



# **FIRE/RECONSTRUCTION CONSULTANTS, INC.**

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CHEMICAL CONSULTANT

**DR. CHRISTIAN A. CLAUSEN**

**Personal:**

Professor and Graduate Program Coordinator  
Department of Chemistry  
University of Central Florida  
Orlando, Florida 32816

**Date and Place of Birth:** December 7, 1940 - New Orleans, Louisiana

**Marital Status:** Married; three children

**Education:**

- High School - 1958, Belle Chasse, Louisiana
- B.S. - 1963, Industrial Chemistry, Louisiana State University; Baton Rouge, Louisiana
- Ph.D. - 1969, Physical Inorganic Chemistry, University of New Orleans; New Orleans, Louisiana; Dissertation topic: "Mossbauer and Far-Infrared Studies on Distorted Octahedral, Tetrahedral and Pyramidal Configurations in Iron and Tin Complexes."

**Professional Employment:**

- Professor, Department of Chemistry, University of Central Florida (formerly Florida Technological University); 1977 to present.
- Senior Technical Consultant for Fire/Reconstruction Consultants, Inc. 1983 to present.
- Technical Consultant to the following firms: Engineering Technology, Inc., Hazardous Waste Consultants, Inc., C.W. Products and GAF Corporation; 1985 to present.
- Associate Professor, Department of Chemistry, University of Central Florida; 1972-1977.
- Assistant Professor, Department of Chemistry, University of Central Florida; 1969-1972.
- Research Chemist, Dow Chemical Company, Plaquimine, Louisiana; 6/76-9/76. Visiting Associate Professor, Department of Chemistry, Louisiana State University, New Orleans, Louisiana; 6/75-9/75.
- Visiting Associate Professor, Department of Chemistry, Louisiana State University, New Orleans, Louisiana; 6/74-9/74.
- Visiting Scientist, Dupont Chemical Company; 6/72-9/72.
- Visiting Assistant Professor, Department of Chemistry, Louisiana State University, New Orleans, Louisiana; 6/70-9/70.
- Graduate Teaching Assistant, Department of Chemistry, Louisiana State University, New Orleans, Louisiana; 9/66-9/69.
- Research Chemist, Standard Oil Company, California; 1/63-9/66.

### **Fields of Interest:**

- Spectroscopy and structure determination of complexes, particularly Mossbauer and FTIR spectroscopy; coordination chemistry; the study and development of new supported metal catalyst systems; the development of new industrial processes; the study of new commercial product formulations; studies of the relationship between basic research and its application to the solution of industrial problems; the application of chemical instrumentation to the solution of problems In forensic science and aerosol systems, hazardous waste minimization and treatment methodologies.

### **Awards:**

1. Dow Chemical Company Scholarship (1959-1963)
2. Outstanding Chemistry Undergraduate Student (1960, 61, 62)
3. National Science Foundation pre-doctoral trainee (1966-1969)
4. Research Society of America Award for "Excellence in research" (1970)
5. Atomic Energy Commission - Research Fellowship (1972)
6. Orlando Jaycees Award as Outstanding Young Educator for 1973.
7. Outstanding Educators of America, 1974-1975 Edition
8. Selected for the American Chemical Society Tour Speaker Award (1974-75)
9. First FTU Foundation Award for Excellence In Teaching (1975)
10. Selected to the UCF "The Quill" (1983)
11. One of the firsts of two UCF faculty members selected to Phi Kappa Phi (1984)

### **Membership and Offices Held in Professional and Honorary Societies:**

1. American Chemical Society
  - a) Secretary for the Florida Section (1972-1976)
  - b) Councilor for the Florida Section (1976-1986)
  - c) Membership Committee Chairman for the Florida Section (1972-1976)
  - d) Chairman of the Florida Congressional Science Councilor Program (1976-1982)
  - e) Congressional Science Advisor (1976-present)
  - f) Member of the Florida Executive Committee (1972-1986)
  - g) ACS Tour Speaker (1974-1982)

