

L. SHANNON DAVIS

EDUCATION

Ph. D., Inorganic Chemistry, University of Florida, Gainesville, FL, 1988
Dissertation: *Trinuclear Ruthenium Carboxylate Complexes as Oxidation Catalysts*
Advisor: Dr. Russell S. Drago

B. S. in Chemistry, *Cum Laude*, Georgia Southern College, Statesboro, GA, 1984

EMPLOYMENT

ACADEMIC EXPERIENCE

8/06 - present Assistant Professor, Department of Chemistry, Georgia Southern University

1990-1994, 2001-2005 Adjunct Professor of Chemistry, Department of Physical Science, Pensacola Junior College.

Courses taught were the General Chemistry two-semester sequence, "Chemistry and Society" {lab and lecture for non science majors}, "Introduction to Chemistry" and "Introduction to College Chemistry" {1 semester refresher for students planning to enroll in the 2 semester general chemistry classes}.

1992-1993 Adjunct Professor, Department of Advanced Technology, Pensacola Junior College.

Course taught was "Introduction to Chemical Plant Operations" {12 modules covering basics of chemistry, physics, algebra, and chemical plant operations including engineering controls, pumps, valves and instrumentation}. Also helped design the curriculum and content for a new degree program at PJC for Chemical Operators and Technicians, implemented in 1994.

1989-1991 Monsanto Biotechnology Curriculum Implementation Project.

Courses taught to the teachers covered the basics of biochemistry and biotechnology and included lab and lecture sections. This curriculum was implemented in 10th grade and 8th grade biology classes throughout Escambia County over a 2 year period. The curriculum was developed in conjunction with experts based in St. Louis, and was funded by NSF and Monsanto.

INDUSTRIAL EXPERIENCE

2/03 – 6/06 Solutia Inc. Intermediates R&D Manager, Nylon Intermediates, Pensacola, FL

I am responsible for a \$5M budget and 18 researchers supporting the long term R&D efforts in the area of nylon-6,6 intermediate chemicals, as well as new product development for coproducts. The chief focus of this group is longer term research efforts. Additional responsibilities include recovering yield losses in the adipic acid process and developing new processes to convert byproduct streams into saleable materials of interest to customers.

3/00 – 2/03 Solutia Inc. Commercial Development Manager, New Ventures, St. Louis, MO

I was responsible for the development of growth strategies directed toward the creation of new business platforms that will meet corporate targets for revenue growth and operating margin. These platforms were targeted to be division sized (\$200-\$300M in sales) and may or may not involve businesses currently in the Solutia portfolio. In this role, I worked closely with the involved business managers, VP/GMs, external consultants and financial agents, and senior management and boards of directors as strategies for growth are designed, discussed, implemented, and executed. Assignments included scoping acquisition candidates for building a pharmaceutical/fine chemicals platform, and identifying potential opportunities in service-based businesses. I worked with A.D.Little and an internal focus group to develop stretch growth strategies for new businesses in the aviation sector; the alternatives ultimately did not meet internal viability criteria and were successfully abandoned. I was also responsible for actively seeking new technologies having the potential to form the basis for new businesses.

12/97 – 3/00 Solutia Inc. Industrial Products Technology Director, St. Louis, MO

I was responsible for a \$3M budget and 15 researchers worldwide, and jointly reported to the Chief Technical Officer and to the Industrial Products VP/GM in a highly matrixed organization. I was a member of the leadership team for the Industrial Products SBU, which provides products and services to the aviation, water treatment, heat transfer fluids, metal working fluids, and specialty chemicals market sectors. Along with division business managers, I developed strategies for growth, managed the intellectual property estate for the SBU, and actively promoted technology advancements for all 6 disparate businesses in this SBU and

for the Industrial Products growth initiative. Two new products based on innovative technology were introduced to their respective industries during my tenure and have resulted in increased sales and profits for the division. I managed the Industrial Products growth program portfolio worldwide for all 6 businesses, which involved 40% of the resources in the SBU and which resulted in approximately \$2M in new income in 1999. I was involved in a number of due diligence teams focusing on the purchase of new businesses and exploring financially attractive alternatives (including divestitures and technology out-licensing) for existing businesses as part of an ongoing portfolio upgrade for this division. I also was responsible for university relations; one of these programs resulted in several publications and one resulted in a patentable invention.

2/97 – 12/97 Solutia Inc. Carpet Technology R&D Manager, Pensacola, FL

Solutia Inc. is the independent entity formed from the spinoff of the chemical businesses of Monsanto in 1997. I was responsible for a \$4.5M budget and 30 researchers in the Carpet R&D organization, reporting to the Technology Director, Carpet Technology. I was responsible for terminating a major program in new carpet style development when neither the timing targets nor the performance targets of the new fiber met program premises. I also nurtured a program from incubation to successful product launch at a major trade show; this new product line, trade named Pet-Agree, will contribute significant new income to the business and has received prestigious consumer awareness awards since its launch. I managed a large group in geographically separated locations and was responsible for the development of a portfolio of ongoing R&D programs for this business unit.

