

## ADRIAN VILLALTA-CERDAS

Assistant Professor of Chemistry  
Department of Chemistry - Sam Houston State University  
[AVC-ChemEd.com](http://AVC-ChemEd.com)

### EDUCATION

**Ph. D. in Chemistry with emphasis in Chemical Education**, Department of Chemistry, University of South Florida, Tampa, Florida. 2014.

**Master of Arts in Chemistry with emphasis in Chemical Education**, Department of Chemistry, University of South Florida, Tampa, Florida. 2012.

**Bachelor of Science in Chemistry degree achieved with honors**, School of Chemistry, University of Costa Rica, San José, Costa Rica. 2008.

### PROFESSIONAL APPOINTMENTS

**Assistant Professor of chemistry**, Department of Chemistry, Sam Houston State University. Fall 2016 – to date.

**Lecturer in Chemistry**, Department of Chemistry and Biochemistry, California State University, Bakersfield. Fall 2014 – Spring 2016.

**Curriculum Development Teaching Assistant**, Department of Chemistry, University of South Florida. Spring 2012 – Summer 2014.

**Research Assistant**. Department of Chemistry, University of South Florida. Fall 2011 – Summer 2014.

**Research Assistant**. Chemistry Department, University of Texas at El Paso. Fall 2010 – Spring 2011.

**Research Assistant**. Chemistry Department, Clemson University. Fall 2008 – Summer 2010.

**Chemical Analyst**. LASA Analytical Laboratories, University of Costa Rica, Costa Rica. 2007 – 2008.

**Chemical Analyst**. Customs Laboratories, Treasury Department of Costa Rica, Costa Rica. 2006 – 2008.

**Lecture Teaching Assistant**, School of Chemistry, University of Costa Rica. 2006 – 2008.

### RESEARCH PROGRAM

Research projects focus on learning strategies that foster scientific skill development and the study of effective teaching practices in chemistry at the college level. Assessment methodologies are an essential component of my educational research work.

Additionally, I am studying the use of carbon nano materials for the removal of organic molecules from water for environmental remediation applications.

## RESEARCH COLLABORATIONS

### EXTERNAL PROJECTS

#### **Conceptual understanding of microscopic representations via molecular animations**

**Time frame: 2014 - 2021**

Akaygun, Sevil	Boğaziçi University
Hansen, Sarah	Columbia University
Kelly, Resa	San Jose State University

#### **Collaborative Research: General Chemistry in Three Dimensions: A Course Reform Collaborative**

**Time frame: 2018 - 2021**

Biberdorf, Kate	The University of Texas at Austin
Bond, Marcus	Southeast Missouri State University
Conrad, John	University of Nebraska Omaha
Darr, Joshua P.	University of Nebraska Omaha
Donovan, Ashley	American Chemical Society Chemical – Edu. Division
Hegwood, Steven	Sam Houston State University
Morgan Theall, Rachel A	Southeast Missouri State University
Pazicni, Samuel	University of Wisconsin, Madison
Richter-Egger, Dana	University of Nebraska Omaha
Walker, Deborah R	The University of Texas at Austin
Wink, Donald J	University of Illinois at Chicago

#### **The Networking for Science Advancement (NSA), Identifying Dormant Essential Automaticity Skills (IDEAS) in STEM**

**Time frame: 2017 - 2022**

Andrews, Casey	Texas A&M San Antonio
Alivio, Theodore	Nicholls State University
Atkinson, Molly	University of North Texas
Broadway, Susan	University of North Texas
Day, Elizabeth	University of Texas at El Paso
Dubrovskiy, Anton	University of Houston-Clear Lake
Headley, Allan	Texas A&M Commerce

Herridge, Michelle	Baylor University
Jang, Ben	Texas A&M Commerce
Lee, Kathleen	Abilene Christian University
Mamiya, Blain	Texas State University
Mason, Diana	University of Northern Texas
Powell, Cynthia	Abilene Christian University
Rix, Brad Alan	Abilene Christian University
Shelton, George	Texas A&M San Antonio
Thompson, Jon	Texas Tech University
Walker, Deborah	The University of Texas at Austin
Weber, Rebecca	University of North Texas
Williamson, Vickie	Texas A&M

**Center for Curriculum Redesign (CCR): Gates Foundation - Chemistry Learning Objectives and Outcome Expectations**

**Time frame: 2021 - 2022**

Fadel, Charles	Founder and Chairman of CCR
Howard, Eve	Project Manager at CCR
Thomas, Paul	Team Lead at CCR
Morgan Theall, Rachel A	Southeast Missouri State University
Pazicni, Samuel	University of Wisconsin, Madison
Richter-Egger, Dana	University of Nebraska Omaha
Walker, Deborah R	The University of Texas at Austin

**Project MUSE: Integration of art conservation science in college-level laboratory and classroom learning experiences focused on cultural heritage preservation**

**Time frame: Summer 2022**

Gregory Dale Smith	Indianapolis Museum of Art – Science Conservation Lab
Victor Chen	Indianapolis Museum of Art – Science Conservation Lab

**INTERNAL PROJECTS**

**Redesign of course, instruction, and assessment of chemical kinetics in General Chemistry II: improving student learning via active, practice-oriented performance expectations**

**Time frame: 2017 – 2018**

Thompson, David	Department of Chemistry
Zall, Christopher	Department of Chemistry

**Implementation of self-explaining-based learning in Environmental Chemistry: improving conceptual understanding and scientific skills via active learning and performance expectations**

**Time frame: 2018 – 2019**

Thompson, David	Department of Chemistry
Trad, Tarek	Department of Chemistry

**A Comprehensive Model for Improving the Success of STEM Majors through the STEM Center.**

**Time frame: 2017 - 2023**

Artho, Donna	Office of Institutional Effectiveness
Hegwood, Steven	Department of Chemistry
Loft, Brian	Department of Mathematics
Martin, Taylor E	Department of Mathematics
Thompson, David	Department of Chemistry
Swarthout, Mary	Department of Mathematics
Yildiz, Faruk	Department of Engineering Technology

**Advancing STEM Programs with Integrating Research Enhancement Scholarships (ASPIRES)**

**Time frame: 2020 - 2022**

Choudhary, Madhusudan	Department of Biological Sciences
Holt, Melinda	Department of Mathematics
Hyuk, Cho	Department of Computer Sciences
Ma, Junkun	Department of Engineering Technology

**General Chemistry Performance Expectations at Sam Houston State University**

**Time frame: 2022 - 2023**

Haines, Donovan	Department of Chemistry
Hegwood, Steven	Department of Chemistry

## UNDERGRADUATE RESEARCH MENTORING

- 2017 Corbin McCleary, Andrea Bui, William Fernandez, Itzel Almaguer
- 2018 Andrea Bui, Ivette Rodriguez, My Phan, Jacqueline Jimenez, Sandra Perez
- 2019 My Phan, Jacqueline Jimenez, Faith Dimas, Cailee Auck, Lucy Hendrickson
- 2020 My Phan, Jacqueline Jimenez, Lucy Hendricson, Raul Zablah Vasquez, Ryan Dolezal, Cailee Auck, Emily Cwiklik
- 2021 Jacqueline Jimenez, Raul Zablah Vasquez, Emily Cwiklik, Ariel Van-Sertima, Michaela Tabor, Sandra Simmons.
- 2022 Sandra Simmons, Ariel Van-Sertima, Megan Hicks, Raul Zablah Vasquez, Jorge De La Cerda, Delvin Coleman.