- h) Chairman of ACS Task Force on Academic Preparation and Industrial Careers in Chemistry (1979-1984)
- i) Sub-committee Chairman ACS Task Force on Cross Fertilization of Chemistry and Chemical Engineering (1982- 1986)
- j) Member ACS Academic-Industrial Chemistry Advisement Board (1985-1988)
- 2. Member and past chairman of the Psi Chapter of Alpha Chi Sigma (1961)
- 3. Phi Lambda Upsilon (Men's Chemistry Honorary) (1962-present)
- 4. Phi Kappa Phi (1984-present), Treasurer (1985-1987)

**Sponsored Research - External Funding:**

1. "Waste Minimization - The Replacement of Halogenated Hydrocarbons in Solvent Based Cleaning Operations and the Treatment of Spent Inorganic Oxidizing Solutions", (1989) funded by Martin Marietta, \$60,841.
2. "The In-Place Immobilization of Metal ions In Soil and Ash, (1989) funded by The Center for Environmental Toxicology", \$35,000.
3. "Enhancement of the Kinetics of Incineration of Dilute Hazardous Organic Vapors", (1989) funded by Gulf Coast Hazardous Substance Research Center, \$64,930.
4. "Microparticulate Studies", (1988) funded by Engineering Technology, Inc., \$13,000.
5. "Aerosol Evaporation Studies", (1988) funded by DOD for \$12,063.
6. "Aerosol Evaporation Studies", (1987) funded by DOD for \$22,812.
7. "Aerosol Evaporation Studies", (1986) funded by DOD for \$10,470.
8. "Infrared Obscuration Studies - Phase III", (1986) funded by DOD for \$1,400.
9. "Infrared Obscuration Studies - Phase II", (1985) funded by DOD for \$1,000.
10. "Aerosol Evaporation Studies", (1984) funded by DOD for \$4,000.
11. "Infrared Obscuration Studies", (1984) funded by DOD for \$3,000.
12. "The Development of a Methodology Base for Identifying Tire Skid and Scuff Marks", (1982) funded by DSR for \$6,000.
13. "Self Paced Instruction for General Chemistry Lab Assignments", (1981) funded by QIP for \$625.
14. "Identification of Accelerents in Fire Atmospheres", (1980) funded by the STAR program, \$24,009.
15. "The Use of Phosphate Rock Slimes in the Ternary Treatment of Sewage" (1979) funded by the W.R. Grace Corporation, \$2,000.
16. "Early Detection and Entrapment of Accelerents in Fire Atmospheres", (1979) funded by the STAR program; \$22,000.
17. "Piperylene Separation", (1979) funded by Dow Chemical Company, \$9,585.
18. "Development of a Laboratory Course in Principles of Industrial Chemistry", (1979) funded by the National Science Foundation, \$20,358.
19. "Mossbauer Spectroscopic Studies of Homogeneous Catalysts Coordinately Bound to Polymer Supports", (1975) funded by Research Corporation, \$5,000.
20. "Selected Iron and Ruthenium Mossbauer Studies - A Study of Supported Ruthenium Catalysts - Part II", (1975) funded by National Science Foundation - College Research Participation Program, \$6,335.
21. "Cooperative Research in Graduate Education", (Summer, 1976) funded by Dow Chemical Company, \$10,000.

22. "A Project to Develop Instructional Materials for a Course In Industrial Chemistry", (1973) funded by National Science Foundation, \$17,260.
23. "Selected Iron and Ruthenium Mossbauer Studies - A Study of Supported Ruthenium Catalysts - Part I", (1974) funded by National Science Foundation College Research Participation Program, \$5,305.
24. "Summer Research Participation Program", (1973) funded by the Atomic Energy Commission, \$4,500.
25. Travel Grant to AEC Savannah River Laboratories, (1973) funded by the Atomic Energy Commission, \$250.
26. Atomic Energy Commission Grant, (1970); \$10,000.

