Sarah Sewell Pierce, Ph.D.

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Education:

2003 - 2007	Doctor of Philosophy, Chemistry, Vanderbilt University, Nashville, Tennessee
2014 - 2016	Master of Arts, Education, Cumberland University, Lebanon, Tennessee
1999 - 2003	Bachelor of Science, Chemistry, *magna cum laude*, The University of Tennessee at Chattanooga, Chattanooga, Tennessee

Professional Experience:

2024 – present **Instructor/Coordinator**
Middle Tennessee State University
Coordinator: Introduction to General Chemistry I, Introduction to General Chemistry II, and Chemistry for Consumers
Teaching Experience: Introduction to General Chemistry I, Introduction to General Chemistry II, Organic Chemistry I, Chemistry for Consumers: Art, Chemistry for Consumers: Cosmetics

2023 – 2024 **Lecturer (Full Time Temporary)**
Middle Tennessee State University
Teaching Experience: Introduction to General Chemistry I, Introduction to General Chemistry II, Organic Chemistry I, Chemistry for Consumers: Art

2020-2023 **Program Director of Biochemistry and Chemistry and Professor of Chemistry**
Cumberland University (CU)
Teaching Experience: The Fundamentals of Chemistry (online and in person), Chemistry in Art, Chemical Literature, General Chemistry I and II, Organic Chemistry I and II, Biochemistry, and Advanced Biochemistry, Analytical Chemistry, ED5857W: Chemistry on a Shoestring: Secondary Science Teachers

2017 - 2020 **Program Director of Biochemistry and Associate Professor of Chemistry**
Cumberland University

2008-2017 **Program Director of Biochemistry and Assistant Professor of Chemistry**
Cumberland University

2013 – 2014 **Upper School Science Teacher** (Sabbatical)
Harpeth Hall School
Teaching Experience: 9th grade Biology, 10th and 11th grade Chemistry, 10th grade Honors Chemistry

2007-2008 **Postdoctoral Research with Todd D. Giorgio**
Biomedical Engineering Department, Vanderbilt University (VU)
The Synthesis of Surface Functionalized Nanoparticles for Proximity-Activated Detection and Imaging of Breast Cancer
Teaching Experience: Biomedical Engineering 281L (Nanobiotechnology Laboratory) Instructor, Biomedical Engineering 281 (Nanobiotechnology) Lecturer

2003-2006 **Graduate Research with David W. Wright**
Chemistry Department, Vanderbilt University
Biomimetic Synthesis of Metal Oxide Nanoparticles Mediated by Peptides and Polymers
Teaching Experience: General Chemistry Laboratory Teaching Assistant

2001-2003 **Undergraduate Research with Kyle S. Knight**
The University of Tennessee at Chattanooga
A Mechanistic Study of Palladium Catalyzed Dehalogenation

Career Honors and Awards:

2021	CU Faculty/Staff Homecoming Representative Nominee (student nominated)
2021	CU Most Outstanding Faculty Award Nominee (student nominated*)*
2020	CU Most Outstanding Faculty Award Nominee (student nominated*)*
2013	CU Most Outstanding Faculty Award Nominee (student nominated)
2012	CU Liberal Arts and Sciences Outstanding Faculty Award (faculty nominated)
2011	CU Most Outstanding Faculty Award Nominee (student nominated)
2008	Fellowship for STEMES Education Scholars Program (VU)
2003	GAANN Fellowship (VU)
2003	American Institute of Chemists Award (UTC)

Professional Organizations:

2003 - present	American Chemical Society, Chemical Education Division
2011 – 2012	National Science Teachers Association
2009 – 2011, 2015-2024	Tennessee Academy of Sciences
2010 - 2011	American Society of Engineering Education

Service at MTSU:

2025-2026	True Blue Core Assessment Team Member
2025-2026	Engage Fellow
2025-present	Chemistry Department Social Committee Chair
2024- 2025	Chemistry Department Curriculum Committee
2024- present	Chemistry Department Scholarship & Awards Committee

Service at CU:

2021 – 2023	Academic Integrity Board
2017 – 2023	Assessment Committee
2019 – 2023	Safety Committee
2008 – 2020	Pre-Professional Society Advisor
2016 – 2023	Colloquium Committee (Chair from 2016 - 2019)
2010 – 2020	University General Education Core Committee
2017 – 2019	Promotion Committee
2015 – 2017	Faculty Senate
2015	Labry School of Science, Technology, and Business Mission Statement Committee
2015 – 2017	Institutional Review Board
2008 – 2012	School of Liberal Arts and Sciences Faculty Observation Committee
2008 – 2012	Alpha Omicron Pi Faculty Advisor
2008 – 2012	University Course, Curriculum and Academic Policy Committee (Secretary from 2010-2012)
2008 – 2010	Academic Integrity Board (Secretary from 2008-2010)

Funding

2025	MTSU-EXL Supplies Grant ($983 for travel to BCCE)
2024	MTSU-EXL Supplies Grant ($293.20 for development of a laboratory activity for Chemistry for Consumers - Art)
2023	MTSU- EXL Equipment Grant ($279.49 for a kiln for Chemistry for Consumers-Art)
2022	CU Bone Research Grant ($5000 for the project "Teaching Intermolecular Forces Using an Authentic Learning Experience")
2022	CU Charles and Elaine Bell Faculty Engagement and Student Development Grant 2022 ($1200 for Mole Day and Darwin Day Speakers)
2021	CU Charles and Elaine Bell Faculty Engagement and Student Development Grant 2021 ($1000 to attend the BCCE meeting in August of 2022)
2021	CU Dr. Bill McKee Academic Research Grant ($1676 for the project "The Quantification of Capsaicin in Peppers")
2018	CU Charles and Elaine Bell Faculty Engagement and Student Development Grant 2018 ($2000 to attend the BCCE meeting in August of 2018)
2017	CU Charles and Elaine Bell Faculty Engagement and Student Development Grant 2017 ($654 to attend the Pittcon meeting in March of 2017)
2017	Pittcon Promoting Excellence in Education Grant for a classroom set of visible spectrometers ($4,788)
2016	CU Charles and Elaine Bell Faculty Engagement and Student Development Grant 2016 ($966 to attend the BCCE meeting in August of 2016)
2016	cCWCS Implementation Grant for 2 Vernier Environmental Chemistry Equipment Packages ($1000)
2016	American Chemical Society Passer Education Grant ($800 to attend the cCWCS workshop on Chemistry in Art)
2015	American Chemical Society Chemical Education Travel Grant ($1000 to attend the BCCE meeting in August of 2016)
2015	CU Charles and Elaine Bell Faculty Engagement and Student Development Grant 2014-2015 ($500 to attend the cCWCS workshop on Environmental Chemistry)
2013	Middle Tennessee STEM Innovation Hub 2013 for Development of Science Teacher Workshops ($5,000)
2012	CU Research Grant for the development of the research project "Utility of Computer

	Based Training in Supplemental Knowledge and Method Transfer." ($8,322)
2012	Tennessee Valley Authority Sponsorship for a Summer Science Camp ($2,500)
2010	Nashville Predator's Foundation Grant for the implementation of a science camp for sixth grade students. ($2,500)
2010	Tennessee Valley Authority Sponsorship for a Summer Science Camp ($1,000)

Workshops

2016	Chemistry Collaborations, Workshops & Communities of Scholars Art as a Context for General Chemistry Workshop
2015	Chemistry Collaborations, Workshops & Communities of Scholars Environmental Chemistry Workshop
2014	Chemistry Collaborations, Workshops & Communities of Scholars Chemistry in Art Workshop

Community Outreach

2021	Chemistry in Art: Developed and facilitated a workshop for area high school teachers
2013-2014	Chemistry on a Shoestring Budget, A Standard Based Chemistry Laboratory Concept and Technique Workshop: Developed and facilitated a workshop for area high school teachers based on Common Core Science Standards
2009 – 2010, 2012	Sixth Grade Summer Science Camp Director: Developed and facilitated chemistry, biology, and physics activities for sixth and seventh grade students
2011 – 2012	Science Olympiad Coach for Friendship Christian School