## FUNDED GRANTS

**Principal Investigator:** Enhancing Undergraduate Research Experiences and Creative Activities - FAST Award - Study of the effectiveness of a slow-release phosphate hydrogel polymer as fertilizer in water and soil media. 2023. Funding: \$6,000.

**Principal Investigator:** Teaching Innovation Grants (TIGs) - General Chemistry II Performance Expectations at Sam Houston State University, Sam Houston State University, 2022 – 2023. Funding: \$9,000.

**Principal Investigator:** Teaching Innovation Grants (TIGs) - General Chemistry Performance Expectations at Sam Houston State University, Sam Houston State University, 2021 – 2022. Funding: \$8,940.

**Principal Investigator:** STEM Center at Sam Houston - Scholarship of Teaching and Learning: Graphical analysis and interpretation in General Chemistry II via virtual chemistry experiences on kinetics and chemical equilibria. 2021 - 2022. Funding: \$2,000.

**Principal Investigator:** The Center for Community Engagement - Sam Houston State University – Academic Community Engagement in General Chemistry II. 2022. Funding: \$250.

**Principal Investigator:** Pilot Studies for Future Funding Program - Sam Houston State University - Reformed Organic Chemistry Laboratories (ROC-Labs): an academic environment supported by cooperative learning and project-based experimentation. 2021 - 2022. Funding: \$14,700.

**Principal Investigator:** Enhancing Undergraduate Research Experiences and Creative Activities - FAST Award - Synthesis of magnetite carbon nano onions composites for environmental remediation applications. 2021. Funding: \$6,000.

**Principal Investigator:** STEM Center at Sam Houston - Scholarship of Teaching and Learning: Integration of virtual chemical experiences into General Chemistry II via ChemCollective Labs. 2020 - 2021. Funding: \$1,802.

**Principal Investigator:** College of Science and Engineering Technology - Summer Research Award - Carbon nano-onions (CNOs): synthesis and surface modification for

environmental remediation applications, Sam Houston State University, 2019. Funding: \$2,500.

**Principal Investigator:** SHSU Individual Scholarship Internal Grant - Reformed chemistry laboratories: cooperative and project-based experimentation, Sam Houston State University, 2019 – 2020. Funding: \$5,000.

**Principal Investigator:** Teaching Innovation Grants (TIGs) - Implementation of self-explaining-based learning in Chemical Quantitative Analysis: improving conceptual understanding and scientific skills via active learning and performance expectations, Sam Houston State University, 2018 – 2019. Funding: \$5,400.

**Principal Investigator:** Teaching Innovation Grants (TIGs) - Redesign of course, instruction and assessment of chemical kinetics in General Chemistry II: improving student learning via active, practice-oriented performance expectations, Sam Houston State University, 2017 – 2018. Funding: \$6,000.

**Principal Investigator:** College of Science and Engineering Technology - Summer Research Award - Design of novel lab experiences for Organic Chemistry at SHSU, Sam Houston State University, 2018. Funding: \$2,500.

**Co-PI and Educational Assessment Specialist:** “A Comprehensive Model for Improving the Success of STEM Majors through the STEM Center.” DUE - IUSE - Development & Implem Institut & Comm Transform, [Award #1725674](#), 2017-2023. Project total Funding: \$2,028,798.

## AWARDS AND RECOGNITIONS

### ACADEMIC ACHIEVEMENTS

**Keys of Excellence Award, 2022-2023**, Orange Keys – Student Organization – Sam Houston State University, 2022.

**Younger Chemist Award**, The American Chemical Society - Greater Houston Section, 2020.

**REU Mentor Certificate**, Department of Chemistry, University of South Florida, Spring 2014.

**REU Mentor Certificate**, Department of Chemistry, University of South Florida, Spring 2013.

**Costa Rican Ministry of Science and Technology Fellowship**, San José, Costa Rica. 2012-2014 (\$12,500), 2011-2012 (\$7,300), 2010-2011 (\$5,000), 2009-2010 (\$7,500), 2008-2009 (\$7,000).

**Portals of Teaching Success Certificate of Achievement**, Academy for Teaching and Learning Excellence, University of South Florida, Spring 2012.

**Graduate Poster Award**, Department of Chemistry, The University of Texas at El Paso, October 2010.

**Academic Achievement Award**, School of Chemistry, University of Costa Rica, December 2005.

**Full-Tuition Scholarship (2005-2006)**, University of Costa Rica, January 2005.

**Academic Achievement Award**, School of Chemistry, University of Costa Rica, December 2004.

**Full-Tuition Scholarship (2004-2005)**, University of Costa Rica, January 2004.

## **TRAVEL GRANTS**

**Odyssey Grant Travel Award 2019**, National Science Teacher Association Conference, December 12-14, 2019. Seattle, WA.

**Division of Chemical Education (DivCHED) Travel Award 2017**, 253rd ACS National Meeting, April 2-6, 2017. San Francisco, CA.

**The Martin Travel Endowment Award**, Department of Chemistry, University of South Florida. Conference: 247<sup>th</sup> American Chemical Society National Meeting & Exposition, Dallas, TX. March 2014.

**Conference Presentation Grant Program**, Student Government, University of South Florida. Assisted conference: 246<sup>th</sup> American Chemical Society National Meeting & Exposition, Indianapolis, IN. September, 2013.

**The Martin Travel Endowment Award**, Department of Chemistry, University of South Florida. Assisted conference: Gordon Research Conference on Chemical Education, Newport, RI. June 2013.

**Conference Presentation Grant Program**, Student Government, University of South Florida. Assisted conference: International Conference on Chemistry Education – 11<sup>th</sup> European Conference on Research In Chemistry Education (ICCE-ECRICE), Rome, Italy. July 2012.

**Conference Presentation Grant Program**, Student Government, University of South Florida. Assisted conference: International Seminar of Chemistry: History, Philosophy and Education, Bogotá, Colombia. October 2011.