#### **Sponsored Research - Internal Funding:**

1. Overhead Projection Chemical Demonstrations', (1988), an Instructional Development Grant from UCF Instructional Resources, \$350.
2. "Instructional Development Grant in Chemistry", (1984) UCF Learning Council, \$1,500.
3. "The Development of a Methodology Base for Identifying Tire Skid and Scuff Marks by Fourier Transform Interferometry", (1982) funded by Division of Sponsored Research, \$6,000.
4. The Development of a Process for Recovering Platinum from Spent Automotive Emission Control Catalytic Converters - Phase II", (1979) funded by Division of Sponsored Research, \$750.
5. "The Development of a Process for Recovering Platinum from Spent Automotive Emission Control Catalytic Converters - Phase I", (1978) funded by Division of Sponsored Research, \$1,700.
6. "A project to Establish the Toxic Chemical Exposure Levels in Laboratories and Work Areas at F.T.U.", (1978) funded by Division of Sponsored Research Business Affairs, \$1,090.
7. "The Development of a Homogeneous Catalytic System for Producing Methanol from Carbon Oxides and Hydrogen Mixtures Under Low Pressure and Temperature Conditions", (1977) funded by Division of Sponsored Research, \$1,700.

#### **Textbooks Published:**

1. Chemistry Fundamentals Laboratory Experiments, C.A. Clausen, December 1974; Omni-Print, Inc.: Sarasota, Florida; 70 pages.
2. Case Studies in Industrial Chemistry, C.A. Clausen and G.C. Mattson, January 1975; American Chemical Society; Washington, D.C.; 385 pages.
3. Principles of Industrial Chemistry, C.A. Clausen and G.C. Mattson, December 1978; John Wiley & Sons: New York; 412 pages.
4. Fundamentos De Quimica Industrial, C.A. Clausen and G.C. Mattson; May 1982; Editorial Limus, S.A.; 445 pages.

#### **Scientific Publications:**

1. Clausen, C.A.; Good, M.L.; "Effects of Cations on the Mossbauer Spectra of Tetrahaloferrate Anions", in Mossbauer Methodology; Gruverman, I., Ed.; Plenum Press: New York, 1968; Vol. 4, Page 187.
2. Clausen, C.A.; Good, M.L.; "Stabilization of the Hexachloroferrate (III) Anion by the Methylammonium Cation", *Inorg. Chem.* 1968,7,2662.
3. Clausen, C.A.; Prados, R.A.; Good, M.L.; "Mossbauer Effect Parameters in Ruthenium Compounds", *Chem. Comm.* 1969, 1188.
4. Clausen, C.A.; Good, M.L.; "Mossbauer and Far Infrared Studies of *Inorg. Chem.* 1970, 9, 220.

