

CURRICULUM VITAE

(Chronological)

NAME: Theodore J. Burkey DEPARTMENT: Chemistry RANK: Professor

DEGREES

DEGREE	DISCIPLINE	INSTITUTION	YEAR
B.S.	Chemistry	Harvey Mudd College	1976
Ph.D.	Chemistry	University of California, San Diego	1982

EXPERIENCE

RANK/POSITION	DEPARTMENT/DIVISION	INSTITUTION/COMPANY/ORG	PERIOD
Research Associate	Hydrocarbon Research	National Research Council Canada	2/82-7/84
Research Associate	Chemistry	Louisiana State University	8/84-7/85
Assistant Professor	Chemistry	The University of Memphis	8/85-7/90
USAF-UES Summer Research Fellow	F. J. Seiler Laboratory	USAF Academy	6/90-8/90
USAF-RDL Summer Research Fellow	Wright Laboratories	Eglin Air Force Base	6/92-7/92
Associate Professor	Chemistry	The University of Memphis	8/90-8/05
Interim Chair	Chemistry	The University of Memphis	11/00-6/02
Professor	Chemistry	The University of Memphis	9/05-
First Tennessee Professor	Chemistry	The University of Memphis	9/08-8/11

HONORS/AWARDS

HONOR/AWARD	INSTITUTION/COMPANY/ORGANIZATION	YEAR
Who's Who of American Colleges and Universities	Harvey Mudd College	1976
Superior Performance in University Research	The University of Memphis	1992
Outstanding Environmental Health and Safety Award	The University of Memphis	2002
First Tennessee Professorship	The University of Memphis	2008

TEACHING EXPERIENCE: *(Specific information for past two years summarized in Appendix A. Use Appendix A to elaborate on teaching experience as needed.)*

SUBJECT <i>(indicate Undergraduate (U), Graduate (G), Other)</i>	INSTITUTION
Organic Chemistry I (U)	The University of Memphis
Organic Chemistry II (U)	The University of Memphis
Molecular Spectroscopy	The University of Memphis
Molecular Spectroscopy Lab	The University of Memphis
Advance Organic Chemistry: Structure and Reactivity (G)	The University of Memphis
Organic Chemistry I Lab Supervisor (G)	The University of Memphis
Chemistry Literature and Seminar (U & G)	The University of Memphis
Fourier Transform NMR Spectroscopy (G)	The University of Memphis
Intermediate Organic Chemistry (U & G)	The University of Memphis
Instrumental Analysis (U)	The University of Memphis

STUDENT ADVISING/MENTORING: *(Use Appendix B to elaborate on advising/mentoring)*

Students involved in scholarly (research, creative) activities directly supervised (committees chaired).

Undergraduate 0, Masters 0, Doctoral 2, Postdoctoral 0

Current	Name	Year of graduation (anticipated)
Graduate	Karen Mosley	2012, PhD
Graduate	Jermaine Johnson	2014, PhD
Graduate	Phil Lubet	2012, MS
Graduate	Thomas McFadden	2016, PhD
Graduate	Margaret Owens	2017, PhD

Number of current Committee memberships (other than those chaired): Masters , Doctoral 2.

Number of students currently advised: Undergraduate 5, Graduate 5

RESEARCH/SCHOLARSHIP/

CREATIVE ACTIVITIES: *(use Appendix C to provide additional information as needed.)*

PUBLICATIONS (authors, title, reference) Include material in press and accepted for publication.

Refereed journal publications (include book chapters)

1. T. J. Burkey and R. C. Fahey, "Equilibrium Studies of Water Addition to Ketones: Substituent and Solvent Effects for Methyl Ketones", *J. Am. Chem. Soc.*, **1983**, 105, 868-871.
2. T. J. Burkey, A. L. Castelhamo, D. Griller, and F. P. Lossing, "Heats of Formation and Ionization Potentials of Some alpha-amino Radicals", *J. Am. Chem. Soc.*, **1983**, 105, 4701-4703.
3. T. J. Burkey, D. Griller, L. Lunazzi, and A. S. Nazran, "Homolytic Substitution at Furan and Thiophene: Rate Constants for the Formation and Decay of Radical Intermediates", *J. Org. Chem.*, **1983**, 48, 3704-3707.
4. T. J. Burkey, and D. Griller, "Modulation Spectroscopy: A New Technique for the Study of Free Radicals in Solution", *Rev. Chem. Interm.*, **1984**, 5, 21.
5. T. J. Burkey, D. Griller, D. A. Lindsay, and J. C. Scaiano, "A Simple Method for Quantifying the Distribution between Micellar and Aqueous Phases of Sodium Dodecyl Sulfate Solutions", *J. Am. Chem. Soc.*, **1984**, 106, 1983-1985.
6. T. J. Burkey and R. C. Fahey, "Equilibrium Studies of Water and 3-Mercaptopropanoic Acid Addition to Ketones", *J. Org. Chem.*, **1985**, 50, 1304-6.
7. T. J. Burkey and D. Griller, "Micellar Systems as Devices for Enhancing the Lifetimes and Concentrations of Free Radicals", *J. Am. Chem. Soc.*, **1985**, 107, 246-249.
8. T. J. Burkey, D. Griller, R. Sutcliffe, and C. J. Harding, "Inversion Barrier of the Cycloheptyl Radical", *J. Org. Chem.*, **1985**, 50, 1138-1140.
9. T. J. Burkey, M. Majewski, and D. Griller, "Heat of Formation of the t-Butoxytriphenylphosphoranyl Radical", *J. Chem. Soc. Chem. Comm.*, **1985**, 1259-1260.
10. T. J. Burkey, J. Luszyk, K. U. Ingold, J. K. S. Wan, and F. J. Adrian, "Chemically Induced Dynamic Electron Polarization of the Diethoxyphosphonyl Radical: A case of Mixed S-T₀, S-T-Radical Pair Polarization" *J. Phys. Chem.*, **1985**, 89, 4286-91.

11. T. J. Burkey, J. A. A. Hawari, F. Lossing, J. Lustyk, R. Sutcliffe, and D. Griller, "The tert-Butyl Perthiyl Radical", *J. Org. Chem.* **1985**, 50, 4966-4967.
12. T. J. Burkey, M. Majewski and D. Griller, "Heats of Formation of Radicals and Molecules by a Photoacoustic Technique" *J. Am. Chem. Soc.* **1986**, 108, 2218-2221.
13. J. M. Morse, Jr., G. H. Parker, T. J. Burkey, "The Enthalpy of CO Dissociation of $M(CO)_6$ ($M = Cr, Mo, W$) in Alkanes: Determination of Intermolecular Agostic Bond Strengths," *Organometallics*, **1989**, 8, 2471-2474.
14. T. J. Burkey, "Photoacoustic Calorimetry Studies of Ligand-Exchange of Aliphatic Amines with $Cr(CO)_6$: Steric Effects and Hydrogen Bonding", *Polyhedron*, **1989**, 8, 2681-2687.
15. Daniel Church, T. J. Burkey, and William A. Pryor, "Preparation of Human Lung Tissue from Cigarette Smokers for Analysis by Electron Spin Resonance Spectroscopy" submitted for publication in "Methods in Enzymology Volume 186, Oxygen Radicals in Biological Systems, Part B: Oxygen Radicals and Antioxidants", Academic Press, 1990, p 665-669.
16. T. J. Burkey, "Thermochemistry of Silane Substitution on CO on Metal Carbonyl Compounds: Interaction of Silanes with Metal Centers", *J. Am. Chem. Soc.* **1990**, 112, 8329-8333.
17. S. K. Nayak and T. J. Burkey "Low Quantum Yields of $Cr(CO)_6$ Substitution in Fluorocarbon Solvent: Evidence that Metal-Fluorocarbon Interactions are Weak", *Organometallics* **1991**, 10, 3745-3750.
18. T. J. Burkey, "Solution Thermochemistry of Organometallic Compounds using Photoacoustic Calorimetry: Enthalpies of Ligand Exchange, Metal-Ligand Bonds, and Metal-Solvent Interactions," In *Energetics of Organometallic Species*; J. A. Martinho Simoes, Ed.; Nato ASI Series C:367; Kluwer: Dordrecht, 1992, pp 75-94.
19. S. K. Nayak and T. J. Burkey "Photosubstitution of $Fe(CO)_5$ with PEt_3 in Cyclohexane: $Fe(CO)_4PEt_3$ and $Fe(CO)_3(PEt_3)_2$ are Single-Photon Products", *Inorganic Chemistry*, **1992**, 31, 1125-1127.
20. S. K. Nayak and T. J. Burkey, "Photosubstitution of Iron Carbonyl Phosphine Complexes: Quantum Yields, Kinetic and Thermochemical Studies," *J. Am. Chem. Soc.* **1993**, 115, 6391-6397.
21. S. K. Nayak, G. J. Farrell and T. J. Burkey, "The Photosubstitution of Two Iron Pentacarbonyl CO's in Solution Via a Single Photon Process: Dependence on Dispersed Ligands and the Role of Triplet Intermediates," *Inorg. Chem.* **1994**, 33, 2236-2242.
22. S. Hu., G. J. Farrell, C. Cook, R. Johnston, T. J. Burkey, "Rearrangement of $\eta^5-Cp-Mn(CO)_2(HSiEt_3)$: A Missing Step in the Energy Surface for the Oxidative Addition of Silane to $CpMn(CO)_2$ (heptane)," *Organometallics* **1994**, 13, 4127-4128.
23. G.-L. Leu and T. J. Burkey, "Alkane Coordination by Molybdenum and Chromium Pentacarbonyls: An Examination of the Energetics of Intermolecular Agostic Bonding," *J. Coord. Chem.* **1995**, 34, 87-97.
24. D. Pace, L. Fan, and T. J. Burkey, "Free radicals From Photolysis of (NTO) 5-Nitro-2,4-dihydro-3H-1,2,4-Triazol-3-one studied by EPR Spin Trapping," Proceedings of the MRS Meeting, 1995, p. 127-133.
25. L. Fan, C. Dass, and T. J. Burkey, "Synthesis and Thermal Decomposition of ^{15}N -Labelled NTO," *J. Labelled Compds. and Radiopharm.* **1996**, 38, 87-94.
26. T. R. Botcher, D. J. Beardall, C. A. Wight, L. Fan, and T. J. Burkey, "Thermal Decomposition Mechanism of NTO", *J. Phys. Chem.* **1996**, 100, 8802-8806.
27. Z. Pang, T. J. Burkey, and R. F. Johnston, "Design of Transition Metal Complexes with High Quantum Yields for Ligand Substitution: Efficient Photochemical Chelate Ring Closure in Cyclopentadienyl-manganese Tricarbonyl Derivatives," *Organometallics* **1997**, 16, 120-123.
28. T. Jiao, Z. Pang, T. J. Burkey, R. F. Johnston, T. A. Heimer, V. D. Kleinman, and E. J. Heilweil, "Ultrafast Ring Closure Energetics and Dynamics of Cyclopentadienyl Manganese Tricarbonyl Derivatives" *J. Am. Chem. Soc.* **1999**, 121, 4618-4624.
29. J. A. Daffron G. J. Farrell, and Theodore J. Burkey "High-Pressure Photoacoustic Calorimetry" *Rev. Sci. Instrum.* **2000**, 71, 3882-3885.
30. G. J. Farrell and T. J. Burkey, "High-Pressure Photoacoustic Calorimetry of Chromium Hexacarbonyl: Volumes of Heptane Displacement at Chromium Pentacarbonyl Heptane" *J. Photochem. Photobiol. A: Chemistry*, **2000**, 137, 135-139.

