. Wheeler, Thomas M. Loehr and Joann Sanders-Loehr. American Chemical Society Regional Meeting, June 18, 1986.

Determination of the Solution Structure of Cr(III) and Mo(III) Complexes by Deuteron NMR Spectroscopy. J.I. Legg, R.J. Bianchini C.A. Green, S. Kaizaki, N. Koine and W.D. Wheeler. The XXIII International Conference on Coordination Chemistry, July 31, 1984.

A Structural Study of the Cr(III)-Edta Complex in Solution by Deuteron NMR Spectroscopy. William D. Wheeler and J. Ivan Legg. American Chemical Society National Meeting, March 24, 1983.

X-Alpha Multiple Scattering Calculations on [CrF₅py]²⁻. William D. Wheeler, J. Ivan Legg, and Ronald D. Poshusta. International Symposium on Atomic, Molecular and Solid-State Theory, Collision Phenomena and Computational Quantum Chemistry. Quantum Chemistry Symposium No. 17, March 10, 1983.

PROFESSIONAL AFFILIATIONS AND ACTIVITIES

Association of Managers of Magnetic Resonance Laboratories (AMMRL)