

## DR. SCOTT E. MCKAY

### THE UNIVERSITY OF TEXAS PERMIAN BASIN

Scott McKay joined UTPB in the fall of 2019, previously he was at Dakota State University as the provost and vice president of academic affairs from 2017. Prior to DSU, Dr. McKay was the Dean of Science & Engineering and Professor of Chemistry at Southern Arkansas University. He joined the University in 2011. Prior to SAU, he was the chair and professor of chemistry at the University of Central Missouri and Director/Founder of the Center for Alternative Fuels and Environmental Science. Before that he was an assistant professor of chemistry at LMU and postdoctoral associate at The University of Alabama studying in the area of crystal engineering. Previous to UA he was a visiting scientist at Lehigh University researching industrial processes of dyes.

Dr. McKay has bachelor's degrees in chemistry and geology, a master in analytical chemistry and a Ph.D. in organic chemistry from The Florida Institute of Technology in Melbourne, Florida 1995. Following his Ph.D., he served postdoctoral stints at Lehigh University and the University of Alabama. Dr. McKay's research interests are in the areas of alternative energy, petroleum products, crystal engineering, and proton exchange membranes for hydrogen fuel cells. His activities have been supported by NSF, ACS, and LWI-Army Research Laboratory. He presently consults for energy related companies and has been an investigator on approximately 2 million dollars of grants. He served on the board of directors for Arkansas Economic Development Commission (appointed by Governor of Arkansas) and the board of directors for Hi-Tec, LLC and Arkansas Department of Higher Education Funding Formula Committee. He won the *Excellence in Technology Award* at the 2013 Biennial Achievement Award from the Coordinating & Development of the economic development authority for the Ark-La-Tex. In 2016, Dr. McKay was awarded *The Mary Armwood Diversity Excellence Award* by SAU.

#### **Synergistic Professional Activities**

- Interim Associate Vice President of Research
- Arkansas Economic Development Commission (appointed by governor of AR)
- Board of Directors, Hi-Tec, LLC
- Owner, McKay Management, LLC
- Arkansas Department of Higher Education Funding Formula Committee
- Founded and Directed the Center of Alternative Fuels and Environmental Sciences at UCM
- Oversight Natural Resource Research Center at SAU
- Oversight STEM center at SAU
- Oversight of Research and Graduate Office at DSU
- Founded the UTPB Biomedical Research Center
- Founded the UTPB Natural Resource Center
- Founded the UTPB Cyber Center for Energy Infrastructure
- Over two million dollars of research supported by NSF, ACS PRF, and LWI-Army Research
- Extensive consulting and collaboration with chemical and energy companies
- Experience with regional SACS, HLC and discipline accreditation CAE, ACS, NASM, NASAD, ACEN, ABET
- Experience with state boards and legislative issues
- Extensive experience with a variety of budget and finance models
- Extensive marketing and recruiting and student success activities
- Extensive academic and personnel management
- University System Task Force on Workforce Credentials

## **EDUCATION**

- B.S. Eastern Kentucky University, Richmond, KY 1987 Geology
- B.A. Eastern Kentucky University, Richmond, KY 1987 Chemistry
- M.S. Eastern Kentucky University, Richmond, KY 1989 Chemistry
- Ph.D. Florida Institute of Technology, Melbourne, FL 1995 Chemistry
- Postdoctoral Associate 1997-1998 University of Alabama, Tuscaloosa, AL (Hydrogen bond and weak intermolecular interactions;x-ray crystallography)
- Visiting Scientist 1996 Lehigh University, Bethlehem, PA (Area: Process and development of commercial diazoaromatics)

## **PROFESSIONAL EXPERIENCE & ACTIVITIES**

- **Dean of Arts & Sciences** 2019-present  
University of Texas-PB, Odessa, TX
- **Interim Associate Vice President of Research** 2019-2020  
University of Texas Permian Basin, Odessa, TX
- **Provost/Vice President of Academic Affairs** 2017-2019  
Dakota State University, Madison, SD
- **Dean College of Science and Engineering** 2011-2017  
Oversight NRRC Natural Resource Research Center 2011-2017  
Oversight STEM Center 2011-2017
- **Department Chair: Biochemistry, Chemistry & Physics**  
2009-2011 University of Central Missouri, Warrensburg, MO
- **Director and Founder: Center for Alternative Fuels and Environmental Systems (CAFES)**  
2008-2011  
University of Central Missouri, Warrensburg, MO
- **Professor of Chemistry** 2007-2011  
University of Central Missouri, Warrensburg, MO
- **Associate Professor of Chemistry** 2002-2007  
University of Central Missouri, Warrensburg, MO
- **Assistant Professor of Chemistry** 1999-2002  
University of Central Missouri, Warrensburg, MO
- **Assistant Professor of Chemistry** 1998-1999,  
Lincoln Memorial University, Harrogate, TN

## **ADMINISTRATIVE BENCHMARKS**

- **The University of Texas Permian Basin** 2019-present
- Dean of Arts and Sciences
- Departments: Art, Biology, Chemistry, Communications, Computer Science, Criminal Justice, Geology, History, Humanities, Literature and Languages, Math, Music, Social Sciences
- Interim Associate Vice President of Research for most of AY2019-2020
- Founded the UTPB Biomedical Research Center grants thus far ~\$4,000,000
- Founded the UTPB Natural Resource Center – external face for applied research with industry
- Founded the UTPB Cyber Center external face for applied research with industry and cyber education
- Installed comprehensive strategic growth plan
  - Updated curriculum in many areas
  - Comprehensive recruitment plan
  - Extended retention activities
  - Provided additional co-curricular activities
  - First two years enrollment growth for college +2%, +8%
  - Extensive outreach to High Schools and Community Colleges

- Extensive development of 2+2 Mou and collaborative agreements
  - Developed Visiting Scholar Program for schools and community organizations
- Program Development
  - M.S. Biology with track in biomedical research
  - B.S. Computer Science with track in software development
  - B.S. Computer Science with track in game and simulation
  - B.S. Computer Science with track in cyber security
  - B.S. Computer Science with track in Data Science
  - M.S. Computer Science with track cyber security
  - M.S. Computer Science with track in data science
  - M.S. Computer Science with track in information technology
  - M.S. Math with track in statistics and data science
  - B.S. Intelligence & Cyber Security Leadership
  - B.S. Environmental Science
  - Minor in statistics
  - M.A. Spanish online
  - Accelerated Masters Program in Biology
  - Accelerated Masters Program in Biochemistry
  - Accelerated Masters Program in Geology
  - Accelerated Masters Program in Math
  - Accelerated Masters Program in Computer Science
  - Accelerated Masters Program in History
  - Accelerated Masters Program in Psychology
  - Accelerated Masters Program in Spanish
- Development of Certificates and Workforce Development
  - Spanish for First Responder Spanish online
  - IT Management
  - Network and Communications
  - Software Development
  - Website Design and Development
  - Data Science graduate
  - Geospatial/GIS online
  - Cyber Security graduate online
- Number of staff and faculty ~88 full time faculty; 60 part time faculty; 15 staff
- Increase of course efficiency and occupancy
- Increase of scholarship activity in grants and publications
- New promotion and tenure guidelines
- New annual evaluation guidelines
- Accreditations NASAD, NASM, SACS, CAE
- Academic Council Committee, Administrative Council, Deans Council, IP Advisory, IACUC Advisory, Enrollment Management Committee, University Budget Committee
- Co-curricular support and development: Esport team, Debate team, Mariachi Band, String Quartet
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- **Dakota State University**
- Provost and Vice President of Academic Affairs 2017-2019
- Oversight: Academic Colleges, Graduate School, Research Office 2017-2018, Registrar, Online office, library, Institutional Research, Assessment, Honors College, Art Gallery, International Office,
- Completed Regional accreditation, HLC reaccreditation visit without monitoring reports, DSU 2018
- Accreditations: HLC, CAEP, ACBSP, CAHIIM
- Lead DSU administrator for technical/community school activities for city campus
- Developed transfer agreements, education delivery collaborations, and 2+2 agreements with community colleges, Community College of the Air force, Army and other entities.

