

CURRICULUM VITAE

**G. Robert Shelton, Ph.D.**

Texas A&M University-San Antonio • College of Arts & Sciences  
Department of Natural Sciences  
One University Way • San Antonio, TX 78224  
Bob.Shelton@tamusa.edu • (210) 784-2246 (office)

**Education**

<b>Master of Business Administration</b>	In Progress
Texas A&M University San Antonio, San Antonio, TX AACSB accredited. The National Society of Leadership and Success	2023
<b>Post-Doctoral</b>	2006
University of North Texas, Denton, TX: Advisor: Weston T. Borden Stability of small molecules and hydrogen tunneling	
<b>Doctor of Philosophy</b>	2004
University of Florida, Gainesville, FL: Advisor: William R. Dolbier Computational and experimental investigation of fluorinated cyclopropenes	
<b>Master of Science in Chemistry</b>	1999
Southern Illinois University – Edwardsville, Edwardsville, IL: MS Advisor: Timothy B. Patrick Synthesis of a Fluorinated Pheromone: (Z)5(1-Decenyl) dihydro2(3H)furanone	
<b>Bachelor of Science in Chemistry minor in Biology</b>	1997
BS Advisor: James R. Hunsley Synthesis and application of boron rich products for neutron activation cancer therapy	

**Academic & Research Appointments**

<b>Texas A&amp;M University-San Antonio</b>	
• Instructional Associate Professor	1/23 – Present
• Instructional Assistant Professor	8/21 – 1/23
• Assistant Professor	8/15 – 8/21
• Visiting Researcher, <i>University of Texas San Antonio</i>	6/17 – Present
• Visiting Faculty, <i>Western Kentucky University</i>	8/15 – Present

**Austin Peay State University**

- Associate Professor 6/13 – 8/15
- Assistant Professor 8/10 – 6/13

**Adjunct Appointments****University of North Texas**

- Adjunct Assistant Professor 1/07 – 8/11

**Texas Woman's University**

- Adjunct Associate Professor 1/09 – 12/09
- Adjunct Assistant Professor 8/05 – 12/08

**Teaching Responsibilities****Texas A&M University-San Antonio**

- Undergraduate Chemistry Lectures & Laboratories
  - Organic Chemistry I & II
  - Biochemistry I & II
  - General Chemistry I & II
  - History of Science | Study Abroad
  - Environmental Chemistry
  - Introductory Chemistry

**Austin Peay State University**

- Undergraduate Chemistry Lectures & Laboratories
  - Introductory Chemistry
  - General Chemistry I & II
  - Organic Chemistry I & II
  - Advanced Organic Chemistry
  - Introduction to Research
  - Senior Seminar
  - Selected Topics in Chemistry: Study Abroad London
- Development & Redesign of Courses
  - Computational Chemistry (New - Face to face)
  - Chemical Literature (Redesign - Hybrid)
  - Introductory Chemistry for Non-Science Majors (Online)
  - General Chemistry for Science Majors (Online)
  - General Chemistry for Science Majors Laboratory (Redesign)
- Developed New Courses
  - “Palladium, Rhodium & Niobium: Rediscovering Chemistry’s British Roots”
    - 14-day inclusive study abroad course
- Directed Undergraduate Research
  - Directed students on projects ranging from computational studies, synthetic methodology, and formulation.
- Chaired or served on Undergraduate Thesis Committees
  - Joshua Hinckley, B.S. "A computational study of the fluoro-substituent effect of cyclopropene acidity and anion structure".
  - Ashley McNeill, B.S. “Computational Studies of Gas-Phase Peptide Acidities and Decomposition Mechanisms”.
  - Covington, Cody, B.S. “Computational Analysis of Heterofullerene-esk Structures”.

**University of North Texas**

- Undergraduate Chemistry Lectures & Laboratories
  - General Chemistry for Science Majors I & II
  - Organic Chemistry I & II
- Developed Online Supplemental Modules for Organic Chemistry
- Graduate Dissertation/Thesis Committees
  - Manrique, Carissa, Ph.D. (May 2011). “Effects of Using Logic and Spatial Cybergames to Improve Student Success Rates in Lower-Division Chemistry Courses”
  - Powell, Cynthia, Ph.D. (August 2010). “Podcast Effectiveness as Scaffolding Support for Students Enrolled in First-Semester General Chemistry Laboratories”
  - Mewhinney, Christina, Ph.D. (August 2009). “Predicting Chemical and Biochemical Properties Using the Abraham General Solvation model.”