**SACNAS Travel Award**, SACNAS National Conference, Anaheim, CA. September 2010.

**SACNAS Travel Award**, SACNAS National Conference, Dallas, TX. October 2009.

## **OTHER AWARDS**

2018 Chemistry in Pictures photo contest - **Grand-prize winner**, Chemistry & Engineering News magazine, February 2019.

## **SCIENTIFIC PUBLICATIONS**

### **JOURNAL ARTICLES**

22. Villalta-Cerdas, A.; Yildiz, F. (2022). Creating Significant Learning Experiences in an Engineering Technology Bridge Course: a backward design approach. Paper presented at 2022 American Society for Engineering Education (ASEE) Annual Conference.

21. Yildiz, F.; Villalta-Cerdas, A.; Thompson, D. E.; Martin, T. E.; Swarthout, M. B. (2022). The STEM Center to Promote Undergraduate Education and Research at Sam Houston State University. Paper presented at 2022 American Society for Engineering Education (ASEE) Annual Conference.
20. Villalta-Cerdas, A.; Dubrovskiy, A.; Mamiya, B.; Walker, D. R.; Powell, C. B.; Broadway, S.; Weber, R.; Shelton, G. R.; Mason, D. (2022). Personal characteristics influencing college readiness of Hispanic students in a STEM gateway course: first-semester general chemistry. *Journal of College Science Teaching*, 51(5), 31-41.
19. 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. (2022) Is the gender gap closing? *Journal of Research in Science, Mathematics and Technology Education*, 5(1), 47-68.
18. Mamiya, B.; Powell, C. B.; Shelton, G. R.; Dubrovskiy, A.; Villalta-Cerdas, A.; Broadway, S.; Weber, R.; Mason, D. (2022). Influence of Environmental Factors on Success of At-Risk Hispanic Students in First-Semester General Chemistry. *Journal of College Science Teaching*, 51(4), 46-57.
17. Shelton, R. G.; Mamiya, B.; Weber, R.; Walker, D. R.; Powell, C. B.; Jang, B.; Dubrovskiy, A. V.; Villalta-Cerdas, A.; Mason, D. (2021). Early Warning Signals from Automaticity Diagnostic Instruments for First- and Second-Semester General Chemistry. *Journal of Chemistry Education*, 98(10), 3061-3072.
16. Kelly, R. M.; Akaygun, S.; Hansen, S. J. R.; Villalta-Cerdas, A.; Adam, J. (2021). Examining Learning of Atomic Level Ideas About Precipitation Reactions with a Resources Framework. *Chemistry Education Research and Practice*, 22(4), 886-904.
15. Villalta-Cerdas, A.; Thompson, D. E.; Hegwood, S. L. (2021). Integration of Research-based Strategies and Instructional Design: Creating Significant Learning Experiences in a Chemistry Bridge Course. Paper presented at 2021 American Society for Engineering Education (ASEE) Virtual Annual Conference Content Access, Virtual Conference.
14. Pazicni, S.; Wink, D. J.; Donovan, A.; Conrad, J. A.; Darr, J.; Richter-Egger, D. L.; Morgan Theall, R. A.; Villalta-Cerdas, A.; Walker, D. R. (2021). The ACS General Chemistry Performance Expectations Project: From Task Force to Three-Dimensional Learning Community. *Journal of Chemistry Education*, 98, 4, 1112–1123.
13. Weber, R.; Powell, C. B.; Williamson, V.; Mamiya, B.; Walker, D. R.; Dubrovskiy, A.; Shelton, G. R.; Villalta-Cerdas, A.; Jang, B.; Broadway, S.; Mason, D. (2020). Relationship between academic preparation in general chemistry and potential careers. *Biomedical Journal of Scientific & Technical Research*, 32 (5), 25311-25323.
12. Hansen, S. J. R.; Hu, B.; Reidlova, D.; Kelly, R. M.; Akaygun, S.; Villalta-Cerdas, A. (2019). Critical consumption of chemistry visuals: eye tracking structured variation and visual feedback of redox and precipitation reactions. *Chemical Education Research and Practice*, 2019, 20, 837-850.



11. Villalta-Cerdas, A.; McCleary, C. (2019). Analysis of copper alloys as an introduction to data analysis and interpretation for General Chemistry courses. *Educación Química*, 30(2), 41-53.
10. Kelly, R. M.; Akaygun, S.; Hansen, S. J. R.; Villalta-Cerdas, A. (2017). The effect that comparing molecular animations of varying accuracy has on students' submicroscopic explanations. *Chemical Education Research and Practice*, 18, 582-600.
9. Villalta-Cerdas, A.; Sandi-Urena, S. (2016). Assessment of self-explaining effect in a large enrollment general chemistry course. *Educación Química*, 27(2), 115-125.
8. Villalta-Cerdas, A.; Sandi-Urena, S. (2014). Self-explaining effect in general chemistry instruction: Eliciting overt categorical behaviours by design. *Chemical Education Research and Practice*, 15, 530-540.
7. Villalta-Cerdas, A.; McKeny, P.; Gatlin, T. A.; Sandi-Urena, S. (2014). Evaluation of Instruction: General Chemistry Students' Patterns of Use and Contribution to RateMyProfessors.com. *Assessment & Evaluation in Higher Education*, 40(2), 181-198.
6. Villalta-Cerdas, A.; Sandi-Urena, S. (2013). Self-explaining and its Use in College Chemistry Instruction. *Educación Química*. 24(4), 431-438.
5. Bergin, A., Sharp, K., Gatlin, T., Villalta-Cerdas, A., Gower, A., Sandi-Urena, S. (2013). Use of RateMyProfessors.com as a supplemental tool for the assessment of General Chemistry Instruction. *Journal of Chemical Education*, 90, 289-295.
4. Yang, M.; Flavin, K.; Kopf, I.; Radics, G.; Hearnden, C. H. A.; McManus, G. J.; Moran, B.; Villalta-Cerdas, A.; Echegoyen, L. A.; Giordani, S.; Lavelle, E. C. (2013). Functionalization of Carbon Nanoparticles Modulates Inflammatory Cell Recruitment and NLRP3 Inflammasome Activation. *Small*, 9(24), 4194-4206.
3. Plonska-Brzezinska, M.; Dubis, A.; Lapinski, A.; Villalta-Cerdas, A.; Echegoyen, L. (2011). Electrochemical Properties of Oxidized Carbon Nano-Onions: DRIFTS-FTIR and Raman Spectroscopic Analyses. *A European Journal of Chemical Physics and Physical Chemistry*, 12, 2659-2668.
2. Plonska-Brzezinska, M.; Lapinski, A.; Wilczewska, A. Z.; Dubis, A.; Villalta-Cerdas, A.; Winkler, K.; Echegoyen, L. (2011). The synthesis and characterization of carbon nano-onions produced by solution ozonolysis. *Carbon*, 49, 5079-5089.
1. Brezko, J.; Winkler, K.; Plonska-Brzezinska, M.; Villalta-Cerdas, A.; Echegoyen, L. (2010). Electrochemical properties of composites containing small carbon nano-onions and solid polyelectrolytes. *Journal of Materials Chemistry*, 20, 7761-7768.