- Number of staff and faculty oversight ~175
- Realigned Graduate and Research office to provide a full service ORSP/IP/Compliance in preparation of a new research-intensive mission
- Instituted research professor and guidelines
- Program Development
  - Ph.D. in Cyber Operations 1<sup>st</sup> in US
  - Ph.D. in Information Systems
  - Ph.D. in Cyber Defense
  - M.S. in Software Engineering
  - B.S. Cyber Leadership and Intelligence
  - B.S. Analytical Science
  - B.S. Software Engineering
- Intensive recruiting plan
  - DSU only public university in SD to have positive growth
  - Increase in academic profile SAT of incoming freshman
  - DSU enrollment growth of 3.5% in 2018
  - ROI
  - #3 rated cyber school by Military Times 2018
- Led university wide student success initiative with installation of EAB platform
- Led university wide student success initiative with HLC student success academy
- Reorganized Honors College and Founded an Honors House
- Built new Art Gallery in Library
- Funded new series of colloquia
- Developed new online university repository including scholarship, and hall of fame modules
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- **Southern Arkansas University 2011-2017**
- Dean of Science and Technology later renamed to Science and Engineering
- Oversight included departments Agriculture, biology, chemistry, computer science, engineering, math, and physics. Other Natural Resource Research Center, STEM Center
- Added first engineering program south of Little Rock and renamed college
- Developed comprehensive recruiting and marketing plan
- Results of recruiting and programmatic reform efforts:
  - From 2010 to 2016 the college of Science and Engineering majors grew +138% from 882 to 2,100 students
  - College faculty and staff ~60
  - Developed one of the largest Computer Science programs in U.S.
  - Recruiting initiatives targeted traditional students, international students and returning students
  - Increase in international student recruitment and enrollment
  - Instituted comprehensive recruiting tracking score card to include chairs, faculty, alumni, and students on recruiting effectiveness and outcomes
  - Initiated recruiting strategies to develop larger potential regional market including non-traditional recruiting methods
- Instituted new program development and program updates to attract students and serve the demand. New programs include:
  - Engineering
  - Engineering Technology
  - Welding Engineering Technology
  - Computer Science with options of Game & Animation
  - Computer Science with options in Cybersecurity & Privacy
  - Marine biology
  - Environmental Toxicology
  - Biochemistry Pre-health

- Instituted comprehensive cradle to grave student progress tracking for student advising and success
- Instituted junior level writing and speech course in most majors to help student career success
- Set up advisory councils and internships with companies throughout Arkansas, Oklahoma, and Texas.
- Collaborated with companies such as Lockheed Martin in work force development degrees such as the Welding Engineering and Technology Degree and the Engineering Technology Degree.
- Worked extensively with community colleges in Arkansas, Louisiana and Texas on 2+2 transfer agreements and joint programs.
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### College initiatives

- Initiated task force to develop college promotion and tenure guidelines
- Initiated new task force to develop college faculty development guidelines
- Initiated ACS accreditation in chemistry
- Repurposed a major endowment to support student creative endeavors and travel
- Emphasized scholarly and creative activity as part of the comprehensive mission
  - number of research papers, presentations and funding applications have increased over the past five years by several fold
  - Emphasized undergraduate research as point of emphasis for scholarly activity, training and learning
- Facilitated the development of the NRRC into an ADEQ certified research laboratory
  - lead external commercial contract acquisitions
  - lead acquisition of R&D collaborative funded projects
  - initiated efforts to add a hydrocarbon and toxicology research lab to the NRRC
- Initiated college pre-health club and advisory board. Initiated position of a professional pre-health advisor from endowment funds
- Initiated alternate tracks to reduce university student attrition rated for pre-health and engineering with allied health and engineering technology tracks
- Added proactive advisement intervention for high attrition programs
- initiated faculty/faculty teaching mentor program
- Initiated the first and only BS Marine biology in the state of Arkansas
- First engineering program south of Little Rock, in Arkansas
- Initiated American Chemical Society accreditation process for chemistry (estimated spring 2016)
- Initiated ABET accreditation for new engineering program (estimated fall 2017)

### Fund raising activities

- Frequent collaboration with SAU development on value added fund raising and development activities with companies
- Engaged alumni
- Engaged corporate givers
- Initiated college and engineering advisory boards to help assessment, curriculum alignment and seek fund raising opportunities
- Acquire major instrumentation and gifts in kind

### Regional university mission

- Developed highly trained and sought after graduates for the region
- Developed centers at all stops to support alternative university revenues resources and facilitate regional economic development

### Budget issues

- Review and continually improve program and operation efficiencies
- Increased efficiency in classroom occupancy especially in laboratories
- Created priority funding opportunities

- Facilitated growth of one of the largest computer science programs in the state and country
- Initiated new budget, spending and request interactive forms to better inform chairs of real time purchasing and tracking
- **University of Central Missouri 1999-2011**
- Chair Department of Biochemistry, Chemistry & Physics
  - Founder/Director Center for Alternative Fuels and Environmental Sciences (CAFES)

### **Proponent of liberal arts**

- Arkansas state legislature limited programs to 120hrs by removing 15 hours of general education
- Led college initiative to add an advanced junior level technical writing course.
- Led initiative to add back voluntarily speech to several College of Science programs
- Cross promote and cross listed courses with the BFA in game and design program with the BS computer science – game development option and BS Agri Business
- Built Honors House, art gallery, sound rooms, funded colloquia, and other Academy building activities.

### **RESEARCH INTERESTS**

Synthetic Photochemistry, Computational Chemistry, Petroleum Chemistry  
Crystal Engineering, Alternative Fuel Research

### ***GRANTS some 40 funded & pending grants; 85 grants have been applied for between 1998-Present***

*Funded Grants most indicative of primary research areas*

RFI to DNI of Texas for the establishment of an RSOC at UTPB, Gywali, McKay, Hernandez, request March 2022, pending, **\$2,000,000**.

THECB through the Accelerating Credentials of Purpose and Value Grant Program (Jan 2022 to September 2022). Collaborative Colleges Grant, **Funded \$410,000**.

Health Informatics and Technology Workforce Training Program, Office of the National Coordinator for Health Information Technology in the Department of Health and Human Services, collaborative colleges grant, **Funded \$286,000**.

Acquisition of a Triple Quadrupole GCMS with Multiple Sample Introduction Capabilities to Enhance Undergraduate Research and Training at Dakota State University. MO Gaylor (PI), SE McKay (co-PI), K Baker (Investigator), D Droge (Investigator), JA Maloney (Investigator). Submitted to the National Science Foundation (NSF) Major Research Instrumentation (MRI) program. **2019** Requested \$400,000.

The STEM Institute: Capitalizing on Recruitment and Retention Successes of Two Years of Experiential Summer STEM Institute Programs to Establish a More Inclusive Year-Round STEM Institute at Dakota State University. JA Maloney (PI), M Geary (co-PI), MO Gaylor (co-PI), B Jones, (co-PI), S McKay (co-PI). NASA South Dakota Space Grant Consortium. **2019** \$17,000.

Acquisition of a Triple Quadrupole GC-MS System with Multiple Sample Introduction Capabilities to Forge a Robust Culture of Undergraduate Scientific Research and Training at Dakota State University. MO Gaylor (PI), P Videau (co-PI), S McKay (co-PI), K Bakker (co-PI), D Droge (co-PI), JA Maloney (co-PI). Submitted to the National Science Foundation (NSF).

**2018** Requested \$350,000. Not funded. Resubmission requested.

AR Space Grant STEM Award, Scott McKay 2016, **\$5,000, Funded**

Characterization and Analysis of Lignite from the Claiborne and Wilcox Groups in Southern Arkansas, McKay, S.E.; Geme, G.; Petroleum Research Foundation Grant, 2015 , **\$70,000 submitted**

Rocketry grant GenCorp Scott McKay, 2014, **funded, \$2,000**

Renovation of Existing Research Space Supporting Multiple Chemical Disciplines and Alternative Energy Research in a Predominantly Undergraduate Institution, PI: Scott McKay, NSF-ARI-2, **\$484,097, 9/25/10, funded.**

“Development of an alternative fuel stream for forward operating bases”, Harvey Buhr (Hi-Tec) & Scott McKay (UCM), Leonard Wood Institute (LWI); submitted LWI-Army, April 22, 2008, **funded \$788,600**

“Converting plastics, tires waste, oils and lubricants into fuels suitable for use in diesel generators found on forward operating bases”, Harvey Buhr (Hi-Tec) & Scott McKay (UCM), October 3, 2007. **funded LWI-Army \$498,000**

*Evaluating the Nature of C-H...O Hydrogen Bonds and Donor-Acceptor Interactions in Heterocyclic-N-oxides.* Scott E. McKay, Petroleum Research Foundation Grant, June 27, 2002 **funded. \$35,000**

*Initiation and Integration of Teaching and Research at a Traditionally Undergraduate Regional University,* Scott E. McKay, Passer Grant (*American Chemical Society*), January 28<sup>th</sup>, 2000. **Funded \$1000**

National Science Foundation - CCLI Adaptation and Implementation Grant: "A computer laboratory to support integration of visualization and computation into the curriculum," Renée Cole, Steven Boone, Scott McKay, Somnath Sarkar, Glenn Petrie, Jason Holland, **\$79,020 June 20<sup>th</sup>, 2004 funded.**

#### *Other funded Grants*

Kraig Wheeler (Eastern Illinois University PI)- Senior Personnel Scott McKay NSF-MRI: (\$351,000) Acquisition of a Single Crystal X-ray Diffractometer. 6/15/07, funded.