**Texas Woman’s University**

- Taught Undergraduate Chemistry Lectures & Laboratories
  - Introductory Chemistry with laboratory
  - Introductory Organic and Biochemistry with laboratory
  - General Chemistry for Science Majors
  - Organic Chemistry I & II
  - Introductory Biological Chemistry

**Service Responsibilities****Texas A&M University-San Antonio**

- **Director of Study Abroad – CoAS** 8/22 – Present
- **Program Coordinator for Physical Sciences** 8/15 – Present
  - Chemistry, Physics, Geology, & Geography
  - Developing Courses & Curriculum
    - Chemistry Program Proposal 8/15 – 8/21
- **Director of International Education (Study Abroad)** 9/16 – 8/19
- **Departmental and University Committees**
  - Experiential Learning & Service-Learning Course Designation Committee 9/22 – 9/23
  - Faculty Senate 2015-17, 2020(late) – 2023
    - Calendar Committee 2017
    - Secretary of the Senate 2016 – 2017
  - Health Professions Advisory Committee 2018 – Present
  - Chaired and/or participated on numerous hiring committees 2015 – Present
    - Provost search committee 2022
    - Chair search committee 2017
    - Chaired search committee for TT analytical chemist 2016
  - System Employee Benefits Advisory Committee (SEBAC) 2017 – 2019
  - Served on the Academic Technologies Advisory Council 2017
  - Served on the Technology Advisory Council 2016 – 2017
  - SciTech Building Committee 2016 – 2017

- Super Group Committee 2015 – 2016
- **Faculty Co-Chair of the ACS affiliated Chemistry Club** 2016 – Present

### **Austin Peay State University**

- **Departmental and University Committees**
  - Various Hiring Committees
  - Elected to Faculty Senate 2012 – 2014
    - Chair of Nominations & Election Committee 2013 – 2014
    - Co-Chair of Nominations & Election Committee 2012 – 2013
  - University Assessment Analysis Council 2010 – 2015
- **Faculty Co-Chair of the ACS affiliated Chemistry Club**

### **University of North Texas**

- Supervised teaching assistants in General and Organic Chemistry Laboratories
- Summer Advisor for Freshman and Transfer Students

### **Memberships, Honors, & Activities**

- **Member of the American Chemical Society (ACS)** 1995 – Present
  - San Antonio Local Section
    - Chair Elect, Chair, Past-Chair 2018 – 2020
    - Finance Committee 2016
  - Organic, Fluorine, & Chemical Education Division member
  - Peer Reviewer for Journal of the American Chemical Society, Journal of Chemistry Education, & Journal of Organic Chemistry
  - Symposium Presider “Chemical Education”  
ACS Regional Meeting Austin, TX, October 31-November 3, 2021.
  - Symposium Chair “Innovative use of technology in under-graduate chemistry course”  
257th ACS National Meeting Orlando, FL, March 31-April 4, 2019.
  - Southwest Regional Committee Member 10/16
    - ACS E. Ann Nalley Award for Volunteer Service Committee.
  - Symposia Committee “Chemistry Education Research”  
BCCE 2016 - Northern Colorado University August 14-16, 2016.
  - ACS Science Coach 10/15 – 5/16
    - Fisher Elementary School with Science Coordinator Leah Clark
    - Meet monthly for a day with individual grade levels on various science topics
  - Symposium Organizer “Mobile Technology in Undergraduate Chemistry Courses”  
247th ACS National Meeting Dallas, TX, March 16-20, 2014.
  - BCCE 2012 Symposia Chair “Innovative Uses of Technology in Undergraduate Chemistry Courses” BCCE 2012 – The Pennsylvania State University July 29-August 2, 2012.
  - Symposium Organizer “Analysis of current trends that support preparing general chemistry students for new frontiers”  
247th ACS National Meeting Dallas, TX, March 16-20, 2014.
  - 2010 Biennial Conference on Chemical Education (BCCE) 8/07 – 8/10
    - Chair of Publicity and Communications

- General Planning Committee
  
- Regional Director of Associated Chemistry Teachers of Texas (ACT<sub>2</sub>)** 8/15 – Present
  - Host, Biennial Conference 2022: The Magic of Chemistry, June 15-18, 2022
  - Host, Biennial Conference 2020 Chemistry Vision, June 15-18, 2020
    - Face to face postponed to 2022 as a result of pandemic
  
- A&M-SA Regional Science Olympiad** 8/15 – Present
  - Designed and administered chemistry related activities
  
- Jaguar Demo Team 8/15 – Present
  - A locally touring chemistry demonstration program
    - *KLRN SEE Career Day*
    - *Career Day* 11/22
      - *Fisher Elementary School, Booking confirmed 7/22*
    - *Career Day* 11/21
      - *Fisher Elementary School*
    - *Career Day* 11/19
      - *Fisher Elementary School*
    - *Career Day* 10/18
      - *Nichols Elementary School*
    - *Career Day* 12/18
      - *Fisher Elementary School*
    - *Career Day* 11/16
      - Fisher Elementary School, approx. 800 students in attendance
    - *Career Day* 11/15
      - Fisher Elementary School, approx. 800 students in attendance
  
- 2<sup>nd</sup> Annual Researcher Development Conference** 3/12
  - Tennessee Board of Regents Office of Academic Affairs
  
- Member of the Council on Undergraduate Research (CUR)** 2/11 – Present
  - Attended CUR Dialogues, Washington D.C. (Grant Writing) 2/11
  - Attended CUR Dialogues, Washington D.C. (Grant Writing) 2/13
  
- Big Red Demo Team** 8/10 – 8/15
  - A locally touring chemistry demonstration program
    - Science Is Fun 5/14
      - Barsanti Elementary School, 2<sup>nd</sup> grade classroom, DoDEA
      - Invited by Kerri Patterson; Ft. Campbell, KY
    - *Career Day* 4/14
      - Jackson Elementary School, 4<sup>th</sup> & 5<sup>th</sup> grade classroom, DoDEA
      - Invited by Carla Smith; Ft. Campbell, KY
    - Chemistry for the new year 1/14
      - Title I Learning Center, K-5<sup>th</sup> grades, CMCSS