5. Clausen, C.A.; Good, M.L.; "An Interpretation of the Mossbauer Spectra of Mixed Hexahalo complexes of Tin (IV)", *Inorg. Chem.* 1970, 9, 817.
6. Clausen, C.A.; Prados, R.A.; Good, M.L.; "Chemical Applications of the Mossbauer Effect in Ruthenium Compounds", in *Mossbauer Methodology*; Gruverman, I., Ed; Plenum Press: New York, 1970, Vol. 7, pp 31.
7. Clausen, C.A.; Prados, R.A.; Good, M.L.; "A Mossbauer Study of the bonding in Ruthenium (II) Compounds", *J. Am. Chem. Soc.* 1970,92,7482.
8. Clausen, C.A.; Good, M.L.; "Mossbauer and Far Infrared Studies of Mixed Halide Complexes of Iron and Tin", *Proceedings of the 3<sup>rd</sup> Symposium on Coordination Chemistry*; Beck, M.T., Ed.; Akademiai Kiado Budapest, 1970; Vol. I, pp 445-454.
9. Clausen, C.A.; Prados, R.A.; Good, M.L.; "A Mossbauer Study of Ruthenium Red", *Inorg. Nucl. Chem. Lett.* 1971, 7, 485.
10. Clausen, C.A.; Prados, R.A.; Good, M.L.; "Nuclear Isomer Shift and Ligand Electronegativity in Ruthenium Trihalides", *Chem. Phys. Lett.* 1971, 8, 565.
11. Clausen, C.A.; Prados, R.A.; Good, M.L.; "Mossbauer Study of Ruthenium (II) Pentaamines", *J. Coordination Chem.* 1973, 2, 201.
12. Clausen, C.A.; Good, M.L.; "Application of Mossbauer Spectroscopy in the Study of Coordination Compounds", an American Chemical Society Monograph, *Coordination Chemistry*, Vol. I; Martell, A.E., Ed.; Reinhold Publishing Corp., 1971, pp 341.
13. Clausen, C.A.; Wilson, M.M.; "A Mossbauer Study of Iron (III) -Amino Acid Complexes", *Abstracts of the 23rd Southeastern Regional American Chemical Society Meeting, Nashville, Tenn., 1971*, Abst. 49.
14. Clausen, C.A.; Dunn, G.C.; "A Mossbauer Study of Iron (II) - Amino Acid Complexes", *Flacs* 1972, 25(8), 29.
15. Clausen, C.A.; Mattson, G.C.; "Teaching Concepts in Industrial Chemistry by the Case Study Method", *Flacs* 1974, 27(8), 23.
16. Clausen, C.A.; Prados, R.A.; Good, M.L.; "A Mossbauer Study of a Series of Ruthenium (II) Pentaamines", *J. Coord. Chem.* 1973, 2, 201.
17. Clausen, C.A.; Good, M.L.; "Mossbauer Effect Studies of Supported Ruthenium Catalysts", *J. of Catalysis* 1975, 38, 92.
18. Clausen, C.A.; Mattson, G.C.; "Cases in Chemical Technology", *CHEMTECH* 1975, 5, 535.
19. Clausen, C.A.; Stone, J.; "Mossbauer Spectra of <sup>237</sup>Np in Ion-Exchange Resins", *J. Inorg. and Nucl. Chem.* 1975, 37, 261.
20. Clausen, C.A.; Good, M.L.; "Application of Mossbauer Spectroscopy to Studies of Supported Ruthenium Catalyst Systems", in *Mossbauer Methodology*; Gruverman, I., Ed.; Plenum Press: New York, 1977; Vol.10, pp 93-118.
21. Clausen, C.A.; Good, M.L.; "Characterization of Bulk and Surface Properties of Heterogeneous Ruthenium Catalysts by Mossbauer and ESCA Techniques: in *Advances in Characterization of Metal and Polymer Surfaces*; Plenum Press: New York, 1977; pp 65-100.
22. Clausen, C.A.; "Mossbauer Study of Automotive Emission Control Catalysts", *J. of Catalysts* 1977, 46, 58.
23. Clausen, C.A.; Good, M.L.; "Mossbauer Spectroscopy Studies of Complexes of Ruthenium Y-Type Zeolites", *J. of Inorg. Chem.* 1977, 16, 816.
24. Clausen, C.A.; "Early Detection and Entrapment of Accelerents In Fire Atmospheres", *STAR REPORT 79-047*, September 1980, 51 pages.
25. Clausen, C.A.; "Identification of Accelerents in Fire Atmospheres", *STAR REPORT 80-049*, May 1, 1982, 29 pages.
26. Clausen, C.A.; "Early Detection and Entrapment of Accelerents in Fire Atmospheres", *Arson Anal. Newsletter*, 1983, 6, pp 105-140.
27. Clausen, C.A.; Morgan, P.W.; and Tronson, S.K.; "A Laboratory Study of Infrared Obscuration by Black Smoke", *CROC Report, Aberdeen Proving Grounds, Maryland (1985)*.