31. T. J. Jiao, G.-L. Leu, G. J. Farrell and T. J. Burkey, "Photoacoustic Calorimetry and Quantum Yields of Mo(CO)₆ Ligand Exchange in Linear Alkanes: Determination of Volume of Reaction, Energetics, and Kinetics of Nucleophile Displacement of Alkane from Mo(CO)₅(Alkane)" *J. Am. Chem. Soc.* **2001**, 123, 4960-4965.
32. S. Gittermann, T. Jiao and T. J. Burkey "Volume of Reaction, Energetics, and Kinetics of Tetrahydrothiophene Displacement of Solvent from Mo(CO)₅(alkane)", *Photochem. Photobiol. Sci.* **2003**, 2, 817-820.
33. J. S. Yeston, T. T. To, T. J. Burkey, E. J. Heilweil, "Ultrafast Chelation Dynamics of Cyclopentadienyl Manganese Tricarbonyl Derivatives with Pendant Sulfides", *J. Phys. Chem B.* **2004**, 108, 4582-4585.
34. T. T. To, C. E. Barnes, and T. J. Burkey "Bistable Photochromic Organometallics Based on Linkage Isomerization: Photochemistry of Dicarbonyl(η^5 -methylcyclopentadienyl)manganese(I) derivatives with a Bifunctional, Non-Chelating Ligand", *Organometallics*, **2004**, 23, 2708-2714.
35. K. M. McCauley, D. A. Pratt, S. R. Wilson, J. Shey, T. J. Burkey, W. A. van der Donk, "Properties and Reactivity of Chlorovinylcobalamin and Vinylcobalamin and Their Implications for Vitamin B12-Catalyzed Reductive Dechlorination of Chlorinated Alkenes", *J. Am. Chem. Soc.* **2005**, 127, 1126-1136.
36. T. T. To, E. J. Heilweil, and T. J. Burkey, "Time-Resolved Infrared Absorption Study of Cyclopentadienyl Manganese Tricarbonyl Derivatives: Chelation of Pendant Sulfides in Acetonitrile", *J. Phys. Chem A* **2006**, 110, 10669-10673.
37. C. B. Duke III, C. Ross II and T. J. Burkey. "[η^6 -2-Benzoyl-2-(1,2-dihydropyridin-2-ylidene)acetonitrile] tricarbonylchromium(0)", *Acta Crystallographica E*, **2006**, E62, m2086-m2088.
38. To, Tung T.; Duke, Charles B., III; Burkey, Theodore J.; Heilweil, Edwin J. "Ultrafast chelation dynamics of model photoswitches: cyclopentadienyl manganese and arene chromium tricarbonyl derivatives with pendant sulfides". Springer Series in Chemical Physics (2007) 88 261-263.
39. T. T. To, E. J. Heilweil, C. B. Duke III and T. J. Burkey "Solvent and Structural Effects on Ultrafast Chelation Dynamics of Arene Chromium Tricarbonyl Sulfide Derivatives" *J. Phys. Chem. A.* **2007**, 111, 6933-6937.
40. C. B. Duke, T. T. To, C. R. Ross and T. J. Burkey "[μ -1,1'-[2-Cyano-2-(2-pyridyl)propane-1,3-diyl]di- η^5 -cyclopentadienyl]bis[tricarbonylmanganese(II)]." *Acta Crystallographica E*, **2007**, E63, m1848-m1849.
41. T. T. To, C. B. Duke III, C. S. Junker, C. O'Brien, C. R. Ross II, C. E. Barnes, C. E. Webster, T. J. Burkey, "Linkage Isomerization as a Mechanism for Photochromic Materials: Cyclopentadienylmanganese Tricarbonyl Derivatives with Chelatable Functional Groups". *Organometallics*, **2008**, 27, 289-298.
42. Y. Z. Hamada, H. Holyfield, K. Rosli, T. Burkey, "Equilibrium models of Cr³⁺ and Cu²⁺ with Glutamate" *J. Coord. Chem.* **2009**, 62, 721-733.
43. **Invited centennial article:** T. T. To, E. J. Heilweil, K. R. Ruddick, C. E. Webster, C. B. Duke III, and T. J. Burkey, "The Development of Ultrafast Photochromic Organometallics and Photoinduced Linkage Isomerization of Arene Chromium Carbonyl Derivatives", *J. Phys. Chem. A* **2009**, 113, 2666-2676.
44. C. B. Duke, C. R. Ross II, and T. J. Burkey "Tricarbonyl(2-methyl-2- η^6 -phenyl-1,3-dioxolane)chromium(0)" *Acta Crystallographica Section E: Structure Reports Online*, (2010) Volume 66, Part 2, pages m148.
45. M. M. Mecwan, T. Burkey, S. R. Mishra, W. O. Haggard, J. D. Bumgardner, "Effect of molecular weight of chitosan degraded by microwave irradiation on bone tissue engineering applications" *Trans. Ann. Soc. Biomat.* **2010**, 32 (Annual Meeting of the Society for Biomaterials: Giving Life to a World of Materials, 2010, Volume 2), 714.
46. S. M. Gittermann, R. G. Letterman, T.-J. Jiao, G.-L. Leu, N. J. DeYonker, C. E. Webster, and T. J. Burkey "Bond Energies, Reaction Volumes, and Kinetics for σ and π Complexes of Mo(CO)₅L", *J. Phys. Chem. A*, **2011**, 115, 9004-9013.
47. E. J. Heilweil, J. O. Johnson, K. L. Mosley, P. P. Lubet, C. E. Webster, T. J. Burkey, "Engineering Femtosecond Organometallic Chemistry: Photochemistry and Dynamics of Ultrafast Chelation of Cyclopentadienylmanganese Tricarbonyl Derivatives with Pendant Benzenecarbonyl and Pyridinecarbonyl Groups" *Organometallics*, **2011**, 30, 5611-5619. [10.1021/om2003656](https://doi.org/10.1021/om2003656)
48. Y. Z. Hamada, T. J. Burkey, E. Waddell, M. Aitha, N. Phambu, "Reactions of Zn²⁺, Cd²⁺ and Hg²⁺ with free adenine" *J. Appl. Sol. Chem. Model* **2013**, 2, 77-84.
49. Charles B. Duke III, Roger G. Letterman, Jermaine O. Johnson, James W. Barr, Songnan Hu, Charles R. Ross II, Charles Edwin Webster, and Theodore J. Burkey, "Photochemistry of Arene Chromium Tricarbonyl

Complexes with Tethered Pyridinyl and Propenyl Groups: Investigations of Chelate Formation, Structure, and Linkage Isomerization" *Organometallics*, **2014**, 33, 485-497. dx.doi.org/10.1021/om400928k

50. Roger G. Letterman, Charles B. Duke III, Tung T. To, Theodore J. Burkey, and Charles Edwin Webster, "Degenerate Pathways for Metallocycle Ring Inversions: A Common Phenomenon Consistent with the Principle of Microscopic Reversibility" *Organometallics*, **2014**, 33, 5928-5931. dx.doi.org/10.1021/om5007165.