10/94 – 2/97 Monsanto, Saflex[®], Manager - Product Science, Saflex[®] Technology, Springfield, MA

Reporting to the Director, Technology for Saflex[®], I was part of the Product Group Leadership Team and rebuilt the product development group by implementing a team-based organization in Saflex[®] R&D; I managed a budget of \$5 M and coached a group of 19 researchers and technicians worldwide. For inclusion in a growth portfolio for Saflex[®], I evaluated world wide entrepreneurial efforts related to new product lines and stretch technologies for Saflex[®] and delivered proposals for venture capital investments, joint ventures and joint research & development programs. This work for growth was recognized by the CEO and the corporate growth team as one of the best developed and presented programs proposed during this phase of growth assessment. I designed and implemented a comprehensive strategy for polyvinylbutyral growth using a multifunctional team approach. This required the development of a world wide manufacturing capability strategy and plan, along with a long term R&D effort for increased capacity and improved quality. I focused a disorganized, disparate outreach effort and managed external research programs and university relations to complement internal research programs. These programs resulted in the implementation of new measurement methodologies and alternative uses for scrap PVB. I served as the Saflex[®] liaison to the University of Massachusetts Polymer Science Department Monsanto Fellowship Program, overseeing the \$250,000 gift.

6/93 - 10/94 Monsanto, Fibers Intermediates Pilot Plant Team Leader, Pensacola, FL

I managed pilot plant operations in the Intermediates Technology R&D group for both Intermediates needs and on a contract basis for other Monsanto divisions; administered 11 nonexempt personnel (Monsanto and contract); all operations were performed safely and within budget. In this job, I reported to the R&D Manager, Intermediates Technology. As primary catalyst liaison for a team investigating alternate routes for the manufacture of adipic acid, I developed sound relationships for a joint catalyst development partnership between Monsanto and a catalyst company. The results from this work were used as the basis for catalyst development for a new, proprietary process for the conversion of benzene to phenol. I also established working relationships with a local university for a joint research program and access to analytical facilities.

9/88 - 2/94 Monsanto, Fibers Intermediates, Senior Research Chemist, Pensacola, FL

I worked closely with technology and manufacturing engineers to improve the existing cyclohexane oxidation process in both the pilot plant and manufacturing areas. This work resulted in process improvements valued over \$1M in raw material costs and methods for less capital intensive capacity improvements. Collaborations and improved communications with manufacturing engineers aided in developing a model for the process and more effective process control. I accomplished significant process knowledge transfer via a training manual on cyclohexane oxidation process chemistry and engineering for process engineers and area operators. As Team Leader for a process development project in the area of high value-added coproducts, I coordinated research in 2 remote sites; I also designed, installed, and ran a small scale demonstration of the process, producing requisite volumes of product for large scale customer sampling and testing

PROFESSIONAL AFFILIATIONS

American Chemical Society (1982-)
Women Chemists Committee, Member, 2000-
Leader, Advocacy Subcommittee, 2003-2004
Pensacola Local Section offices held
PR Chair (1994); Chairman (1993) - The local section won the Outstanding Local Section Award for small sections for 1993; Coordinator, National Chemistry Week (1989-1992) - The local section was nominated for 2 Phoenix Awards for the National Chemistry Week activities organized in 1991 & 1992
American Association of University Women (1990-)
Public Policy Chair (1991-93)
Society of Organic Chemicals Manufacturers (1998-)

HONORS

Profiled, ACS Women Chemists Committee, "Successful Women Scientists" series
Member, Springfield Mayoral Advisory Council on Biotechnology
Finalist, ACS Congressional Fellowship
Program chairman of the Pensacola "Expand Your Horizons" Conference
Who's Who in American Science
Who's Who in American Women
Catalysis Conference Fellowship
Presidential Outstanding Student Award
DuPont Teaching Award
American Association of University Women Award
Ty Cobb Foundation Scholarship
CRC Freshman Chemistry Achievement Award