- Invited by Tracy Dewese; Clarksville, TN
  - Chemistry for the new year 1/13
    - Title I Learning Center, K-5<sup>th</sup> grades, CMCSS
    - Invited by Tracy Dewese; Clarksville, TN
  - Science Is Fun 5/12
    - Barsanti Elementary School, K-5<sup>th</sup> grade assembly, DoDEA
    - Invited by Carla Smith; Ft. Campbell, KY
  - Science Is Fun 1/12
    - Title I Learning Center, K-5<sup>th</sup> grade assembly, CMCSS
    - Invited by Tracy Dewese; Clarksville, TN
  - Youth Leadership Clarksville 8/11
    - Ice Cream Social for 6<sup>th</sup>-8<sup>th</sup> Grades, Leadership Clarksville.
    - Invited by Sheila Bryant
  - Career Day 4/11
    - Cumberland Height Elementary, CMCSS
    - K-5<sup>th</sup> grade assembly & 1<sup>st</sup> grade classroom
    - Invited by Rebecca Aldred, Clarksville, TN
  - Career Day 4/11
    - Barsanti Elementary School, K-5<sup>th</sup> grade assembly, DoDEA
    - Invited by Carla Smith; Ft. Campbell, KY
  - Science Fair Prep Day 1/11
    - Title I Learning Center, 4<sup>th</sup>-8<sup>th</sup> grade assembly, CMCSS
    - Invited by Tracy Dewese; Clarksville, TN
  - Clarksville-Montgomery County School System (CMCSS) 11/10
    - Clarksville High School, 9<sup>th</sup> grade classroom
    - Invited by Sara Cochie; Clarksville, TN
- Chi Epsilon Mu (XEM)** 8/10 – 8/15
  - APSU Student Affiliates of the American Chemical Society
    - Faculty Advisor
- Texas College and Career Readiness for Chemistry Symposium** 7/09
  - Moderator of the “Interface Speed Lunch”
- Fort Worth Regional Science and Engineering Fair** 12/07 – 5/09
  - 2009 IRB/SRC Chair 2009
  - 2008 Science Fair Judge 2008
  - 2008 General Planning Committee 2007
- Mean Green Demo Team** 1/06 – 8/10
  - Nationally touring chemistry demonstration program
    - Gene Pike Middle School Field Day 4/09
      - Invited by Northwest ISD; Justin, TX
    - Campus Chemistry, Girl Scouts 2/09
      - Invited by Teresa Overall; University of North Texas
    - National Convention of the Society of Hispanic Professional Engineers 11/08

- Society of Hispanic Professional Engineers (SHPE)
  - Two shows in Phoenix, AZ
- Reaching for the Stars 10/08
  - San Joaquin Delta College Stockton, CA
  - Invited by The Jose Hernandez Reaching for the Stars Foundation
- Pilot Point Elementary School Summer Science Camp 08/08
  - Invited by Corey Haughton
- Opening Ceremony at Association of Chemistry Teachers Texas (ACT<sub>2</sub>) 08/08
  - ACT<sub>2</sub> Biennial Conference “Fueling the Future 2008” Tyler Texas
- School Assembly at M.J. Miller Elementary, Lake Worth Texas 01/08
  - Invited by Brent McClain and Carla Smith
- CHEM IS TRY at University of Texas at San Antonio 12/07
  - Invited by Carmen Fies and Kathleen Mittag
  - For in-service science and mathematics teachers
- ScienceFEST at Winston Science 11/07
  - U.T. Southwestern Medical School Health Science Center Dallas, TX
- National Convention of the Society of Hispanic Professional Engineers 11/07
  - Two shows in Philadelphia, PA
- Blanche Dodd Intermediate School 10/07
  - Invited by Tara Hatford; Krum, TX
- State Fair of Texas 10/07
  - League of United Latin American Citizens (LULAC), SHPE, & ExxonMobil
- Reaching for the Stars 9/07
  - Program for disadvantaged eighth graders at University of the Pacific Stockton, CA
  - Invited by The Jose Hernandez Reaching For The Stars Foundation
- Engaging Students with the Mean Green Top 10 9/07
  - Ft. Worth Independent School District's Professional Development Day
- Campus Chemistry, Girl Scouts 2/07
  - Invited by Teresa Overall; University of North Texas
- National Convention of SHPE 1/07
  - Denver, CO
- Marilyn Janice Miller Elementary School 12/06
  - Invited by Carla Smith; Lake Worth, TX
- Campus Chemistry, Girl Scouts 2/06
  - Invited by Teresa Overall; University of North Texas

**Alpha Chi Sigma (AXΣ)**

1/06 – Present

- Faculty Advisor 2006
- Bylaw & Constitutional Committee Member 2007

**Illinois State and Regional Science Olympiad**

1996 – 1998

- Coordinated, designed, and administration of activities

**Invited Lectures & Workshops**

Identification of Unsuccessful Students in General Chemistry. 2022

- 5<sup>th</sup> African Conference on Research In Chemical Education, Cairo, Egypt
  - Keynote Speaker Ain Shams University