51. Kristy M. DeWitt, Tung T. To, Edwin J. Heilweil, Theodore J. Burkey "Linkage Isomerization via Geminate Cage or Bimolecular Mechanisms: Time-Resolved Investigations of an Organometallic Photochrome" *J. Phys. Chem. B*, **2015**, 119, DOI: 10.1021/jp513033j

PRESENTATIONS (authors, title, reference)

INVITED PRESENTATIONS

Conferences and Symposia

September 1991 "Solution Thermochemistry of Organometallic Compounds: Enthalpies Ligand Exchange, Metal-Ligand Bonds, and Metal-Solvent Interactions" NATO Advanced Study Institute: Energetics of Organometallic Species, Curia, Portugal.

September 1991 "Tutorial on Photoacoustic Calorimetry" Curia, Portugal, NATO Advanced Study Institute on Energetics of Organometallic Species.

November 1994 "Energetic and Kinetic Studies of the Reaction of Nucleophiles with Organometallic Transients: Fluorocarbons to Phosphines." Symposium on Organotransition Metal Intermediates, Southwest ACS Regional Meeting, Forth Worth, Texas.

June 1997 "Photochromic Materials for Optical Memory: Design and Study of Organometallic Models" NSF Workshop on Inorganometallic Chemistry, Santa Fe, New Mexico.

May 1998 "Designing Molecular Switches Based on Organometallics with High Quantum Yields for Substitution" J. J. Zukerman Organometallic Chemistry Workshop, University of Oklahoma, Norman, Oklahoma.

October 1999 "Designing Photosensitive Organometallics for Molecular Devices" 51st ACS Southeast Regional Meeting, Symposium on Organometallic Materials and Organometallic Chemistry, Knoxville, TN.

February 2006 "Photoacoustic calorimetry – a path to solution phase bond energies" Mesilla Workshop on Organometallic complexes: Energetics – Solvation – Reactions, Mesilla, New Mexico.

August 2011 "Engineering Femtosecond Chemistry for the Development of Efficient Organometallic Photochromes" Theodore J. Burkey, Edwin J. Heilweil, Charles Edwin Webster, Karen Mosley, Jermaine Johnson, James Barr, XXV International Conference on Photochemistry, Beijing, China.

July 2012 "Engineering Organometallic Photochromes Based on Linked Functional Groups." Ted Burkey, Telluride Science Research Center, Telluride, CO.

November 2012 "Challenges for a Successful Project SEED Experience: Identifying Promising Students and Projects" Ted Burkey, 64th Southeast Regional Meeting of the American Chemical Society, Raleigh, NC, United States, SERM-1274.

July 2014 Telluride,

November 2014 "Photochemistry: Fundamentals and Applications in Materials" Ted Burkey, Undergraduate Workshop on Photocatalysis and Solar Energy Conversion, University of Memphis.

Other (universities/industry)

February 1986 "The Thermochemistry of Transient Organometallic and Organic Species and Related Bonds by Photoacoustic Technique", Sixth Annual Undergraduate Chemistry Conference, Memphis State University, Memphis, Tennessee.

February 1986 "Transient Organometallic and Organic Species and Related Bond Energies by Photoacoustic Calorimetry", Sixth Annual Undergraduate Chemistry Conference, Memphis State University, Memphis, Tennessee.

July 1986 "Chemistry and Biochemistry of Cigarette Smoke", Division of Chemistry, National Research Council of Canada, Ottawa, Ontario, Canada.

October 1986 "The Contrary Natures of the Gas and Tar Phases of Cigarette Smoke" Chemistry Department, Memphis State University, Memphis, Tennessee.

October 1986 "The Thermochemistry and Kinetics of Organometallic Transients Using Photoacoustic Calorimetry" Chemistry Department, University of Mississippi, Oxford.

April 1988 "Are Transition-Metal Bond Strengths to Carbon Monoxide greater than to Aliphatic Amines?" Chemistry Department, Memphis State University, Memphis Tennessee.

May 1989 "Thermochemistry of Organometallic Reactions: Ligand Dissociation, Ligand Exchange, and Agostic Bonds", Chemistry Department, Auburn University.

August 1989 "Photoacoustic Calorimetry Studies of Organometallic Complexes" Chemistry Department, University of North Texas, Denton, Texas.

November 1989 "Photoacoustic Calorimetry of Organometallic Compounds" Chemistry Department, Rhodes College, Memphis, Tennessee.

March 1990 "Thermochemistry of Metal Carbonyls" Chemistry Department, University of North Texas, Denton, Texas.

July 1990 "Time Resolved Calorimetry: A New Method to Study What's Hot" F. J. Seiler Research Laboratory, USAF Academy.

October 1991 "Recent Advances in Organometallic Thermochemistry using Photoacoustic Calorimetry", Department of Chemistry, Memphis State University.

January 1992 "Photoacoustic Calorimetry of Organometallic Compounds" Chemistry Department, University of Southern Mississippi, Hattiesburg, Mississippi.

February 1992 "Photoacoustic Calorimetry", Department of Physics, Memphis State University.

April 1992 "Laser Photoacoustic Calorimetry Studies of Organometallic Species: Metal-Ligand and Metal-Solvent Bond Energies", Department of Chemistry, University Nevada, Reno, Nevada.

July 1992 "Solution Thermochemistry of Organometallic Compounds: Enthalpies Ligand Exchange, Metal-Ligand Bonds, and Metal-Solvent Interactions" Department of Chemistry, Ottawa University, Ottawa, Canada.

November 1992 "Photoacoustic Calorimetry Studies: Energetics of Metal-Ligand and Metal-Solvent Interactions", Department of Chemistry, University of New Orleans, New Orleans, Louisiana.

February 1993 "Energetics and Kinetics of Ligand Exchange of Iron Carbonyl Phosphines Using Pulsed Laser Photoacoustic Calorimetry", Department of Chemistry, University of Missouri at St. Louis, St. Louis, Missouri.

January 1994 "Hydrogen as Fuel" Department of Chemistry, University of Tennessee, Martin, Tennessee.

February 1994 "Energetics and Dynamics of Transient Transition Metal Complexes: Studies in Solution Using Laser Photoacoustic Calorimetry", Fisk University, Nashville, Tennessee.

February 1994 "Energetics and Dynamics of Transient Transition Metal Complexes: Studies in Solution Using Laser Photoacoustic Calorimetry", Oak Ridge National Laboratories, Oak Ridge, Tennessee.

February 1994 "Energetics and Dynamics of Transient Transition Metal Complexes: Studies in Solution Using Laser Photoacoustic Calorimetry", Department of Chemistry, Tennessee Technological University, Cookeville, Tennessee.

September 1994 "Little Known Chemistry of Cigarette Smoke", Department of Chemistry, Austin Peay State University, Clarksville, Tennessee.

October 1994 "A Fuel for the Future: Applications, technological Considerations, and Chemistry of Hydrogen Gas." Department of Chemistry, Middle Tennessee State University, Murfreesboro, Tennessee.