28. Clausen, C.A.; Morgan, P.W.; Tronson, S.K.; Nichols, P.K.; Williams, R.M.; and Spinazzola, M.A.; "Carbon Particle Generation of IR Attenuation", Chemical Research and development Center, Aberdeen Proving Ground, Maryland 21010, July 1986. Report #ARCSL-CR-86XX.
29. Clausen, C.A.; Tronson, S.K.; Movassaghi, S.; Williams, R.M.; Spinazzola, M.A.; "Diesel Fuel Smoke", Chemical Research and Development Center, Aberdeen Proving Ground, Maryland 21010, August 1986. Report #DAM15-85-C-0099.
30. Clausen, C.A.; Morgan, P.W.; Williams, R.M.; and Spinazzola, M.A.; "Preparation of Cast Sublimable Materials Containing Small Filaments", Chemical Research and Development Center, Aberdeen Proving Ground, Maryland, 21010, January 1987. Report #DMDO5-86-C-0110.
31. Clausen, C.A.; Tronson, S.K.; Spinazzola, M.A.; and Williams, R.M.; "Water Injection Test", Chemical Research and Development Center Aberdeen Proving Grounds, Aberdeen, Maryland 21010, August 1986. Report #DAADO5-85-C-9533.
32. Clausen, C.A.; Morgan, P.W.; and Fry, R.W., "Transport and Dispersion of Microwires by Use of Sublimable Materials", Proceedings of SMOKE/OBSCURANTS SYMPOSIUM XI, Vol. 1, pp. 167-178 (1987).
33. Yu, D.; Morgan, P.W.; and Clausen, C.A.; "Infrared Obscuration by Means of Carbon Particles Generated in Situ from Diesel Fuel", Proceeding of SMOKE/OBSCURANTS SYMPOSIUM XI, Vol. 1, pp 197-206 (1987).
34. Ebert, L.B.; Scanlon, S.C.; and Clausen, C.A.; "Combustion Tube Soot from a Diesel Fuel/Air Mixture", Fuel Preprints 32, pp 440-447 (1987). American Chemical Society, Washington, D.C.
35. Clausen, C.A.; Morgan, P.W.; Leonard, R.; and Slattery, J.; "A Comparison of JP-8 Aerosols to Diesel Fuel and Fog Oil Aerosols", Chemical Research, Development and Engineering Center, Aberdeen Proving Ground, Maryland 21010, January 1988. Report CRDEC-CR-88031.
36. Clausen, C.A.; Morgan, P.W.; Leonard, R.; and Slattery, J.; "Carbon Particle Generation Studies", Chemical Research, Development and Engineering Center, Aberdeen Proving Ground, Maryland, 21010, January 1988. Report CRDEC-CE-8800.
37. Clausen, C.A.; Leonard, R.; Movassaghi, S.; Slattery, J.; and Williams, R. "Diesel Fuel Particle/Droplet Smokes", Chemical Research, Development and Engineering Center, Aberdeen Proving Ground, Maryland, 21020, October 1987. Report CRDEC-CR-TR-665-01.
38. Ebert, L.B.; Scanlon, J.C.; Clausen, C.A.; "Combustion Tube Soot from a Diesel Fuel/Air Mixture: Issues In Structure and Reactivity", Energy and Fuels 2, 438 (1988).
39. Arrigo, J.T. and Clausen, C.A., "The Chemical Industry and Careers for Chemists - An Annotated Bibliography", The American Chemical Society, 1155 Sixteenth St., N.W., Washington, D.C. 20036. Published June 1988.
40. Clausen, C.A. and Johnson, E.T., "Carbon Particle Generator Studies", Chemical Research, Development and Engineering Center, Aberdeen Proving Ground, Maryland 21010, January 1989. Report DAAO05-85-C-9533.
41. Clausen, C.A.; Jenkins, L.; and Leonard, R.L.; "Filter Tests", Chemical Research, Development and Engineering Center, Aberdeen Proving Ground, Maryland 21010, March 1989. Report DAADO5-88-C-9027.

**Speaker and/or Chairman of Technical Programs and Symposiums:**

1. Invited speaker at the 4th Annual Mossbauer Symposium (sponsored by New England Nuclear Corporation In Chicago, Illinois, in January 1968).
2. Invited speaker for the 6th Annual Mossbauer Symposium, January 25, 1970, in Chicago, Illinois.
3. Inorganic Session Chairman, Meeting-In-Miniature of the Florida Section of the American Chemical Society, May 1971, Gainesville, Florida.
4. Invited panel member, The Florida College Conference on Chemistry Articulation, University of Florida, 1971.
5. Invited speaker for the Atomic Energy Commission's Savannah River Laboratory, on "Chemical Applications of Mossbauer Spectroscopy", Aiken, South Carolina, 1972.