Consulting

2024-2026	W. W. Norton Chemistry supporting information author
2022- 2024	Advanced Placement Reader
2019- 2022	W. W. Norton Chemistry supporting information author
2017-2020	Study.com Content Author
2017	W.W. Norton Chemistry: Atoms First test bank reviewer
2017	W.W. Norton reviewer for the online homework system for Calculations in Chemistry
2016	W.W. Norton Biochemistry test question author
2015	Council for Aid to Education test question author

Presentations:

"A Glass and Ceramic Laboratory for an Art Focused Chemistry Class", Sarah S. Pierce, Presented at the 28th Biennial Conference on Chemical Education, July 29th – August 1st, 2024 at the University of Kentucky.

"Teaching Intermolecular Forces Using an Authentic Learning Experience", Kathleen Oliver, Julie Baker Phillips, Vichuda Hunter, and Sarah S. Pierce, Presented at the spring American Chemical Society national meeting, March 27th, 2023 virtually.

"Teaching Intermolecular Forces using Watercolor Paintings", Kathleen Oliver, Julie Baker Phillips, Vichuda Hunter, and Sarah S. Pierce, Presented at the 132nd Tennessee Academy of Sciences Annual Meeting, November 18th, 2022 at Tennessee State University.

"Exposing Students to Diversity using Science History", Braden W. Huff and Sarah S. Pierce, Presented at the 132nd Tennessee Academy of Sciences Annual Meeting, November 18th, 2022 at Tennessee State University.

"Superhero Science", Sarah S. Pierce, Presented at the 27th Biennial Conference on Chemical Education, July 31st – August 1st in West Lafayette, IN.

"Determination of Concentrations of Food Dyes in Powdered Drink Mixes", Madeline S. Herndon and Sarah S. Pierce, Presented at the 131st Tennessee Academy of Sciences Annual Meeting, November 6th, 2021 at Tennessee Tech University.

"Factors that Determine the Amount of Capsaicin in Jalapeño Peppers", Sugeidy Sanchez-Xalate and Sarah S. Pierce, Presented at the spring American Chemical Society national meeting, April 15, 2020 virtually.

"Factors that Determine the Concentration of Capsaicin in Different Pepper Types", Sugeidy Sanchez-Xalate and Sarah S. Pierce, Presented at the 130th Tennessee Academy of Sciences Annual Meeting, November 21, 2020 virtually.

"Foldable and Doodles in the Collegiate Classroom", Sarah S. Pierce, Presented at the 129th Tennessee Academy of Sciences Annual Meeting, November 22, 2019 in Columbia, Tennessee.

"Culture through community: Engaging activities that build lasting relationships with students", Julie Baker Phillips and Sarah S. Pierce, Presented at the 25th Biennial Conference on Chemical Education, July 29-August 2nd, 2018 in South Bend, Indiana.

"Foldables in general and organic chemistry", Sarah S. Pierce. Presented at the 25th Biennial Conference on Chemical Education, July 29-August 2nd, 2018 in South Bend, Indiana.

"Using Art to Teach General and Organic Chemistry Laboratories", Sarah S. Pierce. Presented at the 127th Tennessee Academy of Sciences Annual Meeting, November 17, 2017 in Martin, Tennessee.

"A Comparison of Antioxidant Content in Supplements and Common Fruit", Kaitlin Kisiloski and Sarah S. Pierce. Presented at the 127th Tennessee Academy of Sciences Annual Meeting, November 17, 2017 in Martin, Tennessee.

"Quantitation of Formaldehyde Produced from Electronic Cigarettes by Different E-Juices", Krista M. Gardner, Roland Landers, Sarah S. Pierce. Presented at Pittcon, March 5-9, 2017 in Chicago, Illinois.

"Quantitation of Formaldehyde Produced from Electronic Cigarettes by Different E-Juices", Krista M. Gardner and Sarah S. Pierce. Presented at the 126th Tennessee Academy of Sciences Annual Meeting, November 19th, 2016 in Clarksville, Tennessee.

"The Assessment of a "Flipped" Pre-laboratory Lecture using a Multi-Rule Quality Control System (MRQCS)", Sarah S. Pierce, Melissa D. Carter, Albert D. Dukes, III, Rebecca H. Brown, Aren E. Gerdon. Presented at the 24th Biennial Conference on Chemical Education, July 31- August 4, 2016 in Denver, Colorado.