## BOOKS AND BOOK CHAPTERS

4. Pazicni, S.; Morgan Theall, R. A.; Richter-Egger, D.; Villalta-Cerdas, A.; Walker, D. R. (2022). General Chemistry Learning Outcomes. The Center for Curriculum Redesign. Project funded by the Bill and Melinda Gates Foundation.

3. Sandi-Urena, S.; Villalta-Cerdas, A.; Gatlin, T. A.; Lykourinou, V. (2013). Authentic Chemistry Experiment Labs (ACE-Labs) For General Chemistry I & II: Cooperative Project-based Laboratory Experiences. Department of Chemistry, University of South Florida, Tampa, FL.
2. Li, F., Villalta-Cerdas, A., Echegoyen, L. E., and Echegoyen, L. (2013). An Update on Electrochemical Characterization and Potential Applications of Carbon Materials. In Torres, T. & Bottari, G. (Eds.), *Organic Nanomaterials: Synthesis, Characterization, and Device Applications*. (pp. 259-310). New York: Wiley-VCH.
1. Pinzón, J. R., Villalta-Cerdas, A., and Echegoyen, L. (2012). Fullerenes, Carbon Nanotubes, and Graphene for Molecular Electronics. In Metzger, R. M. (Ed.), *Unimolecular and Supramolecular Electronics I, Topics in Current Chemistry, Volume 312* (pp. 127-174). Berlin/Heidelberg: Springer.

### **SCHOLARLY PRESENTATIONS** (underlined: undergraduate student)

89. “Design of laboratory experiences in art conservation science: a kinetics study of light-induced fading of commercially available fluorescent highlighters.” Delvin Coleman, Jorge De La Cerda, Adrian Villalta-Cerdas, Gregory Dale Smith; 265th American Chemical Society National Meeting & Exposition, Crossroads of Chemistry, March 26 – 30, 2023, Indianapolis, IN.
88. “Design of laboratory experiences in art conservation science: electrochemical treatment of metal artifacts for cultural heritage preservation.” Jorge De La Cerda, Megan Hicks, Adrian Villalta-Cerdas, Gregory Dale Smith; 265th American Chemical Society National Meeting & Exposition, Crossroads of Chemistry, March 26 – 30, 2023, Indianapolis, IN.
87. “Design of laboratory experiences in art conservation science: a study of the evaporation behavior of homogeneous azeotropes used to clean paintings at room temperature.” Megan Hicks, Jorge De La Cerda, Adrian Villalta-Cerdas, Gregory Dale Smith; 265th American Chemical Society National Meeting & Exposition, Crossroads of Chemistry, March 26 – 30, 2023, Indianapolis, IN.
86. “Integration of art conservation science in the General Chemistry curriculum with a focus on cultural heritage preservation.” Adrian Villalta-Cerdas, Gregory Dale Smith; Southwest Regional Meeting of the American Chemical Society, Nov. 6 to Nov. 9, 2022. Baton Rouge, LA.
85. “Design of laboratory experiences in art conservation science: electrochemical treatment of metal artifacts for cultural heritage preservation.” Jorge De La Cerda, Adrian Villalta-Cerdas, Gregory Dale Smith; Southwest Regional Meeting of the American Chemical Society, Nov. 6 to Nov. 9, 2022. Baton Rouge, LA.
84. “Integration of evidence-based learning strategies in chemistry bridge courses at Sam Houston State University” Adrian Villalta-Cerdas, Steven L. Hegwood, David E. Thompson; 2022 Biennial Conference on Chemical Education, Purdue University, West Lafayette, Indiana, IN, July 31 - August 4, 2022.

83. "Determination of five physical constants in the General Chemistry laboratory" Sandra Simmons, Lucy Hendrickson, Adrian Villalta-Cerdas; 2022 Biennial Conference on Chemical Education, Purdue University, West Lafayette, Indiana, IN, July 31 - August 4, 2022.
82. "Chemical composition of copper-tin-aluminum alloys from a system of three equations in three variables via non-destructive sample analysis" Ariel Van-Sertima, Sandra Simmons, Raul Zablah-Vasquez, Adrian Villalta-Cerdas; 2022 Biennial Conference on Chemical Education, Purdue University, West Lafayette, Indiana, IN, July 31 - August 4, 2022.
81. "Adsorption isotherms, kinetic, and thermodynamic studies of magnetite-charcoal: linearized and non-linearized modeling of experimental data in general chemistry" Raul Zablah-Vasquez, Sandra Simmons, Ariel Van-Sertima, Adrian Villalta-Cerdas; 2022 Biennial Conference on Chemical Education, Purdue University, West Lafayette, Indiana, IN, July 31 - August 4, 2022.
80. "Creating Significant Learning Experiences in an Engineering Technology Bridge Course: a backward design approach." Adrian Villalta-Cerdas, Faruk Yildiz; 2022 ASEE Annual Conference & Exposition. June 26-29, 2022. Minneapolis, Minnesota.
79. "The STEM Center at Sam Houston State University." Faruk Yildiz, Adrian Villalta-Cerdas, David E. Thompson, Taylor Martin, Mary Swarthout; 2022 ASEE Annual Conference & Exposition. June 26-29, 2022. Minneapolis, Minnesota.
78. "Thermodynamic studies of dyes' adsorption of magnetite-carbon nano-onions composites for environmental remediation applications" Sandra Simmons, Ariel Van-Sertima, Raul Zablah-Vasquez, Adrian Villalta-Cerdas; 15th Annual Undergraduate Research Symposium, Sam Houston State University, April 23<sup>rd</sup>, 2022, Huntsville, Texas.
77. "Chemical composition of copper-tin-aluminum alloys from a system of three equations in three variables via non-destructive sample analysis" Ariel Van-Sertima, Raul Zablah-Vasquez, Sandra Simmons, Adrian Villalta-Cerdas; 15th Annual Undergraduate Research Symposium, Sam Houston State University, April 23<sup>rd</sup>, 2022, Huntsville, Texas.
76. "Adsorption isotherms, kinetic, and thermodynamic studies of magnetite-charcoal: linearized and non-linearized modeling of experimental data in general chemistry" Raul Zablah-Vasquez, Sandra Simmons, Ariel Van-Sertima, Adrian Villalta-Cerdas; 15th Annual Undergraduate Research Symposium, Sam Houston State University, April 23<sup>rd</sup>, 2022, Huntsville, Texas.
75. "Integration of virtual chemical experiences into General Chemistry II via ChemCollective Labs" Adrian Villalta-Cerdas; 2022 STEM Center - Be(e) STEM Symposium, Sam Houston State University, April 21<sup>st</sup>, 2022, Huntsville, Texas.
74. "Adsorption isotherms, kinetic, and thermodynamic studies of magnetite-charcoal: linearized and non-linearized modeling of experimental data in general chemistry" Raul Zablah-Vasquez, Sandra Simmons, Ariel Van-Sertima, Adrian Villalta-Cerdas; 263<sup>rd</sup> American Chemical Society National Meeting & Exposition, March 20-24, 2022, San Diego, CA and Online.