Scott McKay, CST Creative Assistance, Construction of an Alternative Fuel bioreactor, Funded \$3,000.

Cambridge Structural Database (CSD) System, PDA, UCM, Warrensburg, MO 64093, November 20, 2008, funded \$550.

Cambridge Structural Database (CSD) System, PDA, UCM, Warrensburg, MO 64093, November 15, 2007, funded \$550.

“*Boron and Biology*”, *The Greer Oppenheimer Grants*, UCM, Warrensburg, MO 64093, October 10, 2007, \$ 355 funded for \$190.

“*Boron and Biology*”, *Sigma Xi*, UCM-chapter, Warrensburg, MO 64093, October 10, 2007, \$100, funded.

“Converting plastics, tires waste, oils and lubricants into fuels suitable for use in diesel generators found on forward operating bases”, Harvey Buhr (Hi-Tec) & Scott McKay (UCM), Leonard Wood Institute (LWI), October 3, 2007. funded \$498,000.

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Orbital Mapping, URC Grant, December 18, 2006, \$2053, funded.

Arts and Sciences Creative/Scholarship Award, Scott E. McKay, Central Missouri State University, Warrensburg, MO 64093, December 2006, funded. \$2500.

CSD, Scott E. McKay, PDA-Grant, Central Missouri State University, Warrensburg, MO 64093, October 6, 2006 \$550 funded.

*"Green Chemistry"*, *The Greer Oppenheimer Grants*, Central Missouri State University, Warrensburg, MO 64093, October 5, 2006 \$ 200 funded.

*"Green Chemistry"*, *The Greer Oppenheimer Grants, Sigma Xi*, 2006 \$ 100 funded.  
Hamilton Company Chemical Education Grant Program, \$2341, funded on 6/14/2006.  
Instructional Research and Development Grant, CTL, CMSU, Warrensburg, MO 64093, February 21, 2006 \$ 3,000 funded.

HPLC, Scott E. McKay, PDA-Grant, Central Missouri State University, Warrensburg, MO 64093, November 15, 2005 \$ 600 funded.

Arts and Sciences Creative/Scholarship Award, Scott E. McKay, Central Missouri State University, Warrensburg, MO 64093, August 2005, funded. \$2500.

*Chromatography*, Scott E. McKay, PDA-Grant, Central Missouri State University, Warrensburg, MO 64093, April 15, 2005 \$ 634 funded.

*Synthesis and X-ray Determination of Aromatic Diazine-N-oxides and Pyridine N-oxide Moieties*, Scott E. McKay, University Research Grant \$5000.00, November 3, 2004, funded.

*Reactions in Inert Atmospheres*, Scott E. McKay, PDA-Grant, Central Missouri State University, Warrensburg, MO 64093, November 1, 2004 \$ 572, funded.

APS Scholars Travel Funds-host, October 1, 2004 \$ 500, funded.

*Crystallography for Organic Chemists: ACS-PRF Summer School*, UCSD, August 2, 2004-August 13, 2004. Travel, room,board, meeting, funded est. 5,000.

National Science Foundation - CCLI Adaptation and Implementation Grant: "A computer laboratory to support integration of visualization and computation into the curriculum," Renée Cole PI, Steven Boone, Scott McKay, Somnath Sarkar, Glenn Petrie, Jason Holland, (\$79,020 June 20<sup>th</sup>, 2004 funded.

*Chromatography in Organic Synthesis*, Scott E. McKay, PDA-Grant, Central Missouri State University, Warrensburg, MO 64093, November 1, 2003 \$ 590 funded.

APS Scholars Travel Funds-host, October 1, 2004 \$ 500, funded.

*Continuous Extractive Methods*, Scott E. McKay, PEC-Grant, Central Missouri State University, Warrensburg, MO 64093, November 10, 2002 \$ 547.45 funded.

*Evaluating the Nature of C-H...O Hydrogen Bonds and Donor-Acceptor Interactions in Heterocyclic-N-oxides*. Scott E. McKay, PRF-Grant \$35,000, June 27, 2002 funded.

*High Vacuum Apparatus for the Chemistry Laboratory*, Scott E. McKay, PEC-Grant, Central Missouri State University, Warrensburg, MO 64093, March 19, 2002 \$ 492, funded.

*Efficient Hydrogen Fuel Cells: The Preparation of Aromatic-based Monomers Containing Acidic Groups as Polyelectrolytic Materials (PEM)*. Scott E. McKay, University Research Grant \$4860.00, October 15, 2001, funded.

Central Technology Grant (multimedia), Department of Chemistry and Physics, Central Missouri State University, Warrensburg, MO 64093, October, 15 2001 \$ 7077, funded.

*A Computational and Mechanistic Study: The Role Basicity plays in the Oxygenation of halogenated 1,4-diazines*. Scott E. McKay, NSF- HAMP, outside funds internally funded, August 20, 2001, \$2900, funded

*Convenient Syntheses of Aromatic Diazine-N-oxides and Water Soluble Compounds*, Scott McKay, NSF-HAMP, outside funds internally funded, May 15, 2001, \$ 2400, funded.

*Access to the Cambridge Structural Database*, Scott E. McKay, Professional Development Assistance Grant, April 16, 2001, \$ 420, funded.

Central Technology Grant, Department of Chemistry and Physics, Central Missouri State University, Warrensburg, MO 64093, December 1, 2000 \$ 10,000, funded.

*Required Reference Materials for Chemical Research*, Scott E. McKay, PEC-Grant, Central Missouri State University, Warrensburg, MO 64093, February 25, 2000 \$ 430, funded.

*Initiation and Integration of Teaching and Research at a Traditionally Undergraduate Regional University*, Scott E. McKay, Passer Grant (*American Chemical Society*), Warrensburg, MO 64093, January 28<sup>th</sup>, 2000. \$ 1000, funded.

*Organometallic Molecular Wires*, Scott E. McKay, GEM Award, Central Missouri State University, Warrensburg, MO, November, 2, 1999, \$1000, funded.

*Development of a Computational Organic Chemistry Course*, Scott McKay, PEC-Instructional Development Fund, Central Missouri State University, Warrensburg, MO, October, 18, 1999, \$699.00, funded.

## **PUBLICATIONS**

\*Leinen, LJ; \*Swenson, VA; \*Juntunen, HL; McKay, SE; O'Hanlon, SM; Videau, P; Gaylor, MO. Volatile Profiling of Preserved Foods Prepared in Early 1950s South Dakota (USA) Using Solid-Phase Microextraction (SPME) with Gas Chromatography-Mass Spectrometry (GC-MS) Determination. *Molecules*. Accepted. **2019** (Invited Paper)

\*Swenson, VA; \*Leinen, LJ; \*Moody, B; \*Juntunen, HL; McKay, SE; Beurmann, S; Honour, R; Hale, RC; Videau, P; Gaylor, MO. Volatile Profiling of Sewage Sludge Biosolids Land-Applied in Diverse Biomes of Washington State (USA). In preparation for submission to *Chemosphere* by March 1 2019.

“Environmental Analysis of Switchgrass on Soil”, Geme, G.; Dobson-Jones, C.; Hagenhoff, B.; McKay, S.E. *Universal Journal of Chemistry*, Vol.3(3), pp.91-97 DOI: 10.13189/ujc.2015.030302

Ahmed M, Mitra A, McKay S, Hossain M, ‘A Brief Review of Wood-Plastic Composites and Possible Use of Such Composites as Making 3D Printer Filaments’, The Composites and Advanced Materials Expo (CAMX) 2014, Orlando FL, October 13-16

Ahmed M, Zhang C, McKay S, Shirsat V, Khan J, “An Investigation of Methane Combustion in A Rectangular Shaped Meso Chamber”, Proceeding of the ASME 2014 International Mechanical Engineering Congress and Exposition, Montreal, Canada, November 14-20, 2014

Biofuel: An alternative to fossil fuel for alleviating world energy and economic crises, Bhattarai, K., Stalick, W., McKay, S., Geme, G., Bhattarai, N., *Journal of Environmental Science and Health, Part A*, 2011, 46, 1424-1442.

Navigating the Challenges of Interdisciplinary Research in the Undergraduate Sciences: An Undergraduate Physics Student’s Perspective, Robert W. Lashlee, Scott McKay, *MJUCR*, 2010, 10, 28-35.

“Syntheses of Bipyridine-*N*-oxides and Bipyridine-*N,N'*-dioxides,” Scott E. McKay, Lincoln W. Maina, Robert W. Lashlee, Kraig A. Wheeler, Alan Brown, *Heterocyclic Communications*, 2009, 3(15), 181-188.