Lecture: “The trouble with Texas students and vodkas.” 2/18

- Southern Illinois University Edwardsville, Chemistry Department

Workshop: “Implementing iPads in the Chemistry Curriculum”

- Chemistry Collaborations Workshops & Communities of Scholars (cCWCS)
  - Weekend workshop in Atlanta, GA 5/17
  - Weekend workshop in San Antonio, TX 5/16
  - Weekend workshop in Atlanta, GA 5/14
  - Weekend workshop in Atlanta, GA 5/13
  - Weekend workshop in Atlanta, GA 1/13

ICT in Teaching and Learning Chemistry Activities on the iPad. 2014

- 1<sup>st</sup> African Conference on Research In Chemical Education Addis Abba Ethiopia
  - Three-hour workshop on using probe ware with iPads in the classroom and Lab
    - Probe ware provide by PASCO
  - Plenary keynote lecture on Teaching and Learning Chemistry Activities on the iPad.

Workshop: “iPads in the Classroom and Laboratory”

- University of North Texas 3/13
  - Six-hour workshop for High School and College teachers
  - Invited by the Texas College of Career Readiness Symposium for Chemistry
- University of Oklahoma 11/12
  - Four-hour workshop for Professors and Instructors
  - Invited by Dr. Mark C. Morvant - Executive Director, Center for Teaching Excellence. Professor, Department of Chemistry & Biochemistry
- University of North Texas 10/12
  - Six-hour workshop for High School and College teachers
  - Invited by the Texas College of Career Readiness Symposium for Chemistry

**Grants, Proposals, & Scholarship Awards**

NSF-sponsored CSU I-Corps Bio-Entrepreneurship Workshop 2019

- A 3-day I-Corps™ Bio-Entrepreneurship Workshop
  - June 2-5, 2019, Philadelphia, PA
  - Work with industry professionals to learn about biotechnology commercialization and explore entrepreneurial opportunities that build on basic research.
  - All expenses (travel, lodging, meals, and transportation) covered by the grant

Texas A&M University San Antonio Research Council Grant 2018

- Molecular cartography and spatial metabolomics of marmoset brains.



- Seed grant of \$1,400
- Passer Education Grant 2017
- Spatial metabolomic and molecular cartography using MALDI
    - \$860 to offset travel expenses, University of Texas San Antonio
- NSF-sponsored Chemistry Collaborations, Workshops & Communities of Scholars 2017
- Implementing iPads in the chemistry curriculum
    - Workshop schedule for May 2017 in Atlanta, GA.
    - Approximately \$9000 for honorariums, accommodation & transportation, participant accommodation, materials, and supplies.
- NSF-sponsored Chemistry Collaborations, Workshops & Communities of Scholars 2016
- Implementing iPads in the chemistry curriculum
    - Workshop schedule for May 2016 in San Antonio, TX.
    - \$9000 for honorariums, accommodation & transportation, participant accommodation, materials, and supplies.
- NSF-sponsored Chemistry Collaborations, Workshops & Communities of Scholars 2014
- Implementing iPads in the chemistry curriculum
    - Workshop in the 2014 schedule for the period of May 16-18, 2014
    - \$7500 for honorariums, accommodation and transportation, participant accommodation, materials, and supplies.
- APSU Technology Access Fee (TAF) Grant 2014
- Modernization of General Chemistry Laboratories (Part 2 of 3)
    - \$52,000 for the purchase of Apple iMacs and Vernier probes and sensors for the General Chemistry, Organic, and Biochemistry laboratories.
- APSU Technology Access Fee (TAF) Grant 2013
- Modernization of General Chemistry Laboratories
    - \$50,400 for the purchase of Apple iMacs and Vernier probes and sensors for the General Chemistry, Organic, and Biochemistry laboratories.
- Tennessee EPSCoR ROA: 2013
- In silico de novo development and design of ligands for organometallic biomimetic catalysts
  - \$20,000 Start up grant for collaborative project with University of Memphis
  - Collaboration with Drs. Xuan Zhau, C. Edwin Webster, & Nathan DeYonker
- NSF-sponsored Chemistry Collaborations, Workshops & Communities of Scholars 2013
- Implementing iPads in the chemistry curriculum
    - Workshop in the 2013 schedule for the period of May 17-19, 2013
    - \$7500 for honorariums, accommodation & transportation, participant accommodation, materials, and supplies.

- NSF-sponsored Chemistry Collaborations, Workshops & Communities of Scholars 2012
- Implementing iPads in the chemistry curriculum
    - Workshop in the 2013 schedule for the period of January 11-13, 2013
    - \$7300 for honorariums, accommodation & transportation, participant accommodation, materials, and supplies.
- APSU Technology Access Fee (TAF) Grant 2012
- Modernization of General Chemistry Laboratories
    - \$50,400 for the purchase of Apple iMacs and PASCO probes and sensors for the General Chemistry, Organic, and Biochemistry laboratories.
    - Partially funded due to lack of funds as a result of campus construction projects.
- APSU Annual Equipment Award 2012
- Academic Affairs Annual Equipment Award
    - \$21,409.99 for the purchase of 30 Apple iPads, applications, and support materials for the development of pedagogy using this emerging technology
- APSU Summer Fellows Research Program 2011
- Computational investigation of organometallic complexes as catalysts for the production of polycarbonates from biorenewable resources
    - \$5000 to support research endeavors
- APSU Annual Equipment Award 2010
- Academic Affairs Annual Equipment Award
    - \$6456 for the purchase of 12 Apple iPads and applications for the development of pedagogy using this emerging technology
- Learning Enhancement Grant 2008
- Success in Organic Chemistry an Individually Assessed Learning (SOCIAL) Program
    - \$13,000 for the development of various online modules for organic chemistry classes and labs
- Lifelong Learning Trial Project
- Creating online problem-solving exercises with visual cues and audio explanations 2007
    - \$1,000 for hardware and software