73. “Chemical composition of copper-tin-aluminum alloys from a system of three equations in three variables via non-destructive sample analysis.” Ariel Van-Sertima, Raul Zablah-Vasquez, Sandra Simmons, Adrian Villalta-Cerdas; 263rd American Chemical Society National Meeting & Exposition, March 20-24, 2022, San Diego, CA and Online.
72. “Thermodynamic studies of dyes’ adsorption of magnetite-carbon nano-onions composites for environmental remediation applications.” Sandra Simmons, Ariel Van-Sertima, Raul Zablah-Vasquez, Adrian Villalta-Cerdas; 263rd American Chemical Society National Meeting & Exposition, March 20-24, 2022, San Diego, CA and Online.
71. “Chemical composition of copper-tin-aluminum alloys from a system of three equations in three variables via non-destructive sample analysis.” Ariel Van-Sertima, Raul Zablah-Vasquez, Sandra Simmons, Adrian Villalta-Cerdas; Texas Academy of Science, February 25-27, 2022, University of Houston Clear Lake, Texas.
70. “Thermodynamic studies of dyes’ adsorption of magnetite-carbon nano-onions composites for environmental remediation applications.” Sandra Simmons, Ariel Van-Sertima, Adrian Villalta-Cerdas; Texas Academy of Science, February 25-27, 2022, University of Houston Clear Lake, Texas.
69. “Understanding density and viscosity of aqueous solutions in the chemistry laboratory.” Raul Zablah-Vasquez, Jacqueline Jimenez, Adrian Villalta-Cerdas; Texas Academy of Science, February 25-27, 2022, University of Houston Clear Lake, Texas.
68. “Integration of research-based strategies and instructional design: creating significant learning experiences in a chemistry bridge course.” Adrian Villalta-Cerdas, David E. Thompson, Steven L. Hegwood; Pacificchem 2021 Congress, Honolulu, Hawaii, USA, December 16 - 21, 2021. Virtual Meeting.
67. “Explaining for the best inference and conceptual understanding of chemical phenomena using contrasting molecular animations.” Adrian Villalta-Cerdas; Pacificchem 2021 Congress, Honolulu, Hawaii, USA, December 16 - 21, 2021. Virtual Meeting.
66. “Chemical composition of copper-tin-aluminum alloys from a system of three equations in three variables via non-destructive sample analysis.” Ariel Van-Sertima, Michaela Tabor, Raul Zablah-Vasquez, Adrian Villalta-Cerdas; Southwest Regional Meeting of the American Chemical Society, Oct. 31 to Nov. 3, 2021. Austin, TX.
65. “Synthesis of magnetite-carbon nano-onions composites for environmental remediation applications.” Sandra Simmons, Ariel Van-Sertima, Adrian Villalta-Cerdas; Southwest Regional Meeting of the American Chemical Society, Oct. 31 to Nov. 3, 2021. Austin, TX.
64. “Understanding density and viscosity of aqueous solutions in the chemistry laboratory.” Raul Zablah-Vasquez, Jacqueline Jimenez, Adrian Villalta-Cerdas; Southwest Regional Meeting of the American Chemical Society, Oct. 31 to Nov. 3, 2021. Austin, TX.

63. "Integration of evidence-based learning strategies and instructional design in a chemistry bridge course at Sam Houston State University." Adrian Villalta-Cerdas, David E. Thompson, Steven L. Hegwood; 262nd American Chemical Society National Meeting & Exposition, August 22 - 26, 2021. Hybrid in-person/virtual meeting.
62. "Experimental determination of five physical constants for introductory chemistry laboratories." Lucy Hendrickson, Adrian Villalta-Cerdas; 262nd American Chemical Society National Meeting & Exposition, August 22 - 26, 2021. Hybrid in-person/virtual meeting.
61. "Understanding density and viscosity of aqueous solutions in the chemistry laboratory." Raul Zablah-Vasquez, Jacqueline Jimenez, Ivette Rodriguez, Adrian Villalta-Cerdas; 262nd American Chemical Society National Meeting & Exposition, August 22 - 26, 2021. Hybrid in-person/virtual meeting.
60. "Increasing Student Engagement Through Process Oriented Guided Inquiry Learning (POGIL)." Adrian Villalta-Cerdas, David E. Thompson, Steven L. Hegwood. Sam Houston State University Teaching and Learning Conference. August 12<sup>th</sup>, 2021.
59. "Integration of research-based strategies and instructional design: creating significant learning experiences in a chemistry bridge course." Adrian Villalta-Cerdas, David E. Thompson, Steven L. Hegwood; 2021 ASEE Annual Conference & Exposition. June 27-30, 2021. Virtual Meeting.
58. "Integration of evidence-based learning strategies and instructional design in a chemistry bridge course at Sam Houston State University." Adrian Villalta-Cerdas, David E. Thompson, Steven L. Hegwood; Northwest Regional Meeting, Spring 2021. Virtual Meeting.
57. "Integration of evidence-based learning strategies and instructional design in a chemistry bridge course at Sam Houston State University." Adrian Villalta-Cerdas, David E. Thompson, Steven L. Hegwood; 261st American Chemical Society National Meeting & Exposition, Spring 2021. Virtual Meeting.
56. "Experimental determination of five physical constants for introductory chemistry laboratories." Lucy Hendrickson, Adrian Villalta-Cerdas; 261st American Chemical Society National Meeting & Exposition, Spring 2021. Virtual Meeting.
55. "Understanding density and viscosity of aqueous solutions in the chemistry laboratory." Raul Zablah-Vasquez, Jacqueline Jimenez, Ivette Rodriguez, Adrian Villalta-Cerdas; 261st American Chemical Society National Meeting & Exposition, Spring 2021. Virtual Meeting.
54. "Limonene reactivity with elemental sulfur as an introduction to polymer chemistry and polarimetry in the organic chemistry laboratory." Emily Cwiklik, My Phan, Adrian Villalta-Cerdas; 261st American Chemical Society National Meeting & Exposition, Spring 2021. Virtual Meeting.
53. "Constructing evidence-based chemical explanations of liquid-liquid extraction processes in the chemistry laboratory." Jacqueline Jimenez, Lucy Hendrickson, My