“Modern Sport and Chemistry: What a Golf Fanatic Should Know,” Scott E. McKay\*, Timothy Robbins, and Renée S. Cole, *J. Chem. Educ.*, 2008, 85, 1319-1322.

“Developing an Undergraduate Capstone Course in the Chemical Sciences: A Needed Augmentation to the Undergraduate Research Experience,” Scott E. McKay, Renee S. Cole, and Alan B. Brown, *MJUCR*, 2008, 9, 41-47.

“Providing an Appropriate Research Environment for a Physical Science Department,” McKay\*, S.E.; Lashlee, R.W. *CUR Quarterly Bulletin*, 2007, 3 (27), 131-134.

“An Undergraduate Interdisciplinary Course in Computational and Theoretical Chemistry: Two Approaches Are Better Than One.” Scott E. McKay\* and Renee S. Cole, *CUR Developing and Sustaining a Research - Supportive Curriculum: A Compendium of Successful Practices*: publication released on February 21st, 2007 at the National Press Club in Washington, D.C.

“Chemical Separation and Characterization of Compounds In the Organic Laboratory Sequence: An Investigative Exercise” Scott McKay\*, Jason Holland, Ashley Millham, and Deblina Pakhira, *Transactions of Missouri Academy of Science*, 2007, 40, 67-73.

"2,2':6',2''-Terpyridine 1,1''-dioxide and Tetracyanobenzene " McKay\*, S.E.; Wheeler, K.A., Holthouse, B. *Zeitschrift fur Kristallographie* NCS 221 (2006) 91-92.

"A computational study of sulfur bridged cyclooctatetraenophanes: towards the syntheses of polymeric organometallic molecular wires," McKay\*, S.E.; Lashlee, R.W.; Holthouse, B.A.; Kiprof, P. *J. Mol. Graphics Modell*, 2006, 4(25), 543-548.

"Fire Accelerants: Determination of Molar Mass and Molecular Formula via Gas Chromatography / Mass Spectrometry in the Freshman Chemistry Laboratory," McKay\*, S.E.; Lashlee, R.W.; Petrie, G.A. Moody, S.M. *Chem. Educ.* 2006, 5(11), 317-318.

"A molecular salt of tricyanomethanide anion and a *N,N'*-dianisylphenazinium dication forms extended supramolecular assemblies that consist of unusual methoxy···methoxy and C≡N···N<sup>+</sup> intermolecular contacts," McKay\*, S.E.; Wheeler, K.A.; Blackstock, S.C., *CrystEngComm.* , 2006, 8, 129 - 131.

"Synthesis of a New Sulfonated Proton Exchange Membrane Monomer," McKay\*, S.E.; Lashlee, R.W.; Kopitzke, R.W. *Heteroatom Chemistry* 2005, 16, 553-556.

"2,2':6',2''-Terpyridine 1,1''-dioxide dihydrate," Wheeler, K.A; McKay, S.E.; Lashlee, R. W. III, *Acta. Cryst.* (2005), E61, 645-647.

"2,2':6',2''-Terpyridine N,N',N''-trioxide," McKay\*, S.E.; Wheeler, K.A; Blackstock, S.C., *Acta. Cryst.* (2004), E60, 2258-2260.

"Meeting General Chemistry Laboratory Goals at a Comprehensive University with Web Based Tools," S. E. McKay\*, R. W. Lashlee III, S. R. Boone, *The Chemical Education Journal* (CEJ), Vol. 8, No. 1 (Serial No. 14) 2004.

"Oxidation Methods for Aromatic Diazines. Part II. Chlorinated Pyrazine N-oxides", McKay\*, S.E, Sooter, J.A., Marshall, T.P., *Heterocyclic Communications*, 2003, vol 9 no. 3 p. 221-224.

"Modern Sport and Chemistry: What a Chemically Aware Sports Fanatic Should Know", McKay\*, S.E.; Giffin, G.A.; Boone, S.R.; Cole, R.S.; Kopitzke, R.; *Journal of Chemical Education*, 2002, 79, 813-819. **Note: Received the cover and the feature molecule.**

"Oxidation Methods for Aromatic Diazines: Substituted Pyrazine-N-oxides, Pyrazine-*N,N*-dioxides, Chloropyrazine-*N*-oxides and Terpyridine-1,1'-*N,N*-Di-oxide", McKay\*, S. E.; Sooter, J.A.; Blackstock, S.C. *Heterocyclic Communications*, Vol. 7, Issue 4 (2001) page no. 307-312.

"An Early Emphasis on Symmetry and a Three-Dimensional Perspective in the Chemistry Curriculum", McKay\*, S.E.; Boone, S.R. *The Journal of Chemical Education*, 2001, 78, 1487.

"Material Science: Internet and WebCT Enhanced Laboratory in General Chemistry", McKay\*, S.E.; Marshall T.P.; Short, M.; Boone, S.R. *The Transactions of The Missouri Academy of Science*, Volume 35, 2001, pages 39 - 46.

"Organic Crystal Engineering with Heterocyclic N-Oxides. Donor-Acceptor Bonding and CH–O Hydrogen Bonding in a Pyrazinedioxide-Pyromellitic Dianhydride Cocrystal", Bodge, S.G.;

Selby, T.D.; McKay, S.E.; Blackstock, S.C. *Transactions of the American Crystallographic Association*, **1998**, 33, 135-143.

"Heterocyclic N-oxide CH--O Hydrogen Bonding (Part 2)", Bodige, S.G.; Zottola, M.A.; McKay, S.E.; Blackstock, S.C. *Crystal Engineering*, **1998**, 1, 243-253.

"The Structure of Hexamethyl Dewar Benzene, Revisited by *Ab Initio* Theory", Brown, A.B.; Kiprof, P.; McKay, S.E.; I. Beros, I. *Internet J. Chem.* **1998**, 1, 18 URL: <http://www.ijc.com/articles/1998v1/18>.

"An *Ab Initio* Study of Annulation Effects on the Valence Isomerism of Benzene", A.B. Brown, S. E. McKay, and P.Kiprof, *J. Mol. Struct. (Theochem)* **1997**, 419, 185-189.

"Scope and Stereochemistry of [2+2] Photocycloadditions Between Cyclopentenones and 1,2-Dichlorocycloalkenes", Brown, A.B.; McKay, S.E.; Meeroff, D.E., *Synth. Commun.* **1997**, 27, 1989-2011 (1997).

"The Effects of Annulation on Cyclobutadiene Bond Alternation: A Comparison Study of Semi-Empirical and *Ab Initio* Methods", S.E. McKay, A.B. Brown, and P. Kiprof, *J. Mol. Struct. (Theochem)*, 368 (1996) 197-204.

"Dichotomous Reactivity of PCl<sub>5</sub> and PBr<sub>5</sub> Toward Cyclic Ketones: A One-Step Preparation of 1,1,2-Trichlorocycloalkanes." *Synth. Commun.* **1995**, 25 (4) 485-501. Brown, A. B.; Chronister, C. W.; Watkins, D. M.; Mazzaccaro, R. J.; Rajski, S. R.; Fountain, M. G.; McKay, S. E.; and Gibson, T. L.

#### **Other Publications:**

##### **Book Chapters:**

Scott E. McKay and Renee S. Cole, "An Undergraduate Interdisciplinary Course in Computational and Theoretical Chemistry: Two Approaches Are Better Than One." in *Developing and Sustaining a Research-Supportive Curriculum: A Compendium of Successful Practices*; Editors: Kerry Karukstis and Timothy Elgren; Learning through Research Series, Council on Undergraduate Research: Washington, D.C., 2007.

General Chemistry I Laboratory Manual, CMSU, Steven Boone, Jason Holland, Scott McKay, Glenn Petrie, Fall 2004.

Test Bank 2004 Organic Chemistry Structure and Reactivity 5E, Houghton Mifflin Sayhan Ege, Brian P. Coppola, Steven R. Boone and Scott E. McKay.