6. Speaker at the Florida Academy of Sciences Meeting on "The Mossbauer Spectra of  $^{237}\text{Np}$  in Ion-Exchange Resins and Solvent Extractants", March 1974, Orlando, Florida.
7. Speaker and Session Chairman, the Florida American Chemical Society Meeting-in-Miniature, "Mossbauer Studies of Supported Ruthenium Catalyst Systems", May 1975, Orlando, Florida.
8. Invited Speaker at the 10th Mossbauer Symposium, "The Application of Mossbauer Spectroscopy to Studies of Supported Ruthenium Catalyst Systems", February 1976, New York.
9. Invited speaker, American Chemical Society Symposium on Advances in Characterization of Metal and Polymer Surfaces, New York Centennial Meeting, April 1976.
10. Invited program chairman of the Chemical Dynamics Division of the Southeast Regional American Chemical Society Meeting, November 1977, Tampa, Florida.
11. Invited chairman of the Plenary Session of the Florida Section American Chemical Society's Meeting-in-Miniature, May 1978, Gainesville, Florida.
12. Invited speaker on "Teaching Principles of Industrial Chemistry", at the National American Chemical Society Meeting, Washington, D.C., September 1979.
13. Chairman of the Industrial Chemistry Division -- joint Southeastern/Southwest American Chemical Society Symposium, New Orleans, Louisiana, 1980.
14. Invited paper on "Early Detection and Entrapment of Accelerants in Fire Atmospheres", American Academy of Forensic Sciences, 33rd Annual Meeting, February 1981, Los Angeles, California.
15. Organized and chaired a one and one-half day symposium on "Academic Preparation and industrial Careers in Chemistry", Las Vegas, Nevada, April 1982.
16. Invited paper on "The Interfacing on Local and National Employment Clearinghouses", Florida American Chemical Society Section, May 1983, Jacksonville, Florida.
17. Invited paper on "Work Experience: It's Value and Methodologies for Incorporation Into the Chemical Curriculum", at the National American Chemical Society Meeting, Miami Beach, Florida, May 1, 1985.
18. Invited paper on "Oxidation Methods in Retarding Diesel Fuel Evaporation", Workshop I on Fog Oil Substitution Problems, University of Florida, Gainesville, Florida, October 22-23, 1985.
19. Invited paper "On the Use of Carbon Particles In Retarding Diesel Fuel Evaporation", Workshop II on Fog Oil Substitution Problems, Chemical Research and Development Center, U.S. Army, Edgewood Arsenal, January 21-22, 1986.
20. Presented a paper on "Experiences on Teaching Industrial Chemistry to Undergraduate Students", Symposium on Introducing Industrial Chemistry Into the Undergraduate Curriculum, Middle Atlantic Regional Meeting, Baltimore, Maryland, September 3, 1986.
21. Organized and chaired a symposium on "Industrial Chemistry in Universities", 194th ACS National Meeting, New Orleans, Louisiana, September 1, 1987.
22. Organized and chaired a symposium on "Hazardous Waste Disposal", 39th ACS Southeast Regional Meeting, Orlando, Florida, November 5, 1987.
23. Presented a paper on "Generation and Study of Soot Aerosols from Diesel Fuel-Air in Mixtures", 39th ACS Southeast Regional Meeting, Orlando, Florida, November 4, 1987.
24. Clausen, C.A., "Materials and Methodologies That Have Been Used to Introduce the Industrial into Academic Chemistry", a Symposium on Industrial Chemistry in Universities, 194th ACS National Meeting, New Orleans, Louisiana, September 2, 1987.
25. Ebert, L.B.; Scanlon, J.C.; and Clausen, C.A.; "Combustion Tube Soot from a Diesel Fuel/Air Mixture", a Symposium on Advances in Soot Formation Chemistry, 194th ACS National Meeting, New Orleans, Louisiana, September 2, 1987.
26. Ebert, L.B.; Scanlon, J.C.; and Clausen, C.A.; "X-Ray Diffraction of Carbonaceous Materials", at the 18th Biennial Conference on Carbon, Worcester, Massachusetts, July 19-24, 1987.
27. Clausen, C.A., "Hazardous Waste: The Chemistry and the Law", A Symposium on Hazardous Waste Disposal, 39th Southeast Regional ACS Meeting, Orlando, Florida, November 3-6, 1987.
28. Clausen, C.A.; Movassaghi, S.; Slattery, J.; Morgan, P.W.; Leonard, R.; "Generation and Study of Soot Aerosols from Diesel/Air Mixtures", 39th Southeast Regional ACS Meeting, Orlando, Florida, November 3-6, 1987.