### **Publications (Peer Reviewed)**

Importance of Academic Legacy on Student Success in General Chemistry I and II. **Shelton, G. R.**, Villalta-Cerdas, A., Jang, B., Dubrovskiy, A., Mamiya, B., Weber, R., Broadway, S., Williamson, V., Powell, C. B., & Mason, D. *Journal of Science, Mathematics and Technology Education*, 2023, 6(3), 121-148.

Influence of Environmental Factors on Success of At-Risk Hispanic Students in First-Semester General Chemistry. Mamiya, B.; Powell, C.B.; **Shelton, G.R.**; Dubrovskiy, A.; Villalta-Cerdas,

A.; Broadway, S.; Weber, R.; Mason, D. *Journal of College Science Teaching*, 2022, 51(4), 46-57.

Is the STEM gender gap closing? Dubrovskiy, A.; Broadway, S.; Jang, B.; Mamiya, B.; Powell, C. B.; **Shelton, G. R.**; Walker, D. R.; Weber, R.; Williamson, V.; Villalta-Cerdas, A.; Mason, D. *Journal of Research in Science Mathematics and Technology Education*, 2022, 5(1), 47-68. DOI: 10.31756/jrsmte.512.

Early warning signals from automaticity diagnostic instruments for first- and second-semester general chemistry. **Shelton, G.R.**, Walker, D.R., Weber, R., Powell, C.B., Mamiya, B., Villalta-Cerdas, A., Dubrovskiy, A.V., Jang, B., Mason, D., *J. Chem. Educ.*, 2021, 98, 10, 3061–3072. DOI: 10.1021/acs.jchemed.1c00714.

Relationship between academic preparation in general chemistry and potential careers. Mason, D., Weber, R., Powell, C.B., Williamson, V.M., Mamiya, B., Walker, D.R., Dubrovskiy, A.V., **Shelton, G.R.**, Villalta-Cerdas, A., Jang, B., Broadway, S., *Biomedical Journal of Scientific & Technical Research*. 2020, 32 (5), 25311-25323. DOI: 10.26717/BJSTR.2020.32.005312.

Personal characteristics influencing college readiness of Hispanic students in a STEM gateway course: first-semester general chemistry. Villalta-Cerdas, A., Dubrovskiy, A., Walker, D., Mamiya, B., Powell, C., Broadway, S., Weber, R., **Shelton, G.R.**, Mason, D., *Journal of College Science Teaching*. 2022, 51(5) 31-41. Accepted in 2020.

Impact of arithmetic automaticity on students' success in second-semester general chemistry. Powell, C. B., Simpson, J. Williamson, V.M., Dubrovskiy, A., Rush, D.R., Jang, B., **Shelton, G.R.**, Mason, D., *Chem. Educ. Res. Pract.*, 2020, 21, 1028-1041. DOI: 10.1039/D0RP00006J.

Impact of basic arithmetic skills on success in first-semester general chemistry. Williamson, V.M., Walker, D.R., Chuu, E., Broadway, S., Mamiya, B., Powell, C. B., **Shelton, G.R.**, Weber, R., Dabney, A. R. Mason, D., *Chem. Educ. Res. Pract.*, 2020, 21, 51-61. DOI: 10.1039/C9RP00077A.

ConfChem Conference on Mathematics in Undergraduate Chemistry Instruction: MUST-Know Pilot Study—Math Preparation Study from Texas. Albaladejo, J., Broadway, S., Mamiya, B., Petros, A., Powell, C.B., **Shelton, G.R.**, Walker, D.R., Weber, R., Williamson, V.M., Mason, D., *J. Chem. Educ.*, 2018, 95 (8), pp 1428–1429. DOI: 10.1021/acs.jchemed.8b00096.

Green Lights that Engage Chemistry Students. George, A.; Smith, C.; **Shelton, G.R.**; Mason, D. *Chimica nella Scuola*. (edited by the Italian Chemical Society); 2012; 34(3); 232-236.

Calculations of the Effect of Tunneling on the Swain-Schaad Exponents (SSEs) for the 1,5-Hydrogen Shift in 5-Methyl-1,3-Cyclopentadiene. Can SSEs Be Used to Diagnose the Occurrence of Tunneling? **Shelton, G.R.**; Hrovat, D. A.; Borden, W. T. *J. Am. Chem. Soc.*; 2007; 129(51); 16115-16118. DOI: 10.1021/ja076132a.

Oxidation of Tertiary Silanes by Osmium Tetroxide. Valliant-Saunders, K.; Gunn, E.; **Shelton, G.R.**; Hrovat, D.A.; Borden, W.T.; Mayer, J. M. *Inorg. Chem.*; 2007; 46(13); 5212-5219. DOI: 10.1021/ic062468u.

