

LEONARD J. ARCHER, Ph.D.

Curriculum Vitae

Department of Chemistry
Missouri Western State University
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Professional Preparation

Ph.D. Inorganic Chemistry, University of Nebraska-Lincoln, Lincoln, NE, Dissertation title "Photochemistry of Dinitrogen Exchange of Molybdenum and Tungsten Complexes"

M.S. Inorganic Chemistry, University of Nebraska-Lincoln, Lincoln, NE, Thesis title "Synthesis, Characterization, and Behavior of Tetrahydridobis(1,2-bis(di-m-tolyl-phosphino)ethane)Molybdenum"

B.S. Chemistry (Physics minor), Northwest Missouri State University, Maryville, MO

Professional Experience

Missouri Western State College, Assistant and Associate Professor, 1968-1990
Missouri Western State University, 1990-present, Professor of Chemistry
Missouri Western State University, Chemistry Chairperson, 1989-2007

Academic Courses Taught

CHE 101, Introduction to Chemistry, lecture and laboratory
CHE 104, Fundamentals of Chemistry, lecture and laboratory
CHE 111, General Chemistry I, lecture and laboratory
CHE 120, General Chemistry II, lecture and laboratory
CHE 311, Organic Chemistry I laboratory
CHE 295, Colloquium in Chemistry
CHE 380, Environmental Chemistry
CHE 441, Advanced Inorganic Chemistry lecture
CHE 442, Inorganic Preparations laboratory
CHE 450, Independent Research/ Project
CHE 490, Research in Chemistry
CHE 495, Seminar in Chemistry
CHE 580, Instrumentation for Chemical Education (adjunct graduate faculty at NWMSU, 1986)

Professional Affiliations

American Chemical Society, Organometallic and Chemistry Education Subdivisions
Missouri Academy of Sciences
Chemistry Educators Association (Saint Joseph Region)
Journal Reviewer: *The Chemical Educator* and *Transactions of the Missouri Academy of Sciences*

Professional Activities

MWSU Ad Hoc Grad Committee (faculty representative) and Graduate Curriculum Committee (chair) – '05, '06
National Coordinator for 2nd ACS On-line Course (Industrial and Environmental Chemistry) - '98
MWSU Faculty Instructor for 1st ACS On-line Course (Industrial and Environmental Chemistry) - '96
National Committee - ACS On-line Course For Upper Level Chemistry Students - '98 (Chair), and '00
Missouri Department of Higher Education Telecommunications Advisory Group Faculty Committee - '98
MWSU Distance Education Committee Faculty Representative - '98, '99, '00, and '01
Director of MO Department of Higher Education Chemical Education Workshop - HS Teacher Retraining - '86
Director of MWSU Advanced Chemistry Education Seminar - '81, '82, '84, '88 and '91
Director of MWSU Chemathon (High School Chemistry Competition) - '79, '80, '83, '87, '90 and '93

Program Coordinator of Chemistry Educators Association - '77, '79, '81, '84, '86, '88, '89, '93, '94, '98, and '99

Publications

"Challenges and Opportunities for On-Line Courses in Chemistry," L. J. Archer, and A. M. Harrison, peer reviewed invited paper in *CONFCEM*, July (1999)

"Environmental and Industrial Chemistry - An On-line Intercollegiate Course," L. J. Archer et. al., *The Chemical Educator*, Vol. 3, Issue 2 (1998)

"Synthesis of Dinitrogen & Dihydrogen Complexes of Molybdenum," L. J. Archer, T. A. George, and M. E. Noble, *Journal of Chemical Education*, 58, (1981) 727.

"The Effect of the Wavelength of Light upon the Extent of Dinitrogen Exchange in Bis(dinitrogen) Complexes of Molybdenum and Tungsten," L. J. Archer and T. A. George, *Inorganica Chimica Acta*, 44, (1980) L129-L132.

"Reactions of Coordinated Dinitrogen. Displacement of Coordinated Dinitrogen by Dihydrogen in Low-Valent Molybdenum Complexes," L. J. Archer and T. A. George, *Inorganic Chemistry*, 18, (1979) 2079-2082.

"Secondary and College Faculty Work Hand in Hand for the Improvement of Science Education," L. J. Archer and L. L. Lambing, *Missouri Science News*, 20, (1978) 7-11.

"Reaction of Dihydrogen with Bisdinitrogen Complexes of Molybdenum Containing Bidentate Tertiary Phosphine Ligands," L. J. Archer and T. A. George, *Journal of Organometallic Chemistry*, 54, (1973) C25-26.

"General Chemistry Laboratory Manual," and "Introductory Chemistry Laboratory Manual," co-authored with other members of the MWSC Department of Chemistry, (nine revisions since publication in 1970)

Research Interests

Remediation of heavy metal ions using zeolite resins; Heavy metal content in white tail deer of Northwest Missouri; Characterization of rhodium metallocene chlorides and their potential use as polymer bound heterogeneous catalysts; Polymer functionalization for catalytic applications; application of distance education technologies for chemistry.