- October 1994 "Energetic and Kinetic Studies of the Reactions of Nucleophiles with Organometallic Transients: Fluorocarbons to Phosphines", Department of Chemistry, Middle Tennessee State University, Murfreesboro, Tennessee.
- October 1994 "Energetic and Kinetic Studies of Solvent Displacement by Nucleophiles on Transient Organometallic Complexes", Department of Chemistry, University of Tennessee, Knoxville, Tennessee.
- October 1994 "Hydrogen as a Fuel - Future or Fantasy?", Department of Chemistry, Tennessee Technological University, Cookeville, Tennessee.
- February 1995 "Kinetic and Energetic Studies of Transition Metal Transients Using a Laser Photoacoustic Technique", Department of Chemistry, Western Kentucky University, Bowling Green, Kentucky.
- February 1995 "Reactivity of Transition Metal Transients in Solution: What We Can Learn by Being Good Listeners", Department of Chemistry, University of Texas at Dallas, Arlington, Texas.
- November 1995 "Little Known Chemistry of Cigarette Smoke", Department of Chemistry, Arkansas State University, Jonesboro, Arkansas.
- January 1996 "Little Known Chemistry of Cigarette Smoke", Department of Chemistry, University of Arkansas, Pine Bluff, Arkansas.
- November 1996 "Laser Photoacoustic Calorimetry: Thermochemistry of Ligand Substitution", Department of Chemistry, Hendrix College, Conway, Arkansas.
- January 1997 "Development of Organometallic compounds as Photochromic Materials", Department of Chemistry, Arkansas Tech, MTSU Russellville, Arkansas.
- November 1997 "What is a Neurotransmitter and Vasodilator Doing in Cigarette Smoke?" Department of Medicinal Chemistry, University of Mississippi, Oxford, Mississippi.
- February 1998 "Developing Photochromic Organometallics for Optical Computer Memory", Department of Chemistry, University of Central Arkansas, Conway, Arkansas.
- October 1998 "Developing Photochromic Organometallics for Optical Computer Memory", Department of Chemistry, Southern Arkansas University, Magnolia, Arkansas.
- October 1998 "Studies of Ultrafast Ring Closure or the Big Bang Approach to Photochemistry" Department of Chemistry, University of North Texas, Denton Texas.
- February 1999 "Reactivity of Transition Metal Transients in Solution: What We Can Learn by Being Good Listeners", Department of Chemistry, St. Louis University, St. Louis, Missouri.
- February 1999 "Broadband Infrared Spectroscopic Investigations of Electron Transfer, Photochemistry and Biochemistry," Department of Chemistry, U. C. Berkeley, Berkeley, CA. Presented by Dr. Edwin J. Hielweil, Collaborator.
- February 1999 "Broadband Infrared Spectroscopic Investigations of Electron Transfer, Photochemistry and Biochemistry," Department of Chemistry, Duke University, Presented by Dr. Edwin J. Hielweil, Collaborator.
- October 1999 "Photochromic Materials" Hutchinson School, Memphis, Tennessee.
- January 2000 "A Study of Light and Sound: The application of Laser Photoacoustic Calorimetry in the Investigation of Chemical Systems, Physics Department, The University of Memphis.
- March 2000 " Creation of Materials with High Reaction Quantum Yields: Development of Compounds for Data Storage " Department of Chemistry, Southern Illinois University, Carbondale, Illinois.
- January 2001 "Photochromic Molecular Machines: Designing Materials for Quantum Computers" Department of Chemistry, University of Tennessee, Chattanooga, Tennessee.
- February 2001 "Photochromic Molecular Machines: Designing Materials for Quantum Computers" Department of Chemistry, University of South Alabama, Mobile, Alabama.
- February 2002 "Photochromic Molecular Machines: Designing Materials for Quantum Computers" Physical Science Department, Lyon College, Batesville, Arkansas.

- October 2003 "Photochromic Organometallics: Potential Materials for Molecular Machines and Ultrafast Optical Switches" Chemistry and Physics Department, Arkansas State University, Jonesboro, Arkansas.
- November 2003 "Photochromic Organometallics: Potential Materials for Molecular Machines and Ultrafast Optical Switches" Chemistry Department, Murray State University, Murray Kentucky.
- November 2003 "Photochromic Organometallics: Potential Materials for Molecular Machines and Ultrafast Optical Switches" Chemistry Department, Kentucky State University, Frankfort, Kentucky.
- November 2003 "Photochromic Organometallics: Potential Materials for Molecular Machines and Ultrafast Optical Switches" Chemistry Department, Eastern State University, Richmond, Kentucky.
- February 2004 "Photochromic Organometallics: Ultrafast Molecular Machines and Optical Switches", Department of Chemistry, University of Tennessee, Chattanooga, Tennessee.
- October 2005 Bistable Photochromics: Creating Molecular Devices with Sub-Picosecond Response", Department of Chemistry and Physics, South Eastern Louisiana University, Hammond, Louisiana.
- September 2008 "Development of Photochromic Organometallic Compounds", Department of Chemistry, University of Tennessee, Chattanooga, Tennessee
- May 2009 "Ultrafast Linkage Isomerization and Chelation Studies with Organometallics for the Development of Photochromic Materials" Ohio University, Athens, Ohio.
- January 2010 "Photochromic Organometallics with Dynamic and Structural Restraints: Synthesis and Studies of Moving Targets" St. Louis University, Saint Louis, Missouri.
- October 2011 "Engineering Femtosecond Chemistry for the Development of Efficient Organometallic Photochromes, University of Southern Alabama, Mobile, Alabama"
- March 2013 "Why make ultrafast photochromic materials? Designing Organometallic Photochromics" Department of Chemistry, Wesleyan Illinois University, Bloomington, Illinois.
- September 2013 "How to Design Organometallic Photochromes: How a Research Idea Evolves" Kentucky Lakes ACS Section Meeting, Union University, Jackson, Tennessee.
- January 2015 "Photochromic Materials" Department of Chemistry, Oakwood University, Huntsville, Alabama
- February 2015 "Molecular Machines Driven by Light: Photochromes and Linkage Isomerization" Department of Chemistry, Tennessee Tech University, Cookeville, Tennessee.

Other (conferences)

- March 1979 "Thiol Addition to Carbonyl Compounds", National American Chemical Society Meeting, Houston Texas.
- June 1988 "Thermochemistry of Ligand-Exchange Reactions of Chromium Carbonyl Compounds with Aliphatic Amines Using a Photoacoustic Method", The Third Chemical Congress of North America, Toronto, Canada.
- April 1989 "The Enthalpy of M-CO Dissociation in Solution (M = Cr, Mo, W) and M-Heptane Agostic Bonds", National American Chemical Society Meeting, Dallas, Texas.
- September 1989 "Thermochemistry of the Oxidative Addition of Silanes to Metal Carbonyl Complexes", Symposium on Bond Energies and the Thermodynamics of Organometallic Reactions, National American Chemical Society Meeting, Miami, FL.
- April 1990 "Metal-Solvent Bond Energies for Metal Carbonyl Compounds in Weakly Coordinating Solvents", 199th National American Chemical Society Meeting, Division of Inorganic Chemistry Boston, MA.
- August 1990 "Photochemistry of Metal Carbonyls in Fluorocarbon Solvent: Evidence for Delayed CO Cage Recombination", 200th National American Chemical Society Meeting, Division of Inorganic Chemistry, Washington D. C.

- August 1991 "Photosubstitution of $\text{Fe}(\text{CO})_5$ with Alkyl Phosphines: $\text{Fe}(\text{CO})_4\text{PR}_3$ and $\text{Fe}(\text{CO})_3(\text{PR}_3)_2$ are Single Photon Products" with S. K. Nayak, Fourth Chemical Congress of North America, New York.
- April 1992 "Photosubstitution of Ironcarbonyl Phosphine Derivatives in Cyclohexane" 203rd American Chemical Society National Meeting, Division of Inorganic Chemistry, San Francisco, CA.
- June 1992 "Oxidation of NTO: Potential Mechanisms Common with Thermal Decomposition", Gordon Research Conference on Energetic Materials, New Hampton School, New Hampton, NH.
- July 1992 "Photoacoustic Calorimetry Studies of Chromium Pentacarbonyl Dihydrogen" 1992 Gordon Research Conference on Organometallic Chemistry, Salve Regina University, Newport, RI.
- July 1992 "Photosubstitution of $\text{Fe}(\text{CO})_5$, $\text{Fe}(\text{CO})_4(\text{PR}_3)$, $\text{Fe}(\text{CO})_3(\text{PR}_3)_2$." 1992 Gordon Research Conference on Organometallic Chemistry, Salve Regina University, Newport, RI.
- August 1992 "Photoacoustic Calorimetry Studies of Chromium Pentacarbonyl Dihydrogen" 204th American Chemical Society National Meeting, Division of Inorganic Chemistry, Washington, D.C..
- April 1993 "Photosubstitution of Ironcarbonyl Phosphine Derivative in Cyclohexane" 205th American Chemical Society National Meeting, Division of Inorganic Chemistry, Denver, CO.
- August 1993 "Energetics and Kinetics of Heptane Displacement from $\text{M}(\text{CO})_5(\text{heptane})$." 206th American Chemical Society National Meeting, Division of Inorganic Chemistry, Chicago, Ill.
- March 1994 "Studies of $\text{W}(\text{CO})_5(\text{heptane})$: Energetics and Kinetics of Solvent Displacement by Phosphines, Amines, Alcohols, and other Ligands." 207th American Chemical Society National Meeting, Division of Inorganic Chemistry, San Diego.
- August 1994 "Intramolecular Rearrangement of $\text{CpMn}(\text{CO})_2(\text{HSiEt}_3)$: Energetics and Kinetics of Silane Addition to $\text{CpMn}(\text{CO})_2$." 208th American Chemical Society National Meeting, Division of Inorganic Chemistry, Washington D. C.
- August 1994 "How Strong Are Metal-Alkane Bonds? Separation of Thermal and Molecular Contributions to Photoacoustic Signals Using High Pressure." Pressure" 208th American Chemical Society National Meeting, Division of Inorganic Chemistry, Washington D. C.
- April 1995 "Design of Transition-Metal Complexes with High Quantum Yields for Ligand Dissociation", 209th American Chemical Society National Meeting, Division of Inorganic Chemistry, Anaheim, CA.
- April 1995 "Application of Photoacoustic Calorimetry to Kinetic and Thermodynamic Studies of Silane Addition to Transition-Metal Complexes", 209th American Chemical Society National Meeting, Division of Physical Chemistry, Anaheim, CA.
- November 1995 "Synthesis and Thermal Decomposition of $\text{NTO-}^{15}\text{N}_2$ ", 47th Southeast/51st Southwest ACS Joint Regional Meeting, Division of Organic Chemistry, Memphis, TN.
- July 1996 "A Solid-Phase Thermal Decomposition Study of NTO Using Simultaneous Thermogravimetric Modulated Beam Mass Spectrometry (STMBMS)", with Leanna Minier, Richard Behrens. Gordon Research Conference on Energetic Materials, New Hampton School, New Hampton, NH.
- April 1997 "Resolution of Solvent-Caged and Diffusive Reactions of $(\eta^5\text{-C}_5\text{H}_4\text{CHCH}_3)\text{Mn}(\text{CO})_2$ ", 213th American Chemical Society National Meeting, San Francisco, CA. INOR-450
- April 1998 Efficient Photochemical Ring Closures: Energetics and Dynamics of Reactions Following Photolysis of $(\eta^5\text{-C}_5\text{H}_4\text{R})\text{Mn}(\text{CO})_3$ ", 215th American Chemical Society National Meeting, Dallas, TX
- September 1998 "An Unusual Trend in the Photochemistry of Molybdenum Hexacarbonyl in Linear Alkanes, 216th American Chemical Society National meeting, Boston, MA.