- Phan, Adrian Villalta-Cerdas; 261st American Chemical Society National Meeting & Exposition, Spring 2021. Virtual Meeting.
52. “Integration of research-based strategies and instructional design: creating significant learning experiences in a chemistry bridge course at SHSU.” Adrian Villalta-Cerdas, David E. Thompson, Steven L. Hegwood; 260th American Chemical Society National Meeting & Exposition, August 17 - 20, 2020. Virtual Meeting.
  51. “Synthesis and surface modification of carbon nano-onions (CNOs) for environmental remediation applications.” Cailee Auck, Adrian Villalta-Cerdas; 260th American Chemical Society National Meeting & Exposition, August 17 - 20, 2020. Virtual Meeting.
  50. “Understanding the complexity and ambiguity of empirical laboratory work using liquid-liquid equilibrium extractions.” Jacqueline Jimenez, My Phan, Lucy Hendrickson, Adrian Villalta-Cerdas; 260th American Chemical Society National Meeting & Exposition, August 17 - 20, 2020. Virtual Meeting.
  49. “Constructing evidence-based chemical explanations in the lab via causal relationships between equilibrium constants and molecular interactions.” Lucy Hendrickson, Jacqueline Jimenez, My Phan, Adrian Villalta-Cerdas; 260th American Chemical Society National Meeting & Exposition, August 17 - 20, 2020. Virtual Meeting.
  48. “Integration of research-based strategies and instructional design: Creating significant learning experiences in a chemistry bridge course at SHSU.” Adrian Villalta-Cerdas(1); David E. Thompson(1); Steven L. Hegwood(1). 2020 Biennial Conference on Chemical Education. Abstract accepted March 31, 2020. Because of the global COVID-19 pandemic, the 2020 Biennial Conference on Chemical Education was terminated on April 2, 2020, by the Executive Committee of the Division of Chemical Education, American Chemical Society; and, therefore, this presentation could not be given as intended.
  47. “Early identification of at-risk Hispanic students in first-semester general chemistry.” Diana Mason(1); Blain Mamiya(2); Adrian Villalta-Cerdas(3); Anton Dubrovskiy(4); Cynthia Powell(5); Rebecca Weber(6); Susan Broadway(1); George Shelton(7). 2020 Biennial Conference on Chemical Education. Abstract accepted March 31, 2020. Because of the global COVID-19 pandemic, the 2020 Biennial Conference on Chemical Education was terminated on April 2, 2020, by the Executive Committee of the Division of Chemical Education, American Chemical Society; and, therefore, this presentation could not be given as intended.
  46. “Design of chemical engineering experiences of liquid-liquid extraction into project-based experimentation for introductory chemistry laboratories” Jacqueline Jimenez, Adrian Villalta-Cerdas; 258th American Chemical Society National Meeting & Exposition, August 25 - 29, 2019. San Diego, CA.
  45. “Inference generation by Liberal Studies students in chemistry courses: latent transition analysis of explanatory behavior over time” Sandra Perez, Adrian Villalta-Cerdas; 258th American Chemical Society National Meeting & Exposition, August 25 - 29, 2019. San Diego, CA.

44. "Extraction of natural products as an introduction to commonly used laboratory techniques, polymer materials, and fluorescence in the organic chemistry laboratory" Andrea Bui, My Phan, Ivette Rodriguez, Adrian Villalta-Cerdas; 12th Annual Undergraduate Research Symposium, Sam Houston State University, Huntsville, TX, April 27, 2019.
43. "Design of significant learning experiences in the chemistry laboratory: understanding the physical properties of aqueous solutions" Andrea Bui, Ivette Rodriguez, Adrian Villalta-Cerdas; 12th Annual Undergraduate Research Symposium, Sam Houston State University, Huntsville, TX, April 27, 2019.
42. "Explaining for the Best Inference (EBI) and conceptual understanding of chemical phenomena using contrasting molecular animations" Adrian Villalta-Cerdas; 257th American Chemical Society National Meeting & Exposition, March 31 - April 4, 2019. Orlando, FL.
41. "Extraction of natural products as an introduction to commonly used laboratory techniques, polymer materials, and fluorescence in the organic chemistry laboratory" My Phan, Ivette Rodriguez, Adrian Villalta-Cerdas; 257th American Chemical Society National Meeting & Exposition, March 31 - April 4, 2019. Orlando, FL.
40. "Design of significant learning experiences in the chemistry laboratory: understanding the physical properties of aqueous solutions" Andrea Bui, Ivette Rodriguez, Adrian Villalta-Cerdas; ACS 2018 Southwest Regional Meeting, Nov 7 - 10, 2018. Little Rock, AR.
39. "Extraction of natural products as an introduction to commonly used laboratory techniques, polymer materials, and fluorescence in the organic chemistry laboratory" Andrea Bui, Ivette Rodriguez, Adrian Villalta-Cerdas; ACS 2018 Southwest Regional Meeting, Nov 7 - 10, 2018. Little Rock, AR.
38. "Redesign of instruction and assessment of chemical kinetics in General Chemistry II: improving student learning via practice-oriented performance expectations" Adrian Villalta-Cerdas, David Thompson, Christopher Zall, 25th Biennial Conference on Chemical Education, University of Notre Dame, South Bend, IN, July 29 - August 2, 2018.
37. "Design of cooperative, project-based laboratory experiences to promote understanding of stoichiometry in college-level General Chemistry courses" Itzel Almaguer, Andrea Bui, William Fernandez, Adrian Villalta-Cerdas, 25th Biennial Conference on Chemical Education, University of Notre Dame, South Bend, IN, July 29 - August 2, 2018.
36. "Development of self-explaining skills at college level: Longitudinal study via Latent Transition Analysis" Adrian Villalta-Cerdas, 25th Biennial Conference on Chemical Education, University of Notre Dame, South Bend, IN, July 29 - August 2, 2018.
35. "Design of laboratory experiences in material science and nanotechnology for cooperative project-based experimentation in general chemistry" Corbin McCleary, Adrian Villalta-Cerdas; 11th Annual Undergraduate Research Symposium, Sam Houston State University, Huntsville, TX, April 28, 2018.