#### **Invited Speaker or Exhibitor: Energy and CAFES:**

1. Rep. Ike Skelton Procurement Conference, Warrensburg, MO May 29, 2009
2. MOBIO Missouri BioScience Legislative Tour, Warrensburg, MO July 28, 2009
3. Alternative Energy Alliance Meeting, UCM October, 20, 2009

4. Green Energy Expo and for the Roundtable, Ingram's Magazine, Warrensburg, MO April 19, 2010.
5. MTC Missouri Technology Corporation meeting including Senator Pearce and Representative Hoskins and MTC Board members, Warrensburg, MO May 27, 2010
6. Solar Challenge Innovation/Energy Fair, Jefferson City, MO State Capital, June 22, 2010
7. MO State Fair Energy Day SCOPE for the Annual Science Street Fair at the Fair event, August 14, 2010

## **PAPERS PRESENTED**

92. "Rocket Roundup" [54222]: SITE 2019 - The Society for Information Technology & Teacher Education to be held in Las Vegas, Nevada, March 18-22, 2019.
91. Hydroponic Studies of Sunflowers and Switchgrass, Brandy Caulwell, Scott McKay, Gija Geme, ACS National meeting in Anaheim, CA, March 28-30, 2011
90. Potassium Concentrations in Soil and Switchgrass, Fabrin Fenton, Fanson Kidwaro, Scott McKay, Gija Geme, ACS National meeting in Anaheim, CA, March 28-30, 2011
89. Correlation Studies of Nitrogen in Soil and Switchgrass, Brittany Hagenhoff, Brian Banach, Fanson Kidwaro, Scott McKay, Gija Geme, ACS National meeting in Anaheim, CA, March 28-30, 2011
88. Studies of Carbon Sequestration by Switchgrass, Patrick Barnett, Fanson Kidwaro, Scott McKay, Gija Geme, ACS National meeting in Anaheim, CA, March 28-30, 2011
87. Pacifichem 2010 Meeting
86. McKay, S. Buhr, H. Cardozo, T., Converting tires into fuels suitable for use in diesel generators and general purpose burner fuels. ACS Midwest Regional, Wichita, KS, October 27-30, 2010.
85. S. Mckay, S., Brown, C., Kidwaro, F., Bhattarai, K., Cardozo, T., Geme, G., Biomass to energy: Reducing the carbon footprint of a state regional university. ACS Midwest Regional, Wichita, KS, October 27-30, 2010.
84. Gini, A., McKay, S.E. Sulfonation Studies of Proton Exchange Membranes, Missouri Academy of Science, April 16<sup>th</sup>, Springfield, MO 2010.
83. Banach, B., Ragon, J., Holcomb, E., McKay, S., Geme, G. Ensuring environmental stability for the production of biomass for alternative fuel through N-P-K determination and monitoring in soil, ACS National meeting in San Francisco, CA March 21-25, 2010.

82. Geme, G., Banach B., Seelenger, R., Short, H. Gant, D, McKay, S. Environmental analysis of switchgrass impact on soil and utilization of biomass, ACS National meeting in San Francisco, CA March 21-25, 2010.
81. Preliminary Studies of Switchgrass Impact on Soil, Jayme Gibson, Brian Banach, Dana Gant, Travis Whisler, Scott McKay, Gija Geme, Fanson Kidwaro, ACS Midwest Regional, Des Moines, Iowa October 20-22, 2009.
80. Reduction of carbon footprint at a Midwest regional university, Christopher Brown, Scott McKay, Patrick Barnett, Gija Geme, Kristopher Beach, Fanson Kidwaro, Wayne Stalick and Keshav Bhattarai, ACS Midwest Regional, Des Moines, Iowa October 20-22, 2009.
79. Utilization of Biomass at UCM, Scott McKay, Gija Geme, Patrick Barnett and Keshav Bhattarai, Missouri Energy Summit, Columbia, Missouri, April 22-23, 2009.
78. Modern Sport and Chemistry: What a Golf Fanatic Should Know, Timothy Robbins, Scott E. McKay, and Renée S. Cole, Central Scholar Symposium, Central Scholar Symposium, April 7-8, 2009.
77. Utilization of Biomass at UCM, Scott McKay, Gija Geme, Patrick Barnett and Keshav Bhattarai, Missouri Energy Summit, Columbia, Missouri, April 22-23, 2009.
76. Modern Sport and Chemistry: What a Golf Fanatic Should Know, Timothy Robbins, Scott E. McKay, and Renée S. Cole, ACS National Meeting, Salt Lake City, Utah, March 22-26, 2009.
75. Sulfonation of Proton Exchange Membranes, Lin Liu, Scott McKay, Central Scholar Symposium, April 7-8, 2009.
74. The Synthesis and Structural Characterization of Dipyridyl Compounds: From Literature to Space Group Determination: A Quintessential Undergraduate Project. Scott McKay, Kraig Wheeler, Alan Brown, Lincoln Maina, 2008 CUR National Conference, St. Joseph, Minnesota, June 21-24, 2008.
73. An Undergraduate Interdisciplinary Course in Computational and Theoretical Chemistry: Two Approaches Are Better Than One. Scott E. McKay and Renée S. Cole, , 2008 National CUR Conference St. Joseph, Minnesota, June 21-24, 2008.
72. "Developing an Undergraduate Capstone Course in the Chemical Sciences: A Needed Augmentation to the Undergraduate Research Experience," Scott E. McKay, Renee S. Cole, and Alan Brown, 2008 National CUR Conference St. Joseph, Minnesota, June 21-24, 2008.
71. A molecular salt of tricyanomethanide anion and a N,N'-dianisylphenazinium dication: cooperative affects of methoxy···methoxy and C≡N···N<sup>+</sup> intermolecular contacts, Scott McKay, Kraig Wheeler, Silas Blackstock, MWACS, Kansas City, MO, November 7-10, 2007.

70. N-oxidation of 2,4-bipyridine and 4,4-bipyridine via dimethyl dioxirane Lincoln Maina, Scott McKay, Kraig Wheeler, Alan Brown, The 233rd ACS National Meeting, Chicago, IL, March 25-29, 2007.
69. Tricyanomethanide as a new supramolecular synthon, Radha Garlapati, Scott E. McKay, and Kraig Wheeler, 41<sup>st</sup> MidWest American Chemical Society Meeting, Quincy IL, October 25-27 2006.
68. Fire Accelerants: Determination of Molar Mass and Molecular Formula via Gas Chromatography / Mass Spectrometry in the Freshman Chemistry Laboratory,” McKay, S.E.; Lashlee, R.W.; Petrie, G.A.; Moody, S.M., 41<sup>st</sup> MidWest American Chemical Society Meeting, Quincy IL, October 25-27 2006.
67. Interactions in the 2,2':6',2"-Terpyridine 1,1"-dioxide and Tetracyanobenzene cocrystal McKay, S.E.; Wheeler, K.A., Holthouse, B. 41<sup>st</sup> MidWest American Chemical Society Meeting, Quincy IL, October 25-27 2006.
66. Chemical Separation and Characterization of Compounds In the Organic Laboratory Sequence: An Investigative Exercise” Scott McKay, Jason Holland, Ashley Millham, and Deblina Pakhira, 41<sup>st</sup> MidWest American Chemical Society Meeting, Quincy IL, October 25-27 2006.
65. “Comprehensive Regional Universities: In Pursuit of a Research Identity”, Scott E. McKay, CUR 2006 National Meeting, Greencastle, IN June 25, 2006.
64. “Determination of Molar Mass and Molecular Formula via Gas Chromatography / Mass Spectrometry of unknown liquids in the General Chemistry Laboratory,” Scott E. McKay, Robert W. Lashlee III, Glenn A. Petrie, Sariah M. Moody, and Lincoln Maina, Kirksville, MO April 21-22, 2005.
63. “Oxidation Methods for 4,4-bipyridine and 2,4'-bipyridines, McKay, S.E. and Maina, L.W. Missouri Academy of Science, Kirksville, MO April 21-22, 2005.
62. “A Structural Account of 2,2':6',2"-Terpyridine N,N',N"-trioxide,” Scott E. McKay and Kraig Wheeler, 40<sup>th</sup> ACS MidWest Regional Meeting 2005, Joplin, MO October 26-29, 2005.
61. “Ab Initio MP2 level Study of Annulation Effects on the Valence Isomerism of [6]Paracyclophanes” Paul Kiprof and Alan B. Brown, Scott E. McKay The Tenth Electronic Computational Chemistry Conference, April 2005, Paper #46.
60. “The Characterization of Proton Exchange Membrane Monomers Through the use of NMR,” Robert Lashlee III, Scott McKay, National Undergraduate Argonne Symposium, Argonne, IL November 5-6, 2004.
59. “Synthesis of 2,2':6',2"-Terpyridine-1,1"-Dioxide and X-ray Determination of Terpyridine Dioxide / Tetracyanobenzene Donor-Acceptor Cocrystal, Bryce A. Holthouse,” Scott E. McKay, Robert W. Lashlee III, National Undergraduate Argonne Symposium, Argonne, IL November 5-6, 2004.