- October 1999 "Ultrafast Broadband Infrared Spectroscopy of Solar Cell and Photochemical Processes, Joint meeting of the annual The Federation of Analytical Chemistry and Spectroscopy Societies and 45th International Conference on Analytical Sciences and Spectroscopy, Vancouver, B. C. Canada. Presented by Dr. Edwin J. Heilweil, collaborator.
- May 1999 "Broadband Infrared Spectroscopic Investigations of Electron Transfer, Photochemistry and Biochemistry," Time-Resolved Vibrational Spectroscopy IX, Biosphere, Tuscon, AZ. Presented by Dr. Edwin J. Heilweil, collaborator.
- June 1999 "Advances in FTIR Imaging and Time-Resolved Spectroscopy at NIST," OSA Topical Meeting on Fourier Transform Spectroscopy: New Methods & Applications, Santa Barbara, CA,. . Presented by Dr. Edwin J. Heilweil, collaborator.
- August 1999 "Broadband Infrared Spectroscopy of Photochemical Ring Closure and Solar Cell Processes," International Conference on Photochemistry XIX, Duke University, Durham, NC. Presented by Dr. Edwin J. Heilweil, collaborator.
- December 2000 "Synthesis of Cyclopentadienylmanganese Tricarbonyl with a Bissulfide Side Chain" **Theodore J. Burkey**, Brian C. Holmes, and Scott Cook. Southeast/Southwest Regional America Chemical Society National meeting, New Orleans, Louisiana.
- March 2000 "Application of photoacoustic calorimetry to organometallic reactions" Burkey, Ted; Jiao, Tianjie, 219th ACS National Meeting, San Francisco INOR-417.
- August 2000 "Self-association reactions studied by broadband ultrafast IR spectroscopy" Heimer, Todd A.; Kleiman, Valeria D.; Burkey, Theodore J.; Heilweil, Edwin J. 220th American Chemical Society National Meeting, Washington, D. C. PHYS-163.
- April 2001 "Thermochemistry, kinetics, and volumes of ligand and solvent substitution of molybdenum carbonyl complexes." Burkey, Ted; Jiao, Tianjie; Gitterman, Shannon. , 221st American Chemical Society National Meeting, San Diego, CA INOR-100.
- April 2002 "A Summer at The Interface of Theory and Experiment. The NSF-REU Site in Chemistry at The University of Memphis." Cundari, Thomas; Parrill, Abby; Burkey, Theodore J.; Anderson, Mary, E. 223rd ACS National Meeting, Orlando, FL, CHED-144.
- November 2002 "Synthesis and photochemistry of methyl cyclopentadienyl manganese carbonyl complexes" Burkey, Ted; **To, Tung T.** 54th Southeast Regional American Chemical Society Meeting, Charleston, South Carolina.
- March 2003 "Photochromic properties of manganese and chromium complexes undergoing chelate ring closure and linkage isomerization." **Burkey, Ted**; To, Tung T. 225th ACS National Meeting, New Orleans, LA, INOR-818.
- April 2003 "Organometallic Photochromic Materials Synthesis" **Duke, Charlie**; Burkey, Ted 26th Annual Area Collegiate Chemistry Meeting, Murray, KY.
- September 2003 Photoinduced dynamics of CpMn(CO)₃ derivatives with pendant sulfides, **Jake S. Yeston**, Tung T. To, Todd A. Heimer, Edwin J. Heilweil, Theodore J. Burkey 226th ACS National Meeting, New York, NY, INOR-654
- September 2003 Ultrafast linkage isomerization as a photochromic mechanism in derivatives of cyclopentadienyl manganese tricarbonyl , **Tung T. To**, Theodore J. Burkey, 226th ACS National Meeting, New York, NY, INOR-655
- September 2003 Design and preparation of cyclopentadienylmanganese tricarbonyl derivatives that undergo ultrafast ring closure upon photolysis, Tung T. To, **Theodore J. Burkey** 226th ACS National Meeting, New York, NY, INOR-700
- September 2003 Synthesis of side chain derivatives of cyclopentadienyl manganese tricarbonyl and benzene chromium tricarbonyl Mohammad Al-**Masum**, Theodore J. Burkey, 226th ACS National Meeting, New York, NY, INOR-559
- November 2003 "Synthesis of Arene Chromium Complexes for Photochromic Materials, **Pasano Bojang, Jr.**, Theodore J. Burkey, 55th Southeast Regional ACS Meeting, Atlanta, GA.

- November 2003 "Cyclopentadienyl Manganese Complexes with Pendant Sulfides: Ultrafast Ring formation for a Molecular machine", **Theodore J. Burkey**, Tung T. To, Edwin J. Heilweil, Jake S. Yeston, Brian C. Holmes⁴, Scott Cook, Todd A Heimer, 55th Southeast Reagional ACS Meeting, Atlanta, GA.
- March 2004 "Synthesis and Photochemistry of Metal Arenes with Pendant Functional Groups", T. To, C. B. Duke, **Theodore J. Burkey**, 227th ACS National Meeting, Anaheim, CA, INOR-036
- March 2005 "Reaction Enthalpies and Volumes for a Variety of Ligands Determined by Photoacoustic Calorimetry" **Shannon Gittermann** and Theodore J. Burkey, Midsouth Inorganic Chemistry Association Meeting, Memphis, TN.
- March 2005 "Photochemical studies on a-methylthiosubstituted acetophenonechromium carbonyl complexes", **Charlie Duke** and Theodore J. Burkey, Midsouth Inorganic Chemistry Association Meeting, Memphis, TN.
- March 2005 "New Photochromic Orgaometallics Based on Ultrafast Chelation of Cymantrene Derivatives with Tethered Functional Group", **Tung To** and Theodore J. Burkey, Midsouth Inorganic Chemistry Association Meeting, Memphis, TN.
- March 2005 "New photochromic organometallics based on linkage isomerization of cyclopentadienyl manganese carbonyl derivatives." To, Tung T.; Burkey, Theodore J., 29th ACS National Meeting, San Diego, INOR-397.
- October 2005 "Studies of Ultrafast Chelation and Linkage Isomerization: Side-chain CpMn(CO)₃ Derivatives as Photochromic Devices", Tung T. To, Edwin Heilweil, Charlie Duke, **Theodore J. Burkey** Joint Southwest/Southeastern Regional Meeting of the American Chemical Society, Memphis, TN.
- October 2005 "Determination of Rates, Enthalpies, and Volumes of Organometallic Reactions using Photoacoustic Calorimetry", **Shannon M. Gittermann**, Tianje Jiao, Ging-Long Leu, Theodore J. Burkey, Joint Southwest/Southeastern Regional Meeting of the American Chemical Society, Memphis, TN.
- August 2006 "Ultrafast Chelation Dynamics of Model Photoswitches: Cyclopentadienyl Manganese and Arene Chromium Tricarbonyl Derivatives with Pendant Sulfides" **Tung T. To**, Charles B. Duke III, Theodore J. Burkey, and Edwin J. Heilweil, 15th International Conference on Ultrafast Phenomena in Pacific Grove, CA.
- March 2006 "Studies of tricarbonyl(methylcyclopentadienyl)manganese side-chain derivatives that undergo ultrafast chelation." **Burkey, Theodore J.**; To, Tung T.; Gittermann, Shannon; Duke, Charles B. 231st ACS National Meeting, Atlanta, INOR-426.
- March 2006 "Time-resolved infrared absorption study of cyclopentadienyl manganese tricarbonyl derivatives: Chelation with pendant sulfides in acetonitrile." **To, Tung T.**; Burkey, Theodore J.; Heilweil, Edwin J. 231st ACS National Meeting, Atlanta, INOR-809.
- March 2006 "Study of tricarbonyl manganese cyclopentadienyl sulfides using time-resolved infrared spectroscopy: Solvation effects on chelation." **To, Tung T.**; Burkey, Theodore J.; Heilweil, Edwin J. 231st ACS National Meeting, Atlanta, PHYS-290.
- November 2006 "Synthesis of Photochromic Organometallic Cyclopentadienyl Manganese Tricarbonyls", **Christopher S. Junker**, Casey M. O'Brien, Charlie B. Duke and Theodore J. Burkey- 58th Southeastern Regional Meeting of the American Chemical Society, Augusta, GA
- August 2007 "Synthesis and ultrafast chelation dynamics of organomanganese and organochromium complexes", **To, Tung T.**; Duke, Charles B.; Burkey, Theodore J.; Heilweil, Edwin J. 234th ACS National Meeting, Boston, MA, , PHYS-324
- August 2007 "Preparation and studies of the first organometallic chromium system that is photochromic and bistable", **Burkey, Theodore J.**; Duke, Charles B.; To, Tung T.; Heilweil, Edwin J. 234th ACS National Meeting, Boston, MA, , INOR-846.
- November 2008 "Ultrafast Time Resolved Infrared Spectroscopy of Photochromic Cyclopentadienyl Manganese Tricarbonyl Derivatives", . Heilweil, Edwin J.; Mosley, Karen L.; Webster, Charles Edwin; Ruddick, Kristie; **Burkey, Theodore J.** 60th Southeast Regional Meeting of the American Chemical Society, Nashville, TN. SERM-106