34. “Design of cooperative, project-based laboratory experiences to promote understanding of stoichiometry in college-level General Chemistry courses” Andrea Bui, William Fernandez, Itzel Almaguer, Adrian Villalta-Cerdas, 11th Annual Undergraduate Research Symposium, Sam Houston State University, Huntsville, TX, April 28, 2018.
33. “Design of laboratory experiences in material science and nanotechnology for cooperative project-based experimentation in general chemistry” Corbin McCleary, Adrian Villalta-Cerdas; 255th American Chemical Society National Meeting & Exposition, March 18-22, 2018. New Orleans, LA.
32. “Design of cooperative, project-based laboratory experiences to promote understanding of stoichiometry in college-level general chemistry courses” Andrea Bui, William Fernandez, Itzel Almaguer, Adrian Villalta-Cerdas; 255th American Chemical Society National Meeting & Exposition, March 18-22, 2018. New Orleans, LA.
31. “Diseño y evaluación de experiencias de aprendizaje para el desarrollo de habilidades científicas en el aula y laboratorio químico: enfoque en la auto-explicación y expectativas de desempeño” Adrian Villalta-Cerdas, Online seminar, College of Science and Engineering - Universidad Pedagógica Nacional, Bogotá Colombia, January 2018.
30. “Design of laboratory experiences in material science and nanotechnology for cooperative project-based experimentation in general chemistry” Corbin McCleary, Adrian Villalta-Cerdas; ACS 2017 Southwest Regional Meeting, Oct 29-Nov 1, 2017. Lubbock, TX.
29. “Effect of Self-explaining on Scientific-Skill Development: Longitudinal study via Latent Transition Analysis.” Adrian Villalta-Cerdas; 253th American Chemical Society National Meeting & Exposition, April 2-6, 2017. San Francisco, CA.
28. “Effect of Self-explaining on Scientific-Skill Development: Longitudinal study via Latent Transition Analysis.” Adrian Villalta-Cerdas; Texas Academy of Science Annual Meeting, March 3-5, 2017. Belton, TX.
27. “Design and implementation of self-explaining activities for chemistry courses.” Adrian Villalta-Cerdas; ACS 2016 Southwest Regional Meeting, November 10-13, 2016. Galveston, TX.
26. “Design and implementation of self-explaining activities for chemistry courses.” Adrian Villalta-Cerdas; 2016 Biennial Conference on Chemical Education (BCCE), July 31 - August 4, 2016. University of Northern Colorado. Greeley, CO.
25. “Effect of self-explaining on conceptual understanding of chemical phenomena using animation models at college level.” Adrian Villalta-Cerdas; 2016 Biennial Conference on Chemical Education (BCCE), July 31 - August 4, 2016. University of Northern Colorado, Greeley, CO.
24. “Self-explaining effect in general chemistry instruction: eliciting overt categorical behaviors by design.” Adrian Villalta-Cerdas; Chemical Education Research: New



- and Noteworthy Symposium (*invitation-only*), 251st American Chemical Society National Meeting & Exposition, March 13-17, 2016. San Diego, CA.
23. “Effect of self-explaining on conceptual understanding using animation models in college level chemistry courses.” Adrian Villalta-Cerdas; Collaborators: Resa Kelly, Sarah Hansen, Sevil Akaygun, Miriam Buschhaus, Danielle Solano; Gordon Research Conference on Chemical Education, June 21-26, 2015. Lewiston, ME.
  22. “Study of self-explaining skill development in college level introductory chemistry courses via latent transition analysis”. Adrian Villalta-Cerdas; 249<sup>th</sup> American Chemical Society National Meeting & Exposition, March 22-26, 2015. Denver, CO.
  21. “Use of Problem Solving to Elicit Self-explaining in General Chemistry”. Adrian Villalta-Cerdas; Invited Speaker at San Jose State University, February 18<sup>th</sup>, 2015. San Jose, CA.
  20. “Conceptual understanding and self-explaining in General Chemistry”. Adrian Villalta-Cerdas, Santiago Sandi-Urena; Florida Annual Meeting and Exposition (FAME), May 8-10, 2014. Innisbrook, FL.
  19. “Conceptual understanding and self-explaining in General Chemistry”. Adrian Villalta-Cerdas, Santiago Sandi-Urena; 247<sup>th</sup> American Chemical Society National Meeting & Exposition, March 16-20, 2014. Dallas, TX.
  18. “Integration of cooperative, project-based, authentic experiments in the General Chemistry Laboratory Program at the University of South Florida”. Adrian Villalta-Cerdas, Santiago Sandi-Urena, Vasiliki Lykourinou; 247<sup>th</sup> American Chemical Society National Meeting & Exposition, March 16-20, 2014. Dallas, TX.
  17. “Use of Problem Solving to Elicit Self-explaining in General Chemistry”. Adrian Villalta-Cerdas, Santiago Sandi-Urena; The Southeast Regional Meeting of the American Chemical Society (SERMACS) 2013, November 12-16, 2013. Atlanta, GA.
  16. “Use of Problem Solving to Elicit Self-explaining in General Chemistry”. Adrian Villalta-Cerdas, Santiago Sandi-Urena; 246<sup>th</sup> American Chemical Society National Meeting & Exposition, September 8-12, 2013. Indianapolis, IN.
  15. “Use of Problem Solving to Elicit Self-explaining in General Chemistry”. Adrian Villalta-Cerdas, Santiago Sandi-Urena; CER Graduate Student Conferences, July 26-28, 2013. Miami University, Oxford, OH.
  14. “Use of Problem Solving to Elicit Self-explaining in General Chemistry”. Adrian Villalta-Cerdas, Santiago Sandi-Urena; Gordon Research Conference on Chemical Education, June 9-14, 2013. Newport, RI.
  13. “Use of problem-solving to elicit self-explaining in general chemistry”. Adrian Villalta-Cerdas, Santiago Sandi-Urena; Florida Annual Meeting and Exposition (FAME), May 9-11, 2013. Innisbrook, FL.
  12. “Use of problem-solving to elicit self-explaining in general chemistry”. Adrian Villalta-Cerdas, Santiago Sandi-Urena; University of South Florida 11<sup>th</sup> Raymond N. Castle Student Research Conference, April 20, 2013. Tampa, FL.