"Using a little bit of make-believe: Teaching chemistry using laboratory experiments that are linked to the job market", Sarah S. Pierce. Presented at the 24th Biennial Conference on Chemical Education, July 31- August 4, 2016 in Denver, Colorado.

"Determination of Formaldehyde Concentrations in Electronic Cigarettes", Roland Landers and Sarah Pierce. Presented at Pittcon, March 6-10, 2016 in Atlanta, Georgia.

"Determination of Formaldehyde Concentrations in Electronic Cigarettes", Roland Landers and Sarah Pierce. Presented at the 125th Tennessee Academy of Sciences Annual Meeting, November 20th, 2015 in Murfreesboro, Tennessee.

"Incorporating an Original Research Project into a General Chemistry II Laboratory Class", Sarah Pierce. Presented at the 23rd Biennial Conference on Chemical Education, August 3-7, 2014 in Allendale, Michigan.

"Being a Lone Ranger: Thoughts from a Lone Chemist", Sarah Pierce. Presented at the 23rd Biennial Conference on Chemical Education, August 3-7, 2014 in Allendale, Michigan.

"Making Musical Serialism Using Mass Spectrometry and Nuclear Magnetic Resonance", Lain Tomlinson, Chris Fuller, and Sarah Pierce. Presented at the Southeastern Regional Meeting of the American Chemical Society, November 14 – 17, 2012 in Raleigh, North Carolina.

"Incorporating Personal Response Systems or "Clickers" into a Fundamentals of Chemistry Class", Sarah Pierce, 2012. Faculty development at Cumberland University.

"Advantages and Challenges of Incorporating a Blog into a Chemistry Class", Sarah Pierce. Presented at the 22nd Biennial Conference on Chemical Education, July 29 – August 2, 2012 in University Park, Pennsylvania.

"Podcasting in Five Minutes", Sarah Pierce. Presented at the 21st Biennial Conference on Chemical Education, August 1-5, 2010 in Denton, Texas. Also presented for Cumberland University Faculty in 2009 and 2010 as a professional development seminar.

"Nanoparticle Synthesis to Application: a Nanobiotechnology Lab Course for Biomedical Engineering", Sarah Pierce, Amanda Lowery, Charleson Bell and Todd Giorgio. Presented at the 117th American Society for Engineering Education Conference, June 20-23, 2010 in Louisville, Kentucky (peer reviewed).

"Surface Functionalized Nanoparticles for Proximity-Activated Detection and Imaging of Breast Cancer", Sarah L. Sewell and Todd D. Giorgio. Presented at the Department of Defense Era of Hope Meeting, June 25- June 28, 2008 in Baltimore, Maryland.

"Surface Functionalized Nanoparticles for Proximity-Activated Detection of Breast Cancer", Sarah L. Sewell and Todd D. Giogio. Presented at the Biomedical Engineering Society National Meeting, September 26-29, in Los Angeles, California.

"Biomimetic Synthesis of Metal Oxide Nanoparticles Utilizing PAMAM and PPI dendrimers", Sarah L. Sewell, David W. Wright. Presented at the 231st National Meeting of the American Chemical Society, March 26-30, 2006 in Atlanta, Georgia.

"Dendrimer Mediated Synthesis of Metal Oxide Nanoparticles", Sarah L. Sewell, David W. Wright. Presented at the 57th Southeast/61st Southwest Joint Regional Meeting of the American Chemical Society, November 1-4, 2005 in Memphis, Tennessee.

"Mechanistic Study of Palladium Catalyzed Dehalogenation", Sarah L. Sewell, Kyle S. Knight. Poster Presentation at the 225th National Meeting of the American Chemical Society, March 23-27, 2003 in New Orleans, Louisiana.

Publications:

"Factors that Determine the Amount of Capsaicinoids in Different Peppers" Adriana Sugeidy Sanchez-Xalate and Sarah S. Pierce. *Journal of the Tennessee Academy of Sciences*, **2023**, 97, 1-6.