- November 2008 "Synthesis and Photochemistry of New Photochromic Organometallics", Mosley, Karen L.; Ruddick, Kristie; Webster, Edwin; Heilweil, Edwin J.; Burkey, Theodore J.. 60th Southeast Regional Meeting of the American Chemical Society, Nashville, TN. SERM-409
- March 2009 "Photochromic cyclopentadienyl manganese tricarbonyl derivatives: Studies of linkage isomerization and ultrafast time resolved infrared spectroscopy", Heilweil, Edwin J.; Mosley, Karen; Ruddick, Kristie R.; Webster, Charles Edwin; Burkey, Theodore J. Abstracts of Papers, 237th ACS National Meeting, Salt Lake City, UT, United States, INOR-435.
- March 2009 "Computational and experimental studies of organometallic photochromic systems: Isomerization mechanisms for bifunctional side-chain complexes." Ruddick, Kristie R.; Burkey, Theodore J.; Webster, Charles Edwin. Abstracts of Papers, 237th ACS National Meeting, Salt Lake City, UT, United States, INOR-670.
- May 2009 "Synthesis and Photochemistry of Novel Organometallics". Mosley, Karen L.; Ruddick, Kristie; Webster, Charles Edwin; Heilweil, Edwin J.; Burkey, Theodore J. Abstracts, 38th Great Lakes Regional Meeting of the American Chemical Society, Chicago, IL, United States, GLRM-227.
- May 2009 "Computational Design of Organometallic Photochromic Systems." Ruddick, Kristie; Mosley, Karen L.; Burkey, Theodore J.; Webster, Charles Edwin. Abstracts, 38th Great Lakes Regional Meeting of the American Chemical Society, Chicago, IL, United States, GLRM-229.
- May 2009 "Ultrafast Linkage Isomerization and Chelation Studies with Organometallics for the Development of Photochromic Materials" Ohio University, Athens, Ohio.
- January 2010 "Photochromic Organometallics with Dynamic and Structural Restraints: Synthesis and Studies of Moving Targets" St. Louis University, Saint Louis, Missouri."
- February 2010 "Designing Organometallic Molecules that Behave Like Machines: Creating Function Amid Chaos" Plenary Speaker, 30th Annual Undergraduate Research Conference, Department of Chemistry University of Memphis. Memphis, Tennessee.
- August 2010 "Photochromic cyclopentadiene manganese tricarbonyl derivatives: Participation of imine group during linkage isomerization", **Ted J. Burkey**, Karen L. Mosley, Prof. C. Edwin Webster, Kristie R. Ruddick, Philippe P. Lubet, Jermaine O. Johnson, Dr. Edwin J. Heilweil, 240th ACS National Meeting & Exposition. August 22-26, 2010, Boston, Massachusetts. Inorganic 652.
- August 2010 "Synthesis of new photochromic organometallics based on a linkage isomerization" **Karen L Mosley**, Kristie R Ruddick, Jermaine O Johnson, Dr. Charles E Webster, Dr. Theodore J. Burkey, 240th ACS National Meeting & Exposition, Boston, Massachusetts. Inorganic 567.
- August 2010 "Computational design of organometallic photochromic systems with chelating, bifunctional tethered side chains", **Charles Edwin Webster**, Kristie R. Ruddick, Karen L. Mosley, Jermaine O. Johnson, Philippe P. Lubet, Theodore J. Burkey, 240th ACS National Meeting & Exposition, Boston, Massachusetts. Computational 331.
- March 2011 "Potential characteristics and proposed synthesis of a predicted photochromic isomeric pair." Thomas Pangia,; Theodore Burkey, 241st ACS National Meeting & Exposition, Anaheim, CA, United States, INOR-614.
- March 2012 "Preparation and photochemistry of cyclopentadienyl manganese tricarbonyl derivatives with pendant hydrazone and pyridine groups" **Theodore J. Burkey**, Edwin J. Heilweil, Jermaine O. Johnson, Karen L. Mosley, Philippe P. Lubet, Charles E. Webster, 243rd ACS National Meeting & Exposition, San Diego, CA, INOR-1001
- March 2012 "Synthetic, structural, photochemical, and thermochemical studies of arene chromium tricarbonyl complexes with tethered pyridine groups", **Theodore J. Burkey**, Charles B. Duke, Roger G. Letterman, , Charles R. Ross, Charles E. Webster, 243rd ACS National Meeting & Exposition, San Diego, CA, United States, INOR-1000.
- August 2012 "How do inequivalent atoms in an organometallic complex become equivalent on the NMR timescale" **Roger G. Letterman**, Charles B. Duke, Tung T. To, Theodore J. Burkey, Charles E. Webster, 244th ACS National Meeting & Exposition, Philadelphia, PA, INOR-354.
- August 2012 "Should density functional theory be used to guide the design of chromium-containing photochromic materials?", **Roger G. Letterman**, Nathan J. DeYonker, Theodore J. Burkey, Charles E. Webster, 244th ACS National Meeting & Exposition, Philadelphia, PA. INOR-224.

April 2013 "Synthesis and Properties of Organometallic Photochromes Based on (η^5 -Cyclopentadienyl)Mn(CO)₃ and (η^5 -Pentalenyl)Mn(CO)₃ Complexes" **Jermaine O. Johnson**, Karen L. Mosley, Roger G. Letterman, Philippe P. Lubet, Theodore J. Burkey, Charles E. Webster New Orleans 245th ACS National Meeting & Exposition, New Orleans, LA, United States, INOR-731.

April 2013 "Design of Organometallic Photochromes: Utilizing Linkage Isomerization in the Production of Ultrafast Devices" Edwin J. Heilweil, **Theodore J. Burkey**, Jermaine O. Johnson, Roger G. Letterman, Charles Edwin Webster 245th ACS National Meeting & Exposition, New Orleans, LA, United States, INOR-774.

April 2013 "Designing and engineering organometallic photochromic systems with chelating, bifunctional tethered side-chains", Charles E. Webster, Roger G Letterman, James W. Barr, Johnson, Jermaine O.; McFadden, Thomas M.; Duke, Charles B.; To, Tung T.; **Burkey, Theodore J.** 245th ACS National Meeting & Exposition, New Orleans, LA, United States, INOR-1086

March 2014 "Synthesis and Characterization of (η^5 -Pentalenyl)Mn(CO)₂ Complexes with Tethered Functional Groups: Development of Organometallic Photochromes" **Johnson, Jermaine O.**; Letterman, Roger G.; Heilweil, Edwin J.; Webster, Charles E.; Burkey, Theodore J. 247th ACS National Meeting & Exposition, Dallas, TX, United States, March 16-20, 2014 (2014), INOR-286.

March 2014 "Organometallic Complexes with Tethered Hydrazone and Pyridyl Ligands as Model Photochromic Complexes: A Density Functional Theory Study" Letterman, Roger G.; Johnson, Jermaine O.; Burkey, Theodore J.; Webster, Charles E. 247th ACS National Meeting & Exposition, Dallas, TX, United States, March 16-20, 2014, INOR-709.

March 2014 "Synthesis and Quantum Yields of Organometallic Photochromes" **Vailonis, Kristina**; Burkey, Ted, 247th ACS National Meeting & Exposition, Dallas, TX, United States, March 16-20, 2014, CHED-809.

June 2014 Breaking and Making Bonds with Light, Meeting Organizers: Jeff Rack, **Ted Burkey**, Edwin Webster, Telluride Science Research Center, June 30-July 4, 2014, Telluride, Colorado.