Presentations

"Remediation of Heavy Metal Contamination from Wastewater Through the Use of Zeolite Resins" presented to the Midwest Regional ACS Meeting in Kansas City, MO, November 2007.

"Application of Zeolite Resins for the Remediation of Contaminant Ions in Wastewater" presented to the Midwest Regional ACS Meeting in Kansas City, MO, November 2007.

"Methods and Scenarios for Utilizing Digital Resources in the Teaching of Environmental Courses for Chemistry Majors", an invited presentation to the 232nd National ACS Meeting, San Francisco, CA, August, 2006

"Using Instrumentation in First Year Chemistry Laboratory – Helping Students Visualize the Practice of Chemistry" presented at the International Conference for First-Year Undergraduate Chemistry Education, Univ. of IL, Champaign-Urbana, IL August, 2005.

"Dual Credit Chemistry Doesn't Have to be a Dirty Word. Getting the Most from a Dual Credit General Chemistry Course", presented at the International Conference for First-Year Undergraduate Chemistry Education, Univ. of IL, Champaign-Urbana, IL August, 2005.

"Dual Credit – An Innovative Model for Teaching General Chemistry", presented at the 227th National ACS Meeting, New Orleans, LA, March, 2003.

"Examining a Chemistry Professor's Teaching Toolbox: Selecting and Using the Appropriate Technology Tools," 218th National ACS Meeting, New Orleans, LA, August, 1999

"A National On-line Course For Upper Level Chemistry Majors -Evolution from the Bleeding Edge...to the Cutting Edge!" 215th National ACS Meeting, Dallas, TX, March, 1998

"Design and Functionality for the Electronic Classroom - Teaching Strategies for use in General Chemistry," 214th National ACS Meeting, Las Vegas, NV, September, 1997

"Environmental and Industrial Chemistry - A National On-line Intercollegiate Course," CHEMCONF '97, University of Maryland, July, 1997 (a national on-line conference)

"Experience with the Virtual Classroom - Results of a National Distance Learning Initiative in Chemistry," Missouri Academy of Science Meeting, Warrensburg, MO, April, 1997

"Use of CD-ROM Textbook Technology as an Aide for Conceptual Learning and Problem Solving in the Multimedia Classroom Environment," Missouri Academy of Science Meeting, Warrensburg, MO, April, 1997

"Environmental And Industrial Chemistry - The First American Chemical Society Sponsored On-line Course For Upper-class Chemistry Students," 212th National ACS Meeting, Orlando, FL, August, 1996

"The First American Chemical Society On-line Chemistry Course For Upper-class Chemistry Students - Environmental And Industrial Chemistry," Missouri Academy of Science Meeting, Springfield, MO, April, 1996

"Techniques Taught in the First General Chemistry Experiment," Missouri Academy of Science Meeting, Maryville, MO, April, 1995

"Dual Tracked Instruction - A Model for the Structure, Content And Presentation of Secondary Science Teacher Workshops," Midwest Regional ACS Meeting, St. Louis, MO, November, 1989

"Heterogenization of Transition Metal Catalysts by Polymer-Attachment using the Methylated Cyclopentadiene

Ligand," Missouri Academy of Science Meeting, Jefferson City, MO, April, 1987

"Heterogenization of Transition Metal Catalysts," Midwest Regional ACS Meeting, Carbondale, IL, November, 1985

"Analysis of Pre-College Student Performance in Competitive High School Chemistry Exams at Missouri Western State College," Regional ACS Meeting, Carbondale, IL, November, 1985

"Microcomputers in the Chemistry Curriculum at Missouri Western State" Regional ACS Meeting, Carbondale, IL, November, 1985

"Employment Outlook for Chemists Through 1990," Employment Seminar and Workshop at the University of Missouri-Kansas City, Kansas City, MO, February, 1985

"High School and College Interface Programs," Midwest Regional ACS Meeting, Columbia, MO, November, 1982

"MWSC Chemathon: A Regional Competition in Chemistry," Midwest Regional ACS Meeting, Lincoln, NE, November, 1980

"The Effect of Light Upon the Rate of Dinitrogen Exchange in Some Bis(dinitrogen) Complexes of Molybdenum and Tungsten," National ACS Meeting, Washington D. C., April, 1979

"The Photochemistry of Bisdinitrogen-bis[1,2-bis(diphenyl-phosphino)ethane]molybdenum," National ACS Meeting, Chicago, IL, April, 1977

"Monodinitrogen derivatives of Molybdenum(I)," National ACS Meeting, New Orleans, LA, November, 1977

"Reactions of Dinitrogen Complexes of Molybdenum," National ACS Meeting, Dallas, TX, August, 1973

"Synthesis and Characterization of a New Eight Coordinate Tetrahydrido-molybdenum Complex," Nebraska Academy of Sciences, Lincoln, NE, April, 1973

"Synthesis and Characterization of New Eight-Coordinate Tetrahydrido-molybdenum Complexes," Midwest Regional ACS Meeting, Lawrence, KS, Midwest Regional ACS Meeting, Lawrence, KS, November, 1973