PRESENTATIONS

"The Women Chemists Committee and You!", Pensacola Local Section ACS Meeting, 2003
"From the Bench to the Business – Adventures of an Industrial Chemist", ACS 225th National Meeting, New Orleans, LA, 2003
"Stretching Precious Research Dollars", ACS 224th National Meeting, Boston, MA, 2002
"Now You See It, Now You Don't", ACS 224th National Meeting, Boston, MA, 2002
Invited speaker, "Women Scientists!", WCC Luncheon, Southeastern Regional Meeting (ACS), Savannah, Ga, 2001
"Leaking Pipelines? An Industrial Perspective", ACS 222st National Meeting, Chicago, IL 2001
"An Oddity No Longer – Women Chemists", ACS 221st National Meeting, San Diego, CA 2001
Women in the Chemical Workforce Panel Discussion, ACS 221st National Meeting, San Diego, CA 2001
"Transitioning into a Sales and Marketing Career", Industrial Pavilion, ACS 221st National Meeting, San Diego, CA 2001
Invited speaker, "An Oddity No Longer – Women Scientists in Industry", Lubrizol Women in Technology Seminar Series, Cleveland, OH 2000
Invited speaker, "An Oddity No Longer – Women Scientists in Industry", National Academy of Sciences "Women in the Chemical Workforce", a Chemical Sciences Roundtable workshop, Washington, DC 2000
"One Marriage, Two Careers—an Industrial Perspective", ACS 221st National Meeting, New Orleans, LA 1999
Monsanto Technical Community presentations (confidential materials), 3 in 5 years
Poster Presentations, Florida Catalysis Conference, Palm Coast, FL, 1986, 1987, 1988.
"Selective Oxidation of Alcohols Employing Ruthenium Carboxylate Catalysts." Middle Atlantic Regional Meeting (ACS), Pomona, NJ, 1987.
"Olefin Oxidation by a Novel Trinuclear Ruthenium Carboxylate Complex." 194th ACS National Meeting, New Orleans, LA, 1987

PUBLICATIONS

"Adventures of an Industrial Chemist", Successful Women in Chemistry – Corporate America's Contribution to Science, ACS Symposium Series #907, Hinkle and Kocsis, editors, Oxford University Press, 2005.

"Keeping the Pipeline of New Chemists Full", New Voices in Chemistry, *Chemical and Engineering News*, 79(13), March 26, 2001

"Workshop for Women in the Chemical Sciences", a Workshop Report to the Chemical Sciences Roundtable, National Academy Press, 2000

Katritzky, Alan R.; Yao, Jiangchao; Qi, Ming; Chou, Yueting; Sikora, David J.; Davis, Shannon. "Ring Opening Reactions of Succinimides." *Heterocycles*, (1998), 48(12), 2677-2691.

Monsanto Company and Solutia Inc. confidential reports (20 over 18 years). Topics covered include fundamental chemistry studies of the oxidation of cyclohexane, hydrogenation kinetics and the application of hydrogenation technology to new substrates, carbonylation catalysis, the production and uses of specialty amines, and non-phosgene routes to isocyanates.

Davis, S.; Drago, R. S. "Alkane Oxidation by a Novel μ_3 -oxo Trinuclear Ruthenium Carboxylate Complex." *J. Chem. Soc., Chem. Comm.*, (1990), (3), 250-251.

Davis, S.; Drago, R. S. "Olefin and alkane oxidations, ruthenium carboxylate catalysts therefor, and method of preparation thereof." U. S. Patent 4885377, 1989 (University of Florida).

Davis, S.; Drago, R. S. "Synthesis, Characterization, and Oxidation Catalysis by a Novel μ_3 -oxo Trinuclear Ruthenium Carboxylate Complex." *Inorg. Chem.*, (1988), 27(26), 4759-4760.

Bilgrien, C.; Davis, S.; Drago, R. S. "The Selective Oxidation of Primary Alcohols to Aldehydes by O₂ Employing a Ruthenium Carboxylate Catalyst." *J. Am. Chem. Soc.*, (1987), 109(12), 3786-3787.

GRANTS

Department of Energy Office of Industrial Technology; "Gold Catalyzed Cyclohexane Oxidation", \$2.3M (2004)

Division of Sponsored Research; "Ruthenium Catalyzed Oxidations", \$7500 (1987), \$8000 (1988)

Catalysis Research Foundation Grant; "Ruthenium Catalyzed Oxidations", \$1000 (1985)

PROFESSIONAL DEVELOPMENT

FASEB MARC Visiting Scientist Grant Writing Workshop, 2006

Green Chemistry and Engineering Practices (Solutia Inc), 2005

Effective Pipeline & Portfolio Management: Prioritizing Projects (Sopheon), 2002

Gaining & Maintaining the Innovation Edge (PDMA), 2002

Creating a Corporate Environment for Innovation & Creativity (Bottom Line Innovation Inc), 2002

Maximize Corporate Problem Solving through the use of Intellectual Capital (TRIZ), 2002

Portfolio Management for New Product Development (R. Cooper), 2002

Raising the Return on Innovation (WinOvations), 2002

Clinical Trials/SRO Partnerships Meet the Future (SRI), 2000

Biotechnology for Business (Duke Univ.), 2000

"Six Hats" Brainstorming (Solutia Inc), 1999

Fundamentals of Strategy – Scenario Planning (Solutia Inc), 1999

One to One Coaching (Monsanto), 1996

More than Meets the Ear (Monsanto), 1996

FDOORA Team Processes (& facilitator training) (Monsanto), 1995

Behavior Description Interviewing (& facilitator training) (Monsanto), 1994

Situational Leadership (Monsanto), 1992

Communispond (Monsanto), 1991

Experimental Design (Montgomery), 1991

Experimental Design for Chemists & Engineers (Deming/Morgan), 1990

Basic Statistical Process Control for the chemical Industry (QualPro), 1988