June 2014 "Picosecond and Longer Infrared Measurements of Organometallic Photochemical Dynamics" **Brian Alberding**, Ted Heilweil, Jermaine Johnson, Ted Burkey, Breaking and Making Bonds with Light, Telluride Science Research Center, June 30-July 4, 2014, Telluride, Colorado.

June 2014 "Tailoring linkage Isomerization to Obtain Ultrafast Organometallic Photochromes" Ted Burkey, Breaking and Making Bonds with Light, Telluride Science Research Center, June 30-July 4, 2014, Telluride, Colorado.

September 2014 "Design and Performance of Ultrafast Organometallic Photochromes" **Ted Burkey**, Jermaine Johnson, Edwin Heilweil, Charles Edwin Webster, Thomas McFadden, Brian Alberding, 41st Annual NOBCChE Conference, New Orleans, Louisiana, September 23-26, 2014.

September 2014 "Design and Synthesis of Organometallic Photochromes based on (η^5 -Pentalenyl)Mn(CO)₃ Complexes" Jermaine O. Johnson, Roger G. Letterman, Edwin J. Heilweil, Charles Edwin Webster, **Theodore J. Burkey**, 41st Annual NOBCChE Conference, New Orleans, Louisiana, September 23-26, 2014.

SUPPORT: (Use Appendix D to provide additional information as needed.)

EXTERNAL (Funded or Pending. List funded support first)	AGENCY/SOURCE	AMOUNT	PERIOD
Studies of Non-Covalent Bonds Between Coordinatively-Unsaturated Metals and Saturated Compounds	PRF-ACS Type G	\$18,000	9/87- 8/89.
Photoacoustic Calorimetry, ESR, and DSC Studies of NTO	Universal Energy Systems/Air Force Office of Scientific Research	\$25,227	1/91 - 8/91
Studies of Weak Interactions with Metal Centers	ACS-PRF Type G Grant Supplement	\$3,000	8/91-9/91
Studies of Weak Interactions with Metal Centers.	ACS-PRF Type AC	\$40,000	1/91 - 8/93
Studies of NTO Decomposition	RDL/AFOSR Research Initiation Program	\$29,687	1/93-12/93
High Pressure Photoacoustic Calorimetry	National Science Foundation	\$30,000	1/93-7/94
Hydrogen Activation by Transition Metal Complexes	ACS PRF Type AC	\$53,000	6/95-8/97
Sponsor for Outstanding Undergraduate Research	Ideal Chemical	\$500	2/97
Sponsor for Outstanding Undergraduate	Schering Plough	\$500	2/97

Research Sponsor for Outstanding Undergraduate Research	American Cyanamid	\$500	2/97
Renovation of J. M. Smith Chemistry Building at The University of Memphis” with Cundari, T. R.; Li, Y. S.; Kurtz, H. A.	National Science Foundation	\$105,991	11/96-8/98
Studies at the Interface of Theory and Experiment with, Parrill, A.; Cundari, T. R.; Bridson, P.; Kurtz, H. A.; Peters, G.	National Science Foundation	\$103,363	2/00-1/03
Design of Organometallic Molecular Machines	National Science Foundation	\$97,000	6-/02-6/03
Ultrafast Infrared Studies of Linkage Isomerization	National Institute of Science and Technology	\$14,925	6/04–12/04
Project SEED, research experience for economically disadvantaged high school students	Cargill, Ciba, Buckman, Schering Plough, ACS	\$4550	5/05-9/05
Acquisition of a 400 MHz NMR Spectrometer for Research and Graduate Research Training (Co-PI with Abby Parrill)	National Science Foundation	\$262,500	3/05-9/06
Project SEED	Cargill, Buckman, Schering Plough, ACS	\$11,075	5/06-9/06
Project SEED	Buckman, Cargill, Schering Plough Valero, ACS	\$13,500	5/07-9/07
Project SEED	Buckman, Cargill, Schering Plough Valero, ACS	\$13,000	5/08-9/08
Access and Diversity Initiative	Tennessee Board of Regents	\$13,800	2/08-3/09
Project SEED	Buckman, Schering Plough, Valero, ACS	\$13,000	5/09-9/09
Project SEED	Buckman, GlaxoSmithKline, ACS	\$14,500	5/10-9/10
Project SEED	BASF, Buckman, GlaxoSmithKline, ACS	\$13,700	5/11-9/11
Development of Organometallics for Ultrafast Photoswitches via Linkage Isomerization	National Institute of Science and Technology	\$72,236	7/08–6/10
Project SEED	BASF, Buckman, GlaxoSmithKline, ACS	\$12,500	5/12-9/12
Spectroscopic Material Identification Center	DOE-NVESD Subcontract	\$100,900	8/09-7/12
Ultrafast dynamics, mechanism, and linkage isomerization of photosensitive organometallic manganese and chromium complexes	National Science Foundation (with Webster)	\$390,000	8/09-7/12
Project SEED	BASF, Buckman, ACS	\$7,500	5/13-9/13
Project SEED	BASF, Buckman, ACS	\$12,500	5/14-9/14
Probes for Cage Reactions of Organometallic Complexes	National Science Foundation (with Webster)	\$761,960	pending
MRI: Acquisition of 400MHz NMR Spectrometer	NSF with Baker, Fujiwara, Zhao	\$412,528	pending

INTERNAL	SOURCE	AMOUNT	PERIOD
Reaction of Thiols with Anticancer Drugs	MSU Faculty Research Grant	\$3000	2/86
Studies of Steric Interactions of Transition Metal Compounds	MSU Faculty Research Grant	\$2,930	3/87.
Quantum Yields of Metal Complexes	MSU Faculty Research Grant	\$2,900	10/88
SPUR (Superior Performance in University Research)	MSU	\$2000	April 1992
Measurements of Quantum Yields at High Pressures	MSU Faculty Research Grant	\$3000	6/92
Design, Preparation, and Characterization	Faculty Research Grant, The	\$4000	7/98-5/99

of Photochromic Materials	University of Memphis		
Volume of Reaction Calculations for PAC Studies	Faculty Research Grant, The University of Memphis	\$4000	8/01-7/02
Methods for Producing Online Lectures for a Technical Course	Internet2 Technology Access Fee (TAF) Awards	\$10,000	7/02-3/03
Application of Digital Video in Technical Lecture and Laboratory Courses	INTERNET2 TECHNOLOGY ACCESS FEE (TAF) AWARDS	\$10,000	8/03-12/04
Building a U of M NOBCCChE Chapter	Provost, A&S, Chemistry	\$14,250	9/04-8/08
First Tennessee Professorship Award	First Tennessee Foundation	\$15,000	9/08-8/11

OUTREACH: *(Project/s summarized as needed in Appendix E.)*

PROJECT	PARTICIPANTS	PERIOD	SPONSORSHIP (if any)
Gas Chromatography	Ideal Chemical Company	3/96-4/96	
Project SEED	Memphis City High School Students	5/05-8/13	American Chemical Society, Glaxo Smithkline, Cargill, Schering Plough, Buckman, Ciba Specialty, Valero

SERVICE:

UNIVERSITY	COMMITTEE/ACTIVITY (if Chair, add [C])	PERIOD
Department	Facilities Committee [C]	6/02-now
	Organic Cumulative Exam Committee	9/85-now
	Chemistry Department Equipment Committee	90-
	Faculty Search Committee, Chair	91-92, 04-05, 07-08
	Faculty Search Committee	87-88, 89-90, 90-91, 91-92, 96-97, 98-99, 00-01, 04-05, 06-07
	Maintenance of Glass Blowing Shop	9/86 – 9/00
	Library Coordinator	9/85-8/90, 9/97-9/00
	Maintenance of Mattson FT IR Spectrometer	9/94 –9/98
	Manager of JEOL NMR Spectrometer	1/92 - now
	Graduate Studies Committee	9/93-8/96
	Director, 15th and 16th Annual University of Memphis Undergraduate Research Conference	3/95, 2/96
	Chair, Planning Committee	1996-97
	Chair, Tenure and Promotion Committee	1998-99, 2010-2011
	Chair, Facilities Committee	2000-now
	Installation of 500 MHz NMR	2005
	Manager and Training 500 MHz NMR	2006-now
College/School	Writing-across-the-University	Fall 89
	Tenure and Promotion Committee	90-91
	Committee for Master Plan	96-97
	Arts and Sciences Technology Access Committee	2003-2005
	External Chair, Committee for Department of Earth Sciences	2007
	Chair Evaluation	
University	Mathematics, Engineering, Science Proposal Review Committee	Spring 97
	Graduate Task Force Committee	Spring 1999
	University T & P Appeals Committee	Spring 2004-6
	Personal Response System RFP Evaluation Committee	Fall 2006/Spring 2007
	Faculty T&P Appeal Advocate (2010 Bicard) (2011 Gabikagojeaskoa) (2012 Aggarwal, Mathur, Mulroy)	2009-2012
	Conflict of Interest Committee	2011-2013
OTHER		
Society/Organization /Journal	COMMITTEE/EDITORIAL BOARD/OFFICE (if Chair, add [C])	PERIOD