11. "Current state of research in chemistry learning in the academic college laboratory." Adrian Villalta-Cerdas, Santiago Sandi-Urena, Todd A. Gatlin; 245<sup>th</sup> American Chemical Society National Meeting & Exposition, April 7-11, 2013. New Orleans, Louisiana.
10. "Current state of research in chemistry learning in the academic college laboratory." Adrian Villalta-Cerdas, Santiago Sandi-Urena, Todd A. Gatlin; 2012 Biennial Conference on Chemical Education (BCCE), July 29 - August 2, 2012. The Pennsylvania State University, College Park, PA.
9. "Use of problem-solving to elicit self-explaining in general chemistry". Adrian Villalta-Cerdas, Santiago Sandi-Urena; 22<sup>nd</sup> International Conference on Chemistry Education – 11<sup>th</sup> European Conference on Research In Chemistry Education (ICCE-ECRICE), July 15-20, 2012. Rome, Italy.
8. "Self-explaining experiences in large enrollment general chemistry courses". Adrian Villalta-Cerdas, Santiago Sandi-Urena; Florida Annual Meeting and Exposition (FAME), May 17-20, 2012. Innisbrook, FL.
7. "Generación de Auto-Explicaciones en Cursos de Química General (Self-explaining experiences in large enrollment general chemistry courses)". Adrian Villalta-Cerdas, Santiago Sandi-Urena; University of Costa Rica, May 3, 2012. San José, Costa Rica.
6. "Self-explaining experiences in large enrollment general chemistry courses". Adrian Villalta-Cerdas, Santiago Sandi-Urena; University of South Florida 10<sup>th</sup> Raymond N. Castle Student Research Conference, April 21, 2012. Tampa, FL.
5. "Current state of research in chemistry learning in the academic college laboratory" Adrian Villalta-Cerdas, Santiago Sandi-Urena, Todd A. Gatlin; 243<sup>rd</sup> American Chemical Society National Meeting & Exposition, March 25 – March 29, 2012. San Diego, CA.
4. "Self-explaining experiences in large enrollment general chemistry courses". Adrian Villalta-Cerdas, Santiago Sandi-Urena; 2012 Mid-Year McKnight Research and Writing Conference, February 25 - February 26, 2012. Tampa, FL.
3. "Regioisomers of tetra-aziridine-C<sub>60</sub> derivatives: Synthesis and characterization". Adrian Villalta-Cerdas, Floriana Foarta, Angy Ortiz, Luis Echegoyen; 66<sup>th</sup> Southwest and 62<sup>nd</sup> Southeastern Regional Meeting of the ACS, November 30 - December 4, 2010. New Orleans, LA.
2. "Regioisomers of tetra-aziridine-C<sub>60</sub> derivatives: Synthesis and characterization". Adrian Villalta-Cerdas, Floriana Foarta, Angy Ortiz, Luis Echegoyen; SACNAS National Conference, September 30 - October 4, 2010. Anaheim, CA.
1. "Synthesis of novel 2D polygons and 3D polyhedral supramolecular Pt<sup>II</sup>, Pd<sup>II</sup>-pyridylpyrrolidino-C<sub>60</sub> derivatives". Adrian Villalta-Cerdas, Angy Ortiz, Luis Echegoyen; SACNAS National Conference, October 15 - 18, 2009. Dallas, TX.

## PROFESSIONAL SERVICE

### INTERNATIONAL

**Symposium Co-organizer:** “Explorations in Chemistry Education Research and Practice: International progress toward the development of students’ understanding of particulate-level chemistry processes” Pacifichem 2021 Congress, Honolulu, Hawaii, USA, December 16 - 21, 2021. Virtual Meeting.

**Ph.D. Thesis Reviewer:** Rodrigo Rodriguez Cepeda, Thesis: “Significant learning of chemistry concepts: a study in the context of learning styles.” National Pedagogical University, Bogota, Colombia. 2016-2017.

**Symposium Co-organizer:** “Research on Learning in the Laboratory.” International Conference on Chemistry Education (ICCE), Toronto, Canada. July, 2014.

### NATIONAL

**Fellowship:** “Integration of art conservation science in college-level laboratory learning experiences focused on cultural heritage preservation.” Project MUSE (Museum Sabbatical Experience), Indianapolis Museum of Art, Indianapolis, IN. June - August, 2022.

**Workshop Co-Organizer:** “Integration of cooperative, project-based, authentic experiments in the General Chemistry Laboratory Programs at the University of South Florida and Northeastern University.” 2016 Biennial Conference on Chemical Education, University of Northern Colorado, CO. July, 2016.

**Symposium Co-Organizer:** “Once upon an animation: Looking for connections between laboratory stories and scenarios partnered with visualization practice.” 2016 Biennial Conference on Chemical Education, University of Northern Colorado, Greeley, CO. July, 2016.

**Consultant and Research Team Member:** “Developing a Visualization Framework for Chemical Reactions.” NSF-DUE-HER Collaborative Research, \$413,118 (two awards), funded September, 2015 to 2021.

**Symposium Co-organizer:** “Research on Learning in the Laboratory.” 249<sup>th</sup> National Meeting and Exposition of the American Chemical Society (ACS), Denver, CO. March, 2015.

**Symposium Co-organizer:** “Research on Learning in the Laboratory.” 247<sup>th</sup> National Meeting and Exposition of the American Chemical Society (ACS), Dallas, TX. March, 2014.

**Symposium Co-organizer:** “Research on Learning in the Laboratory.” 245<sup>th</sup> National Meeting and Exposition of the American Chemical Society (ACS), New Orleans, LA. April, 2013.

## INSTITUTIONAL

**Workshop Co-Organizer:** “Active Learning in STEM Classes Big and Small: Flipped Classes with Peer-Led Team Learning.” Department of Chemistry, Sam Houston State University, TX. June, 2018.

**Session Moderator,** Science Contest - University Interscholastic League 2018, Sam Houston State University, Huntsville, TX. April, 2018.

**Session Moderator,** Science Contest - University Interscholastic League 2017, Sam Houston State University, Huntsville, TX. April, 2017.

**Scientific Judge and Session Moderator,** Kern County Regional Science Bowl 2016, California State University, Bakersfield. February, 2016.

**Workshop Organizer:** “Validity Evidence: construct validity via data analysis” California State University, Bakersfield, CA. January, 2016.

**Scientific Judge and Session Moderator,** Kern County Regional Science Bowl 2015, California State University, Bakersfield. February, 2015.

**Curriculum Reform Committee Member,** General Chemistry Laboratory Program, Department of Chemistry, University of South Florida. Spring 2012 - Summer 2014.

**Graduate Student Advisory Board,** Chem-SEEDS NSF-sponsored REU Site, Department of Chemistry, University of South Florida. Summer, 2013.

**University of South Florida Recruiter,** presentation at the University of Costa Rica, San José, Costa Rica. May, 2012.

**University of South Florida Recruiter,** booth at 243<sup>rd</sup> American Chemical Society National Meeting & Exposition, San Diego, California. March, 2012.

**University of South Florida Recruiter,** presentation at the Universidad Pedagógica Nacional, Bogotá, Colombia. October, 2011.

**SACNAS Chapter Treasurer,** Clemson University. Fall 2009 - Spring, 2010.

**Student Association Board member,** Chemistry Department, University of Costa Rica. 2006.

## AFFILIATIONS

**American Chemical Society (ACS), Divisions of Chemical Education and History of Chemistry,** 2008 to date.

**National Science Teacher Association,** 2019 to date.