58. "Complete Two Dimensional NMR Assignment and Characterization of Sulfonated and Unsulfonated Poly(ether ether ketone) (PEEK) Monomers," Scott E. McKay, Robert W. Lashlee III, Danielle Moul, Bryce Holthouse, Robert W. Kopitzke, 39<sup>th</sup> ACS MidWest Regional Meeting 2004, Manhattan, KS October 20-22, 2004.
57. "X-ray Crystallography and Crystal Engineering," Scott E. McKay, University of Californial-San Diego, August 12<sup>th</sup> 2004.
56. "Finding an Appropriate Research Model for a Physical Science Department," Scott E. McKay, Robert W. Lashlee III, 2004 National CUR Meeting, La Crosse, WI June 23 – June 26<sup>th</sup>.
55. "The Preparation of PolyEtherEtherKetone (PEEK) Monomers," S. E. McKay, R. W. Kopitzke, R. W. Lashlee III, 2004 National CUR Meeting, La Crosse, WI June 23 – June 26<sup>th</sup>.
54. "Using electronic technology to better prepare a time-stressed or alternative student population for the general chemistry laboratory," Scott E. McKay, Steven R. Boone, Robert W. Lashlee III, 18<sup>th</sup> BCCE, Ames, IA (Iowa State University, July 18-22, 2004.
53. "Convenient Syntheses of Substituted Pyrazine N-oxides, Pyrazine N,N'-dioxides, Terpyridine-1,1'-di-N-oxide, and chlorinated Pyrazine N-oxides," S.E. McKay, T.P. Marshall, J.A. Sooter, R.W. Lashlee III, UK Regional Undergraduate Poster Competition, Lexington, KY April 24<sup>th</sup>, 2004.
52. "Student friendly context modules that may enrich the classroom experience for beginning chemistry students," Scott E. McKay, Steven R. Boone, Renee S. Cole, Guinevere A. Giffin, Robert Kopitzke, 227<sup>th</sup> ACS National Meeting, Anaheim, CA March 28 – April 1 2004.
51. "Web based tools in the general chemistry laboratory, " Scott E. McKay, Steven R. Boone, Robert W. Lashlee III, 227<sup>th</sup> ACS National Meeting, Anaheim, CA March 28 – April 1 2004.
50. "Syntheses of Proton Exchange Membrane (PEM) Monomers," McKay, S.E., Lashlee III, R.W., Kopitzke, R.W. Midwest Regional Meeting American Chemical Society (Columbia, MO November 5-7, 2003).
49. "Syntheses of Proton Exchange Monomers," Robert Lashlee III, Scott McKay, Central Scholar Symposium, March 3, 2004.
48. "Convenient Syntheses of Substituted Pyrazine N-oxides, Pyrazine N,N'-dioxides, Terpyridine-1,1'-di-N-oxide, and chlorinated Pyrazine N-oxides," S.E. McKay, T.P. Marshall, J.A. Sooter, S.C. Blackstock, R.W. Lashlee III, HLC Showcase (Warrensburg, MO, March 1, 2004).
47. "Modern Sport and Chemistry: What a Chemically Aware Sports Fanatic Should Know," McKay, S.E., Giffin, G.A.; Boone, S.R.; Kopitzke, R., HLC Showcase (Warrensburg, MO, March 1, 2004).

46. "Syntheses of Proton Exchange Monomers," Robert Lashlee III, Scott McKay, National Undergraduate Argonne Symposium, Argonne, IL October 24-25 2003.
45. "Syntheses of Sulfonated PEEK Monomers," McKay, S.E., Lashlee III, R.W., Kopitzke, R.W. Midwest Regional Meeting American Chemical Society (Lawrence, KS October 23-25, 2002).
44. "Meeting General Chemistry Laboratory Goals With the Rapidly Changing Demographics at a Comprehensive Midwest Regional University," McKay, S.E. and Boone, S.R., 17<sup>th</sup> Biennial Conference on Chemical Education (Bellingham, WA July 28-August 1, 2002).
43. "Using Student Friendly Context Modules to Enrich the Classroom Experience for Beginning Chemistry Students," McKay, S.E., Boone, S.R., Giffin, G.A., Cole, S.R. and R.W. Kopitzke, 17<sup>th</sup> Biennial Conference on Chemical Education (Bellingham, WA July 28-August 1, 2002).
42. "The Introduction of Nontraditional Disciplines of Chemistry Into the General Chemistry Curriculum Using Web Based Resources," McKay, S.E. and S.R. Boone, 17<sup>th</sup> Biennial Conference on Chemical Education (Bellingham, WA July 28-August 1, 2002).
41. "Convenient Syntheses of Substituted Pyrazine-N-oxides, Pyrazine-N-N'-dioxides and Terpyridine-1,1'-di-N-oxide," McKay, S.E.; Sooter, J.A. and S.C. Blackstock, SIUC Poster Show (Carbondale, IL April 20, 2002).
40. "A Crystallographic Study and Evaluation of Putative Interactions in Pyridine Derivatives," McKay, S.E.; Marshall, T.P.; Sooter, J.A. and Blackstock, S.C. SIUC Poster Show (Carbondale, IL April 20, 2002).
39. "Ring-size Effects on Valence Isomerism of (1,2)Dewar-Cyclophanes." Brown, A.B. and McKay, S.E., 223<sup>rd</sup> ACS National Meeting (Orlando, FL April 7-11, 2002).
38. "CH $\cdots$ O Hydrogen Bonds in the Crystal Structure of 2,2':6',2''-Terpyridine Trioxide. McKay, S.E., Sooter, J.A., and Blackstock, S.C., 36<sup>th</sup> Midwest Regional ACS Meeting (Lincoln, NE, October 23-25, 2001).
37. "Using Electronic Forums about Materials Science to Increase the Interactive and Relevant Components of General Chemistry." McKay, S.E., Marshall, T.P, and Boone, S.R. 36<sup>th</sup> Midwest Regional ACS Meeting (Lincoln, NE, October 23-25, 2001).
36. "An *Ab Initio* Study of Annulation Effects on Valence Isomerism of [6]Paracyclophanes", Alan B. Brown, A.B., McKay, S.E., Kiprof, P. 37<sup>th</sup> National Organic Symposium (Bozeman, MT, June 10-14, 2001).
35. "Oxidation Methods for Aromatic Diazines: Substituted Pyrazine-N-oxides and Chloropyrazine-N-oxides", Sooter, J.A. and S.E. McKay. Department of Chemistry, Central Missouri State University. Missouri Academy of Science (Joplin, MO, April 20-21, 2001).

34. "Modern Sport and Chemistry: What a Chemically Aware Sports Fanatic Should Know." Giffin, G.A., Marshall, T.P., Boone, S.R. and S.E. McKay. Central Missouri State University. R. Kopitzke. Winona State University. Missouri Academy of Science (Joplin, MO, April 20-21, 2001).
33. "Material Science: Internet and WebCT Enhanced Laboratory in General Chemistry, Short, M., Boone, S.R., Marshal, T.P. and S.E. McKay. Central Missouri State University. Missouri Academy of Science (Joplin, MO, April 20-21, 2001).
32. "The Development of Attractive Methods to Introduce Polymers, Drugs and High Performance Materials to Beginning Chemistry Students", Marshall, T. P.; Giffin, G. A.; Boone, S. R.; McKay, S. E., NCUR 2001 (Lexington, KY 40475, March 15-17, 2001).
31. "Noncovalent Interactions in Terpyridine-N-oxides", Marshall, T. P.; Blackstock, S. C.; McKay, S. E., NCUR 2001 (Lexington, KY 40475, March 15-17, 2001).
- 30 "Crystal Engineering: CH $\cdots$ O Hydrogen Bonding Interactions in Crystal Engineering", McKay, S. E., American Chemical Society Mo-Kan-Ok section invited speaker, November 14<sup>th</sup>, 2000, Cottey College, Nevada, MO.
29. "Oxidation Methods for Aromatic Diazines: Substituted Pyrazine-N-oxides and Chloropyrazine-N-oxides", McKay, S. E.; Sooter, J. A.; Blackstock, S. C., 35<sup>th</sup> Midwest Regional ACS Meeting (St. Louis, MO, October 25-28, 2000); abstract # 295
28. "Chemistry Curriculum: Symmetry Enhanced Chemical Education", Boone, S. R.; McKay, S. E. 35<sup>th</sup> Midwest Regional ACS Meeting (St. Louis, MO, October 25-28, 2000); Abstract # 271
27. "Modern Sport and Chemistry: What a Chemically Aware Sports Fanatic Should Know." Giffin, G. A.; Boone, S. R.; McKay, S. E.; Kopitzke, R. 35<sup>th</sup> Midwest Regional ACS Meeting (St. Louis, MO, October 25-28, 2000); Abstract # 273
26. "An Ab Initio Study of Annulation Effects on the Valence Isomerism of [6]Paracyclophanes", Brown, A.B.; McKay, S.E.; Kiprof, P. 2000 Florida ACS Meeting and Exposition (Orlando, Fla., May 12-13, 2000); Abstract # P28.
25. "Crystal Packing of Heterocyclic N-oxides Mediated by CH $\cdots$ O Intermolecular Interactions, Scott E. McKay, Gwen Giffin, Silas C. Blackstock and Satish G. Bodige, Eight National Conference of the Council on Undergraduate Research, (Wooster, OH, June 22-24, 2000).
24. "Extensive Use of Symmetry in Chemical Education: An Across the Curriculum Approach", Scott E. McKay and Steven R. Boone, 16<sup>th</sup> Biennial Conference on Chemical Education, (Ann Arbor, MI, July 30-August 3, 2000).
23. "Intermolecular Interactions Influence Upon Supramolecular Chemistry", Scott E. McKay, Silas C. Blackstock and Satish G. Bodige, Missouri Academy of Science (Columbia, MO, April 14-15, 2000).
22. "Donor-acceptor and CH $\cdots$ O Hydrogen Bond Interactions in Crystal Engineering, McKay, S.E., Blackstock, S. C., Selby, T. and Bodige, S.G., Missouri Academy of Science (Columbia, MO, April 14-15, 2000).