Tunneling in the 1,5-Hydrogen Shift Reactions of 1,3-Cyclopentadiene and 5-Methyl-1,3-Cyclopentadiene. **Shelton, G.R.**; Hrovat, D.A.; Borden, W.T. *J. Am. Chem. Soc.*; 2007; 129(1); 164-168. DOI: 10.1021/ja0664279.

Why Does Perfluorination Render Bicyclo[2.2.0]hex-1(4)-ene Stable toward Dimerization? Calculations Provide the Answers. **Shelton, G.R.**; Hrovat, D.A.; Wei, H.; Borden, W.T. *J. Am. Chem. Soc.*; 2006; 128(36); 12020-12027. DOI: 10.1021/ja063848h.

Cooperative and Competitive Effects of Substituents at C1 and C4 on the Barriers to Ring Inversion of 5,5-Difluorobicyclo[2.1.0]pentanes. **Shelton, G.R.**; Hrovat, D. A.; Borden, W. T. *J. Org. Chem.*; 2006; 71(8); 2982-2986. DOI: 10.1021/jo052538z.

Rate Constants For Hydrogen Abstraction From Alkoxides By A Perfluoroalkyl Radical. An Oxyanion Accelerated Process. Cradlebaugh, J.A.; Zhang, L.; **Shelton, G.R.**; Litwiniendo, G.; Smart, B.E.; Ingold, K.U.; Dolbier, W.R. *Organic & Biomolecular Chemistry*; 2004; 2(14); 2083-2086. DOI: 10.1039/B405074F.

4,5-Dehydrooctafluoro[2.2]paracyclophane: Facile Generation and Extraordinary Diels-Alder Reactivity. Battiste, M.A.; Duan, J.X.; Zhai, Y.A.; Ghiviriga, I.; Abboud, K.A.; Roitberg, A.; **Shelton, G.R.**; Dolbier, W.R.; *Tetrahedron Letters*; 2002; 43(39): 7047-7049. DOI: 10.1016/S0040-4039(02)01554-X.

Computational Discovery of a Novel Automerization Process for 1-Fluorocyclopropene. Dolbier, W.R., Jr.; **Shelton, G.R.**; Battiste, M.A.; Stanton, J.F.; Price, D. R. *Org. Lett.*; 2002; 4(2); 233-235. DOI: 10.1021/ol0169574.

### **Publications (Conference Proceedings)**

Predictability of the MUST (Math-Up Skills Test). Mason, D.; **Shelton, G.R.** *African Journal of Chemical Education*; AJCE, 2023, 13(2): Special Issue ISSN 2227-5835 70-92.

Identification of Unsuccessful Students in General Chemistry. **Shelton, G.R.**; Simpson, J.; Mason, D. *African Journal of Chemical Education*; AJCE, 2023, 13(2) 137-161: Special Issue ISSN 2227-5835.

ICT in Teaching and Learning Chemistry Activities on the iPad. **Shelton, G.R.**; Mason, D. *African Journal of Chemical Education*; 2014; 4(3); 182-188.

### **Publications (Apps and Flash Modules)**

Chemistry Gears, version 1.0; iTunes: Austin Peay State University, Clarksville, TN 2014.

3d Spinner, version 1.0; Flash: University of North Texas Center for Learning Enhancement, Assessment, and Redesign (UNT-CLEAR), Denton, TX 2008.

Anions & Cations, version 1.0; Flash: UNT-CLEAR, Denton, TX 2007.

Chunking Game, version 1.0; Flash: UNT-CLEAR, Denton, TX 2007.

### **Publications (Invited Articles)**

MnyOx Baggie Series; Mason, D.; Shelton, G. R.; Chem13 News.

The following series of articles have been accepted and are awaiting publication.

Para- and diamagnetic properties of manganese.

Physical properties, periodicity and bonding of manganese.

Physical and chemical properties of the transition metal manganese.

Signature Mugs Series; Shelton, G. R.; Casao, B; Mason, D.; Chem13 News.

Firsts. April 2016.

Tragedies of oxygen. May 2016.

Texas connections. September 2016.

Across the pond. October 2016.

Across the pond – Continental Europe. December 2016.

Signature Mugs: Seaborg group. February 2017.

### **Presentations**

Cultivating sustainable chemistry education: a community-led approach to inclusivity and civic engagement. Shelton, G.R.; Smyth, D; Simpson, J, ACS National Meeting & Exposition. New Orleans, LA, March 17-21, 2024.

Identification of Unsuccessful Students in General Chemistry. **Shelton, G.R.**; Simpson, J.; Mason, D. *African Journal of Chemical Education*; Special Issue: Lecture Series from ACRICE-5, AJCE, 2023, 13(2): Special Issue, 137-161. ISSN 2227-5835.

Predictability of the MUST (Math-Up Skills Test). Mason, D.; **Shelton, G.R.** *African Journal of Chemical Education*; Special Issue: Lecture Series from ACRICE-5, AJCE, 2023, 13(2): Special Issue, 70-92. ISSN 2227-5835.