"Determination of Concentration of Food Dyes in Powdered Drink Mixes" Madeline S. Herndon, Julie B. Phillips, and Sarah S. Pierce. *Spectrum Journal*, **2023**, 10, 1-7.

"Supplemental Learning in the Laboratory: An Innovative Approach for Evaluating Knowledge and Method Transfer" Carter, M. D; Pierce, S.S.; Dukes, A. D.; Brown, R.H.; Crow, B.S.; Shaner, R. L.; Heidari, L. M.; Perez, J. W.; Thomas, J.D.; Johnson, R.C.; Gerdon, A.E. *J. of Chem. Ed.*, **2017**, 94 (8), 1094-1097.

"Sweet Chemistry: A Study of the Intermolecular Forces in Candy Dye Molecules" Kara E. Paden and Sarah S. Pierce. *ALETHIA*, **2016**, 1, 1-8.

"Quantification of Quantum Dot Concentration using Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)" Sewell, S.L.; Higgins, M. M.; Bell, C. S.; Giorgio, T.D. *Journal of Biomedical Nanotechnology*. **2011**, 7, 685–690.

"Synthesis and Enzymatic Cleavage of Dual-Ligand Quantum Dots" Sewell, S.L.; Giorgio, T.D. *Materials Science and Engineering C.* **2009**, 29, 1428-1232.

"Piezeoelectric Inkjet Printing of Biomimetic Inks for Reactive Surfaces" Deravi, L. F.; Sumerel, J.L; Sewell, S. L.; Wright, D.W. *Small.* **2008,** 4, 2127-2130.

"Versatile Biomimetic Dendrimer Templates for the Formation of TiO_2 and GeO_2" Sewell, S. L.; Rutledge, R. D.; Wright, D. W. *Dalton Transactions.* **2008**, 29, 3857-3865.

"Proximity-Activated Nanoparticles: *In Vitro* Performance of Specific Structural Modification by Enzymatic Cleavage" Smith, R. A.; Sewell, S.L.; Giorgio, T.D. *International Journal of Nanomedicine*. **2008**, 3, 95-103.

"Detoxification Biominerals**"** Carney, C. K.; Harry, S. R.; Sewell, S.L.; Wright, D.W. Topics in Current Chemistry, K. Naka, Ed., Springer-Verlag: Amsterdam, **2007**, 270, 155-185.

"Piezoelectric Print of Medical and Biological Materials" Sumerel, J.; Lewis, J.; Naraya, R.J.; Doraiswamy, A.; Dervai, L.F.; Sewell, S.L.; Gerdon, A.E.; Wright, D.W. *BIOspektrum*. **2006**, 12, 756-757.

"Piezoelectric Ink Jet Processing of Materials for Medical and Biological Applications" Sumerel, J.; Lewis, J.; Doraiswamy, A.; Deravi, L. F.; Sewell, S. L.; Gerden, A. E.; Wright, D. W.; Narayan, R. J. *Biotechnology Journal.* **2006**, 1, 976-987.

"The Basis of Immunomodulatory Activity of Malaria Pigment (Hemozoin)" Carney, C. K.; Schrimpe, A. C.; Halfpenny, K.; Harry, S. R.; Miller, C. M.; Broncel, M.; Sewell, S.L.; Schaff, J. E. Deol, R.; Carter, M. D.; Wright, D. W. *Journal of Biological Inorganic Chemistry.* **2006**, 11, 917-929.

"Biomimetic Synthesis of Titanium Dioxide Utilizing the R5 Peptide Derived from *Cylindrotheca fusiformis*" Sewell, S. L.; Wright, D. W. *Chemistry of Materials*. **2006**, 18, 3108-3113.

"Reduction of Secondary Alkyl Bromides by Palladium Catalysts Containing Chelating Diphosphine Ligands" Milczek, E. L.; Palmiero, L.; Sewell, S. L.; Knight, K. S. *Transition Metal Chemistry*. **2006**, 31, 27-29.

"Size Control of Dendrimer-Templated Silica" Knecht, M. R.; Sewell, S. L.; Wright, D. W. *Langmuir*. **2005**, 21, 2058-2061.