29. Ebert, L.B.; Scanlon, J.C.; and Clausen, C.A.; "Combustion Tube Soot from a Diesel/Air Mixture", 39th Southeast Regional ACS Meeting, Orlando, Florida, November 3-6, 1987.
30. Clausen, C.A.; Dimmette, J.C.; and Morgan, P.W.; "A Comparison of JP-98 Aerosols to Diesel Fuel and Fog Oil Aerosols", Smoke/Obscurants Symposium XIII, Johns Hopkins University, Laurel, Maryland, April 25, 1989.
31. Clausen, C.A. and Cooper, C.D., "Enhancement of the Kinetics of Incineration of Dilute Hazardous Organic Vapors", The Gulf Coast Hazardous Substance Research Center Symposium, Beaumont, Texas, February 22, 1989.

**Master Degree Students Supervised:**

1. Tim Owen, (1976) "Vapor Phase Oxidation of Chloropropenes Over Heterogeneous Catalyst Systems".
2. Mike Myers, (1977) "A Study of Catalyst Systems in Vapor Phase Fluorination Reactions Using Aqueous Hydrofluoric Acid".
3. Mohammed Akbarnejad, (1978) "The Development of a Catalyst System for Producing Hydrocarbons from CO<sub>2</sub> and H<sub>2</sub> at Low Temperatures and Pressures".
4. James Finckbone, (1978) "Development of a Process for Recovering Noble Metals from Spent Automotive Catalytic Converter".
5. Steven Schwinn, (1978) "Development of a Process for Separating Piperylene from a C<sub>5</sub> Petroleum Fraction".
6. Duane Covino, (1979) "Development of a Process for Converting Carbonates into Hydrocarbons".
7. Samuel Maller, (1979) "The Separation of Diolefins from Olefins by a Selective Chemisorption Process".
8. Larry Everson, (1980) "The Evaluation of a New Chromate Containing Water Treatment Additive".
9. Mary Jane Curnutte, (1980) "Separation of Piperylene from a C<sub>5</sub> Petroleum Fraction by Extractive Distillation".
10. Donald Allred, (1982) "Separation of Piperylene Concentrate Via Metathesis Catalysis".
11. Dale Johnson, (1984) "Modeling of Laboratory Scale Batch Distillation with a Desktop Computer".
12. Kathy McIntyre, (1985) "Synergetic Effects in Bimetallic Hydrogenation Catalysts".
13. Soodabeh Karimi, (1985) "A Laboratory Study of Infrared Obscuration by Black Smoke".
14. Sebastian Vasquez, (1985) "The Preparation and Use of Polymeric Metal Complexes as Fuel Oil Combustion Catalysts".
15. Diane Northcott, (1988) "I. Evaluation of iron whiskers and stainless steel microwires as catalysts for ammonia synthesis; II. Hydrodechlorination of chloroalkanes on iron whisker catalysts".

**Consulting Activities:**

During the past seven years I have served as a consultant in the following areas:

1. Expert chemical analyst witness in criminal court cases more than 20 testimonies in such areas as arson, D.W.I., and traffic accidents.
2. Expert chemical analyst witness in civil court cases -- more than 25 testimonies in such areas as explosions, fire, poisons, consumer products, traffic accidents, product liability, etc.
3. Product formulations (e.g., cosmetics, paints, cleaners, adhesives, etc.).
4. Catalyst development (e.g., improved combustion efficiency with petroleum fractions).

5. Fuel additive formulations.
6. Lubricant additive formulations.
7. Cellulose Insulation manufacture and testing.
8. Consumer fire and flame tests.
9. Forensic method development.
10. Environmental pollution and chemical waste disposal problems.