Early Warning: Automaticity Diagnostic Instruments for General Chemistry (Oral). Shelton, G.R., Mason, D.S., ACS Regional Meeting & Exposition. Austin, TX, Oct 31 – Nov 3, 2021.

Study Abroad in Chemistry (Oral). Shelton, G.R., ACS Regional Meeting & Exposition. Austin, TX, Oct 31 – Nov 3, 2021.

Shaken not stirred, y'all: A comparison of Texas vodkas, part two (Oral). Shelton, G.R., Samenuk, G., Montoya, M., Bach, S., Mason, D.S., ACS National Meeting & Exposition. New Orleans, LA, March 18-22, 2018.

Mathematics competency of males and females in general chemistry and STEM retention (Oral). Shelton, G.R., Simpson, J., ACS National Meeting & Exposition. New Orleans, LA, March 18-22, 2018.

MUST-Know Pilot—Math Preparation Study from Texas (Invited Online). Petros, A., Weber, R., Broadway, S., Ford, R., Powell, C., Hunter, H., Williamson, V., Walker, D., Mamiya, B., Del Pilar, J., Shelton, G.R., Mason, D., 2017 Fall ConfChem: Mathematics in Undergraduate Chemistry Instruction

Workshop: cCWCS- sponsored workshop on the use of iPads in teaching college chemistry. BCCE 2016, University of Northern Colorado, CO, August 1, 2016.

A computational study of the fluoro-substituent effect on cyclopropane acidity and anion structure (poster). Shelton, G.R., Hinckley, J., ACS National Meeting & Exposition. San Diego, CA, March 13-17, 2016.

Balancing RTP at a PUI (Oral). Shelton, G.R., BCCE 2014, Grand Valley State University, MI, August 6, 2014.

Trouble with undergrads – getting them interested in graduate school (Oral). Shelton, G.R., BCCE 2014, Grand Valley State University, MI, August 3, 2014.

Project iPad: Evaluating impact on student learning across multiple campuses (Oral). Shelton, G.R., Jones, R.M., ACS National Meeting & Exposition. New Orleans, LA, April 7-11, 2013.

Project iPad: Behind the scenes and lessons learned (Oral). Shelton, G.R., Jones, R.M., BCCE 2012, State College, PA, July 31, 2012.

Project iPad: Integrating iPads into general chemistry (Oral). Jones, R.M., Shelton, G.R., BCCE 2012, State College, PA, July 31, 2012.

The iPad Project: Integrating iPads into General Chemistry (Oral). Jones, R.M., Shelton, G.R., Abstracts of Papers of the ICCE ECRICE, Rome Italy July 2012.

Green Lights that engage chemistry students (Oral). Smith, C.G., Mason, D, Shelton, G.R.; Abstracts of Papers of the ICCE ECRICE, Rome, Italy July 2012.

iPad project: Behind the scenes and lessons learned (Oral). Shelton, G.R., Jones, R.M., Abstracts of Papers of The American Chemical Society 243: 1525-CHED March 2012.

iPad project: Integrating iPads into general chemistry (Poster). Jones, R.M., Shelton, G.R., Abstracts of Papers of The American Chemical Society 243: 63-CHED March 2012.

21<sup>st</sup> BCCE: The CaNe Roundup  
Diana Mason, G.R. Shelton:

Abstracts of Papers of The American Chemical Society 239 March 2010.

Abstracts of Papers of The American Chemical Society 238 August 2009.

Abstracts of Papers of The American Chemical Society 237 March 2009.

64<sup>th</sup> Southwest Regional Meeting (SWRM) A.C.S. October 2008.

Invited Speaker: The Richard Stockton College of New Jersey; Pomona, NJ. “Purely Experimental Indications of Tunneling in Organic Reactions - Calculations Tell Experimentalists Where to Look and What to Look For.” March 2009.

Invited Speaker: Western New England College; Springfield, MA. “Teaching Organic Chemistry By Guided Inquiry” February 2009.

Invited Speaker: Georgia Gwinnett College; Lawrenceville, GA. “Teaching General Chemistry with Demos” January 2009.

Invited Speaker: The City College of New York; New York, NY. “Teaching Organic Chemistry by Guided Inquiry” December 2009.

Invited Speaker: Western New Mexico University; Silver City, NM. “Teaching Organic Chemistry by Guided Inquiry” December 2009.

Workshop: National Convention of the Society of Hispanic Professional Engineers; Phoenix, AZ “Clip Clues.” November 2008.

Workshop: Clip Clues. Diana Mason, G. Robert Shelton; 64<sup>th</sup> Southwest Regional Meeting (SWRM) A.C.S. October 2008.

Invited Speaker: Trinity University; San Antonio, Texas. “Teaching Acid/Base Chemistry with Demos” May 2008.

Invited Speaker: Eureka College; Eureka, IL. “Experimental Indications of Tunneling in Organic Reactions - Calculations Tell Experimentalists Where to Look and What to Look For” April 2008.

Invited Speaker: College of New Rochelle; New Rochelle, NY. “Experimental Indications of Tunneling in Organic Reactions - Calculations Tell Experimentalists Where to Look and What to Look For” March 2008.

Invited Presenter: Qatar Symposium on Science Teaching & Learning, Qatar University, Doha Qatar. “Lone Star Solutions for Engaging Students.” (Plenary Session) February 2008.