ACS-PRF	Proposal referee	9/91, 5/95, 8/96, 11/96, 1/98, 10/01, 5/03, 7/07, 3/08, 9/10, 3/11, 5/11, 9/13 11/89
ACS Symposium Series	manuscript referee	11/89
American Chemical Society	Member	1/77-now
American Chemical Society	SW/SE Regional Meeting, Graduate School Fair Coordinator	11/05
Cottrell	Proposal referee	3/09
Coordination	manuscript referee	11/09
Chemistry Reviews		
Inorganic Chemistry	manuscript referee	8/91, 6/92, 11/95, 6/96, 6/96, 10/97, 11/97, 2/98, 4/98, 8/99, 7/00 6/86, 1/87, 9/87, 5/88, 11/88, 12/88, 1/97, 9/97, 12/97, 9/03
Journal of Organic Chemistry	manuscript referee	9/89, 1/90, 3/91, 3/91, 3/91, 10/92, 6/93, 1/94, 1/94, 7/94, 1/95, 10/02, 6/03, 6/03, 8/03, 12/03, 8/07, 12/08, 12/09, 9/13, 10/13
Journal of the American Chemical Society	manuscript referee	2/02, 2/03, 8/03, 12/03, 10/06, 8/07, 3/11, 6/11
Journal of Coordination Chemistry	manuscript referee	
Journal of Organometallic Chemistry	manuscript referee	3/90, 4/97, 5/98, 5/08
J. Photochemistry and Photobiology A	manuscript referee	10/05, 12/07
Journal of Physical Chemistry	manuscript referee	8/96, 7/99, 9/99, 11/01, 3/02, 6/02, 7/02, 6/03, 8/03, 9/03, 10/06, 8/10, 9/10, 1/11, 2/12 1/93-12/95
Memphis Section, American Chemical Society	Executive Committee member	
NATO ASI Series	manuscript referee	9/91
NSF	Proposal referee	4/94/, 9/94, 5/01, 2/03, 2/04, 5/04, 6/04, 2/07, 10/07, 5/08, 10/08, 4/09, 10/09, 11/09, 3/11, 5/11 2/15
Organometallics	manuscript referee	11/89, 10/91, 1/92, 7/93, 5/00, 6/00, 8/02, 12/03, 12/06, 5/07, 5/08, 6/08, 10/08, 12/08, 12/09, 4/10, 5/11, 7/11, 9/11, 3/12, 2/13, 7/13, 11/13, 12/13, 2/14 5/19
Structural Chemistry	manuscript referee	11/00
Synthesis and Reactivity in Inorganic and Metal-Organic Chemistry	manuscript referee	6/95, 9/95, 4/97, 6/98
NOBCChE	External review of T&P portfolio	9/07
	Member, Chapter advisor	9/04-now, 9/04-8/10

CONSULTING: *(Optional)*

ORGANIZATION/COMPANY	PERIOD
Williams, McDaniel, Wolfe	Spring 99
Williams, McDaniel, Wolfe	Spring 93
Apperson, Crump, Duzane, Maxwell	9/96- 3/1/97
Consultant: Causey, Walker and Markowitz	10/05

APPENDIX B

High School SEED students: Jordan Jackson (2012), Mathew Gude (2011) Diamond Wallace, Charika Williams (2010) Darius Hankins (2009) Shanethia Rucker (2008) London Lamar, Corderius Muse (2007) Timothy Howze (2007) Chris McNeary (2005)

Undergraduate Student Research: Angela Link (1986) Jim Morse, Greg Parker and David Robbins (1989) Don Bobal (1991) Tabitha Hughes (1993) Brian Holmes, Scott Cook, and Shannon Gittermann (2000) Tim Roberts, Dawne McNair and Robert White (2001) Misty Funk, Johnny Giles, and Leo Sieben (2002) Pasano Bojang (2003) Leslie Tiensveld (2004) Melinda Jansen and Nick Mayhall (2005) Jeffrey Swan (2006) Casey O'Brien (2006) Chris Junker (2006) Veronica Shields (2009) Parker Hemphill (2010) Thomas Pangia (2010/11) Aaron Schulzetenberg (2011) Alicia? (2012)

MS students: Perry Fan (1993) Ging-Long Leu (Shiny Chemical, 1994) Songnan Hu (Eastern Trading & Consulting Co., 1996) Tianjie Jiao (Barr Laboratories, 1999), Tung To (2003) Charlie Duke (2004) Philippe Lubet (2012),

PhD students: Suresh Nayak (1992) David Burney (Triarca, 1994) Perry Fan (Abbot Laboratories, 1995) Zhen Pang (University of Shanghai, 1995) Tung To (NIST, 2005), Shannon Gittermann (2007) Charlie Duke (2009). Karen Mosley (2012), Jermaine Johnson (2013) Thomas McFadden (2016) Margaret Owens (2017)

Postdoctoral fellow: Gerard Farrell (1995), Mohammad Al-Masum (2002-2004)

Current Committee: Roger Letterman, Min Zhang, Brandon Gindt, **Chailu Que 2014, Teera Baine 2014**

Proposals submitted but not funded

title	dates	agency	amount
Ultrafast dynamics, mechanism, and linkage isomerization of photosensitive organometallic manganese and chromium complexes	7/08-6/11	NSF	\$543,255
Studies of Ultrafast Chelation and Linkage Isomerization	9/05-8/08	PRF	\$120,000
Studies of Ultrafast Chelation and Linkage Isomerization	6/05-5/08	NSF	\$393,854
Temporal Constraints of Ring Formation	1/05–8/08	PRF	120,000
Development of Ultrafast Photochromic Organometallic Compounds	6/04–5/07	NSF	433,526
Instruction Model for Emerging Non-traditional Students: An Integrated Multimedia Course (Eugene Pinkhassik, Co-PI)	1/04–12/04	Dreyfus	30,064
REU Site: Chemistry Through Collaboration (Minor PI with A. Parrill and G. Peters)	7/03–6/06	NSF	99,570
Acquisition of a 500 MHz NMR Spectrometer for Research and Graduate Research Training (minor PI with A. Parrill)	7/03	NSF	345,000
Structural Characterization of Lipid Phosphate Phosphohydrolases (Minor P.I., with A. Parrill)	7/03–6/07	NSF	623,813
Design of Reversible and Ultrafast Optically-Driven Ring Closure	6/03–5/06	NSF	425,517
Acquisition of a 500 MHz NMR Spectrometer for Research and Graduate Research Training (minor PI with A. Parrill))	1/03	NSF	427,000
Ultrafast Organometallic Machines	1/03–8/06	PRF	120,000
Ultrafast Organometallic Machines	5/02–4/05	NSF	532,529
Acquisition of a 600 MHz NMR Spectrometer for Research and Graduate Research Training (with other faculty)	1/02	NSF	623,000
Studies of Weak Metal-Solvent Interactions	5/00–8/03	PRF	90,000
Studies of Photoefficient Organometallic Materials	6/99–8/02	PRF	90,000
Preparation and Characterization of Organometallic Compounds with High Quantum Yields	9/98–8/01	PRF	90,000
Organic Materials for Optical Memory (white paper)	1/98–12/00	DOD	412,600
Design of Compounds with High Quantum Yields and Photochromic	9/97–	NSF	102,160

Properties	8/00		
Application of PAC to Organometallic Chemistry	9/95– 8/98	NSF	265,390
Hydrogen Activation by Transition Metal Complexes	1/95– 12/97	DOE	208,239
Energetics of Small Molecule Activation by Transition Metal Complexes	9/93– 8/96	PRF	75,000
Energetics of Small Molecule Activation by Transition Metal Complexes	1/94– 12/96	DOE	276,376
Instrument grant for ESR (Minor PI)	3/94	NSF	110,000
Studies of NTO Decomposition	1/94– 12/96	AFOSR	263,554
Instrument Grant for ESR (minor PI)	12/92	NSF	171,027
Instrument Grant for ESR (minor PI)	4/92	NSF	171,027
Undergraduate Research in Chemistry and Instrumentation (minor PI)	6/92– 8/94	NSF	120,000
Studies of Weak Interactions with Metal Centers	5/91– 8/93	PRF	40,000
Undergraduate Research in Chemistry and Instrumentation (minor PI)	6/91– 8/93	NSF	120,000
Binding and Activation of Alkanes by Metal Centers	6/91– 5/94	DOE	354,977
Investigation of Electronic Effects on Catalytically Important Processes (with R. Johnston)	7/90– 5/94	NSF	252,312
Studies of Weak Activation of Carbon-Hydrogen Bonds	6/90– 5/93	DOE	247,772
Studies of Intermolecular Agostic Bonds	5/90– 8/93	PRF	60,000
Enhanced Methane Reactivity (with R. Johnston)	1/90– 12/93	GRI	382,333
Studies of Homogeneous Catalysis using Cyclopentadienyl Complexes (with R. Johnston)	1/90– 12/93	NSF	190,000
Investigation of Electronic Effects on Catalytically Important Processes (with R. Johnston)	9/89– 8/92	P&G	150,000
Thermochemistry of Metal-Inert Solvent Interactions and Metal-Ligand bonds	9/86– 8/88	PRF	18,000