21. "Symmetry Across the Curriculum", McKay, S.E., and Boone, S.R., Missouri Academy of Science (Columbia, MO, April 14-15, 2000).
20. "Pyrazine-*N*-monoxides and Choropyrazine-*N*-monoxides: Synthesis and Intermolecular Interactions", Scott McKay, Gwen Giffin, and J. Aaron Sooter, Silas C. Blackstock and Satish G. Bodige, University of Kentucky Regional Poster Competition (Lexington, KY, April 8<sup>th</sup>, 2000).
19. "Additivity of Ring-Size Effects on Isomerization Energies of (2,3)(5,6)Dewar-Cyclophanes", A.B. Brown, S.E. McKay and P. Kiprof, 36<sup>th</sup> National Organic Chemistry Symposium (Madison, Wis., June 13-17, 1999).
18. "Weak Intermolecular Interactions in Supramolecular Chemistry", Justice, W.; McKay, S.E., University of Kentucky Regional Undergraduate Chemistry Poster Competition (Lexington, KY, April 24, 1999).
17. "Crystal Engineering in Organic Chemistry", Justice, W.; McKay, S.E. Proceedings of The 6<sup>th</sup> Annual Blue Ridge Undergraduate Conference, (Cleveland, TN, March 3, 1999).
16. "Additivity of Ring-Size Effects on Isomerization Energies of (2,3)(5,6)Dewar-Cyclophanes", A.B. Brown, S.E. McKay and P. Kiprof, 1999 Florida ACS Meeting and Exposition (Orlando, Fla., May 7-8, 1999); Abstract #P-18.
15. "Dewar-Phane Nomenclature: A Concise, Unambiguous Formalism for Bridged and Polybridged Dewar Arenes. Alan B. Brown, Scott E. McKay, J. Clayton Baum, Tracy L. Gibson, and Paul Kiprof, 1998 Annual Meeting of the Florida Sections, American Chemical Society (Orlando, Fla., May 8-9, 1998).
14. "The Structure of Hexamethyl Dewar Benzene, Revisited by *Ab Initio* Theory", A.B. Brown, P. Kiprof, S.E. McKay, and I. Beros, 4th Electronic Computational Chemistry Conference (DeKalb, Ill., Nov. 1-30, 1997); Abstract #14.
13. "Preparation of 1,3,5-Tri-*t*-butylbenzene from *t*-Butylbenzene, a Friedel-Crafts Alkylation for the Sophomore Organic Laboratory", F.L. Austin, T.L. Gibson S.E. McKay, A.D. Canastar, R.N. Pellegrin, Jr., A.B. Brown and P. Kiprof 1997 Annual Meeting of the Florida Sections, ACS (Orlando, FL, May 2-3, 1997); Abstract #78.
12. "An *Ab Initio* Study of Annulation Effects on the Valence Isomerism of Benzene", A. B. Brown, S. E. McKay, and P. Kiprof, The Third Electronic Computational Chemistry Conference November 1996, Paper #28.
11. "An *Ab Initio* Study of Annulation Effects on the Valence Isomerism of Benzene", A. B. Brown, S. E. McKay, and P. Kiprof, 212<sup>th</sup> National Meeting, ACS (Orlando, Fla., August 1996); Abstract # ORGN 338.
10. "Scope and Stereochemistry of [2+2] Photocycloadditions Between Cyclopentenones and 1,2-Dichlorocyclohexenes", A. B. Brown and S. E. McKay, 212<sup>th</sup> National Meeting, ACS (Orlando, Fla., August 1996); Abstract # ORGN 339.

9. "The Effects of Annulation on Cyclobutadiene Bond Alternation: A Comparative Study of Semi-empirical and *Ab Initio* Methods." Scott E. McKay, Paul Kiprof and Alan B. Brown. The Second Electronic Computational Chemistry Conference November 1995, Paper #16.
8. "Synthetic Approaches To Annulated Dewar Benzene Homologues", Scott E. McKay, Alan B. Brown\*, 1995 Annual Meeting of the Florida Sections, ACS (Orlando, Fla., May 5-6, 1995); Abstract #134.
7. "A Theoretical Investigation Of The Valence Isomerism Of [N]Paracyclophanes, And Perturbation Thereof Via 2,3-Annulation, Scott E. McKay, Alan B. Brown, 1995 Annual Meeting of the Florida Sections, ACS (Orlando, Fla., May 5-6, 1995); Abstract #131.
6. "Synthetic Approaches To 1,2-Dihalocycloalkenes", Scott E. McKay, Daniel E. Meeroff, Alan B. Brown, Paul D. Gaska, Jennifer R. Lawrence, Jonathan A. Phillips, Michael S. Morton, and John M. Parant, 1995 Annual Meeting of the Florida Sections, ACS (Orlando, Fla., May 5-6, 1995); Abstract #p-26.
5. "Annulation Effects On Valence Isomerism of [5]Paracyclophane, and [6]Paracyclophane: Theory", A.B. Brown, S.E. McKay, and I. Beros, 1994 Annual Meeting of the Florida Sections, American Chemical Society (Orlando, Fla., May 5-7, 1994); Abstract #153.
4. "Synthetic Approaches To An Annulated [5]Paracyclophanes", S.E. McKay and A.B. Brown, 1994 Annual Meeting of the Florida Sections, American Chemical Society (Orlando, Fla., May 5-7, 1994); Abstract #107.
3. "Annulation Effects On Benzene Valence Isomerism: AM1 Calculations", A.B. Brown, I. Beros, and S.E. McKay, 33rd National Organic Symposium (Bozeman, Mont., June 13-17, 1993); Abstract #A-31.
2. "Approaches To Enone-Cycloalkyne [2+2] Cycloadditions", A.B. Brown and S.E. McKay, 1993 Annual Meeting of the Florida Sections, ACS (Orlando, Fla., May 6-8, 1993); Abstract #18.
1. "The nSiO And dSiO Modes Of Silicates and Aluminosilicates, Scott E. McKay and Howard Powell, 31st Rocky Mountain Conference, Denver, Colo., July 30 - August 4, 1989.

**Courses Taught:**

General Chemistry I  
 General Chemistry II  
 Introduction to the Sciences: Chemistry  
 General/Organic/Biochemistry for non-majors  
 Biochemistry  
 Organic Chemistry I  
 Organic Chemistry II  
 Modern Organic Chemistry  
 Advanced Organic Chemistry  
 Computational Organic Chemistry

## Chemical Communication Skills

### H. Television Appearances and News Articles:

KVMA Radio 2016  
Discussion of Engineering

KTSS TV 6/25/2015  
Computer Science

KMOS 5/30/11  
Alternative Energy & Earthweek interview

Today UCM winter 2011, vol 10 no. 3  
The Attraction of Chemistry

KC Business Journal, 12/03/10  
Cass County Power Plant will Fuel Growth

UCM Press CAFES at UCM Joins Cass  
County in Development of *Alternative Fuel  
Facility 11/16/2010*,

<http://www.ucmo.edu/news/cafes.cass.cfm>

UCM Press, UCM Receives National  
Science Foundation Grant for Chemistry  
Lab Renovations, 10/12/2010.

The Mule Skinner 9/30/2010  
CAFES Creates Solar-Powered car

Daily Star Journal 9/2/2010  
Professor Shines Light on Solar Vehicle  
Plans

Sedalia Democrat, 9/11/2009  
UCM's CAFES program seeks to extend  
alternative energy assistance,  
[http://www.sedaliademocrat.com/news/span-  
24605-font-style.html](http://www.sedaliademocrat.com/news/span-24605-font-style.html)

Sedalia Democrat, 8/3/2010  
UCM Students Building Solar Car

Daily Star Journal 8/10/2009  
Recycling tires could aid troops

Warrensburg - Turning used tires into fuel could save the lives of U.S. troops, including in Afghanistan and Iraq. ...