Workshop: Qatar Symposium on Science Teaching & Learning, Qatar University, Doha Qatar. “Clip Clues.” February 2008.

Workshop: Qatar Symposium on Science Teaching & Learning, Qatar University, Doha Qatar. “Teaching Science Using Discrepant Events.” February 2008.

Invited Speaker: Qatar University; Doha, Qatar. "Calculations of the Effect of Tunneling on the Swain-Schaad Exponents for the 1,5-Hydrogen Shift Reactions of 1,3-Cyclopentadiene and 5-Methyl-1,3-Cyclopentadiene." Shelton, G.R. February 2008.

Schizophrenic Effects of Geminal Fluorination on the Kinetic Stabilities of Molecules Containing Strained Rings: Calculations, Predictions, and Experimental Tests. Borden WT, Hrovat DA, Shelton GR, Isborn C, Lewis SB, Getty SJ.; Abstracts of Papers of The American Chemical Society 230: U3184-U3184 279-ORGN August 2005.

Investigation of Substituted 1-Fluorocyclopropene Carbene Rearrangements. Shelton, G.R., Dolbier, W.R., and Battiste M.A.; 79th Annual Florida Annual Meeting and Exposition May 2003.

Computational Discovery of a Novel Automerization Process for 1-Fluorocyclopropene. Shelton, G.R., Battiste, M.A., Dolbier, W.R.; Abstracts of Papers of The American Chemical Society 223: 336 April 2002.

DFT Investigation of the Electrocyclic Ring Opening of Fluorinated Cyclopropenes. Shelton, G.R.; Dolbier, W.R.; Battiste, M.A.; 15<sup>th</sup> Annual Winter Fluorine Conference, 2001.

Chemistry club on campus and in the community: Activities of the 1997-1998 Southern Illinois University at Edwardsville Student Affiliate chapter. Shelton G.R., Henrickson H.P., Westhoff J., Khayyat A., Davidson T., Johnson K.; Abstracts of Papers of The American Chemical Society 215: 577 March 1998.

### **Student Presentations of Mentored Research Projects**

Alec John

- "Chitinase from the gut of a small lizard and its potential efficacy as an antifungal agent"
  - John, A.; Smyth, D.S.; Shelton, G.R.; Watson, C.M.
  - The Society for Integrative & Comparative Biology, January 2024.

Fahad F. Ladha

- "MALDI-TOF Mass Spectrometry Imaging of Proteins and Peptides *in situ* Marmoset Brain Tissue Observing Molecular Mechanism Progression Related to Dementia and Alzheimer's Disease"
  - Poster & Video presentation: UTSA Research Symposium. October 2021.

Stacey Barnett

- "The Texas Tea Challenge: YETI™ vs. RTIC™."
  - Poster presentation: TAMUSA Research Symposium. April 2016.

Joshua Hinckley

- "A computational study of the fluoro-substituent effect of cyclopropene acidity and anion structure."
  - Poster presentation: ACS National Meeting. Dallas, TX. March 2014.



- APSU Research and Creativity Forum. April 2014.

Kayla Milano

- “Synthesis and fluorination of the sex pheromone for *Drosophila ananassae*.”
  - Poster presentation: ACS National Meeting. Dallas, TX. March 2014.
  - APSU Research and Creativity Forum. April 2014.

Linh Nguyen

- “In silico de novo development and design of ligands for organometallic biomimetic catalysts.”
  - Poster presentation: ACS National Meeting. Dallas, TX. March 2014.
  - APSU Research and Creativity Forum. April 2014.

Molly Silkowski

- “Synthesis and characterization of ligands for organometallic biomimetic catalysts.”
  - Poster presentation: ACS National Meeting. Dallas, TX. March 2014.
  - APSU Research and Creativity Forum. April 2014.

Virginia Winstead

- “Project iPad: Breaking teaching boundaries in organic chemistry.”
  - Oral presentation: BCCE2014 Grand Valley State University. August 2014.
  - Oral presentation: 34<sup>th</sup> annual Undergraduate Research Conference University of Memphis. March 2014.
  - Poster presentation: ACS National Meeting. Dallas, TX. March 2014.
  - Oral presentation: APSU Research and Creativity Forum. April 2014.

Yakshin Konstantin

- “Mechanisms of ozonolysis: A density functional theory study.”
  - Poster presentation: ACS National Meeting. Dallas, TX. March 2014.
  - APSU Research and Creativity Forum. April 2014.

Samantha Monk

- “A computational investigation of 1-fluorocyclopropene”
  - APSU Research and Creativity Forum. April 2012
- “Ab initio study of the acidity and chemistry of fluorocyclopropenes”
  - Poster presentation: ACS National Meeting. New Orleans, LA. April 2013.
  - APSU Research and Creativity Forum. April 2013.

J. Bailey Thompson

- “Fluorinated derivative of the Japanese beetle sex pheromone”
  - Poster presentation: ACS National Meeting. New Orleans, LA. April 2013.
  - APSU Research and Creativity Forum. April 2013.

Wendy L. Borland

- “Modeling the unique hapticity of cyclooctatetraene in  $\text{Fe}_3(\text{COT})_3$ ”
  - Poster presentation: ACS National Meeting. San Diego, CA. March 2012.