UCM Press, CAFES at UCM develops and build solar powered car, 7/29/ 2010.

Daily Star Journal 8/10/2009  
UCM holds open house at Energy Park and Learning Center facility  
Warrensburg - At the Energy Park and Learning Center open house,

UCM Press, Open House Planned for UCM's Energy Park and Learning Center, 8/4/2009

Daily Star Journal 7/24/2009  
UCM's Alternative Fuels, Environmental Systems offers students research  
Warrensburg - Recognizing the need for the development of alternative energy from sustainable sources

Unterrified democrat 8/19/2009  
Buhr's tire conversion has generated Plenty of interest.

CAFES and EZone reach an agreement to collaborate 3/2009  
<http://www.protostardesign.com/cafes/March2009Newsletter.pdf>

Unterrified Democrat, 9/2/2009  
Buhr has received tremendous support from the University of Central Missouri

## **DIRECTED STUDENT RESEARCH**

### A. Students Directed by Scott McKay:

Elizabeth Mayhew	1/15/2011	BS Chemistry
Ron Reed	1/15/2011	BS Chemistry
Christopher Brown	9/20/09	BS Chemistry
Aviel Gini	9/20/09-5/10	BS Chemistry
Tony Cordozo	9/1/08	BS Chemistry
Mary Gatheri	9/1/08	BS Chemistry
Nathan Glaspie	9/1/08	BSED Chemistry
Betsy Vile	9/1/08	BS Biology
Lisa Jordan	5/1/08-5/10	BS Chemistry
Kayla Higgins	4/01/05-10	BS Chemistry
Timothy Robbins	2/15/08-09	BS Chemistry

Dr. Scott E. Mckay

Christopher Beach	8/07-8/09	BS Chemistry
Lin Liu	6/07-8-09	BS Chemistry
Lynne Boone	2/1-8/07	Pre-Med
John Carderella	2/07-5/07	BA chemistry
Ashley Millham	5/15/5/07	Pre-med
Deblina Pakhira	1/6/06-5/07	BS Chemistry
Jordan Leininger	8/15/05-8/1/06	Pre-Pharm
Lincoln Maina	8/25/05-5/07	BS Chemistry
Sariah Moody	5/05-12/05	Biology major
Jonathon Robinson	9/04-5/05	Pre-Pharm
Alexandra Hurst	11/04	Chemistry major
Moul, Brenda	1/03-12/04	BA Chemistry
Bryce Holthouse	8/03-8/05	Physics major
Nahlik, Andrew	8/03- 5/05	BS Physics
Robert W. Lashlee III	1/02-8/1/06	BS Physics
Melissa Short	1/01- 8/01	BS Biology
Tadd Marshall	8/00-5/04	BS Chemistry
Joseph Aaron Sooter	5/00- 5/03	BS Chemistry
Guinevere A. Giffin	5/00- 5/02	BS Chemistry
Walt Justice Jr.	11/98-5/99	BS Chemistry
Yolanda Yvonne Janiga	11/98-5/99	BS Chemistry

## **PROFESSIONAL SOCIETIES AND HONORARIES**

### A. Membership:

Council on Undergraduate Research (CUR)  
 American Chemical Society (ACS)  
 Sigma Xi  
 Missouri Academy of Science  
 National Science Teachers Association / Society of College Science Teachers (NSTA/SCST)

### B. Service:

Assistant Editor of the Missouri Academy of Sciences Transactions 2006-2009  
 Missouri Journal of Undergraduate Chemical Research co-editor 1999-2011  
 CUR Faculty Mentor 2006  
 Missouri NanoAlliance 2006  
 Reviewer Journal of Molecular Graphics and Modeling 11/1/06  
 Reviewer Canadian Journal of Chemistry since 6/1/04  
 Reviewer The Journal of Chemical Education since 11/1/00  
 Reviewer for The Chemical Educator since 11/1/00  
 Reviewed "Essential Chemistry", Chang 2<sup>nd</sup> Edition, 1/20/01  
 Council on Undergraduate Research (CUR)-UCM liaison 2002-2010  
 Sigma Xi-membership officer (2002-2004)  
 Sigma Xi- Treasurer (2006-2008)  
 Sigma Xi-President (2008-2009)

### C. Listings in Honorary Publications and Awards:

The Mary Armwood Diversity Excellence Award April 2016



- Appointed to the Arkansas Economic Development Commission S&T Division by Governor Asa Hutchinson, 2016.
  - Appointed to the Board of Directors Hi-Tec, LLC, 2016
- Ark-La-Tex 2013 Annual Achievement Awards for Excellence in Technology  
 Dreyfus Teacher-Scholar Award Nominee 2006  
 2005-2006 Faculty Research Days Paper Competition, Second Place Award  
 Dreyfus Teacher-Scholar Award Nominee 2005  
 9<sup>th</sup> Edition of *Who's Who Among America's Teachers*, 2004-2005  
 University of California-San Diego, Best Presentation 2004  
 Crystallography for Organic Chemists (UCSD), 2004  
 8<sup>th</sup> Edition of *Who's Who Among America's Teachers*, 2003-2004  
 Arts and Sciences Faculty Achievement Award, CMSU, 2002  
 ACSSA Teacher of the Year, Honorable Mention, CMSU, 2002  
 Lincoln Award Nominee, Most Outstanding Faculty Member, LMU, 1999  
 ACS Orlando Section Graduate of The Year, FIT, 1994  
 Sigma Xi Student Paper of the Year nomination, FIT, 1994  
 Dean's list, EKU, 1987  
 Departmental Outstanding Graduate Student, FIT, 1994, FIT

#### D. Consulting

- Hi-Tec industries , Fuel Initiatives 6/07- present
- Watkins Products Co., Extraction 11/01/09-present
- Initial discussion with Innovatia start up technology company
- Initial discussions with Show-me-Energy alternative energy company
- Reviewed “Chemistry”, Chang 9<sup>th</sup> Edition, 3/15/06
- Test Bank 2003 for Organic Chemistry 5E, Scott E. McKay, Steven R. Boone, and Sayhan Ege, Houghton Mifflin
- Reviewed “Essential Chemistry”, Chang 2<sup>nd</sup> Edition, 1/20/01

### **UNIVERSITY SERVICE University/College/Departmental Services**

#### I. SAU

- Academic Council
- College Assessment Team
- Online and Technology Services
- Academic Affairs
- Annual Faculty Performance Review Monitoring

#### II. UCM

- Academic Council 09-present
- University Research Council 00-02
- Human Subjects committee 02-04
- College of A&S: P & T Policy and Development Committee 04-05
- Greer-Oppenheimer Committee college (chair 04-05) 03-05
- Faculty Salary and Fringe Benefits Committee 05-07
- Human Subjects 06-present
- Human Subjects Chair 07-08
- Academic Council 09-present

## Faculty Workload 10-present

### B. Chemistry Department Committees:

Awards Committee 1999- 2008  
Colloquium and Seminar Planning Committee: Chair 1999  
Department Web page developer 2000  
Department Enhancement Committee 2000  
Department Promotion and Tenure committee (chairman) 2004  
Chair Search Committee 2003-2004  
HPLC Acquisition Committee 01/05-11/05  
Biochemists Search Committee  
Analytical Search Committee 2005 and 2006  
Promotion Committee  
Tenure Committee  
WCM Morris Renovation Committee 05-07  
Department P&T guideline committee ad hoc 05-06  
Department Student evaluation and Annual Report guideline Committee ad hoc  
Department Recruitment and Retention Committee 06  
Graduate Coordinator 07

### C. Student Activities:

Faculty advisor to B.A. program	1999-2009
Faculty advisor to pre-professional studies	1999-2010
Faculty advisor to BS Forensic Chemistry	2008-2010
Faculty advisor to pre-pharmacy	2010
ACS-Student Affiliates faculty advisor	1999-2003
Science Olympiad (Judge) annual	1999
Science Day (Judge) annual	1999
Science Day coordinator	2008
PCOS commission	2010
Earth Day committee	2010
CST Master Advisor	2009

### D. other

Nominated by the Council on Undergraduate Research (CUR), Representative Denny Hoskins and Provost UCM George Wilson to be a member of the Energy Efficiency and Renewable Energy Advisory Committee (ERAC) which advises the US Secretary of Energy. July 2010.

Presentation to the Southwest Solid Waste Board, Tires to Fuel, Magnolia, AR June, 28, 2012

Presentation to the El Dorado Rotary Club, CST and Energy, El Dorado, AR, May 28, 2012

Presentation to the Magnolia, Lions Club, CST, Magnolia, AR,

Member, Magnolia Lions Club, 2015-2017Kiwanis of Madison, SD 2018-present

Dr. Scott E. Mckay  
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