

ADRIAN VILLALTA-CERDAS

Assistant Professor of Chemistry
Department of Chemistry - Sam Houston State University
AVC-ChemEd.com

EDUCATION

Ph. D. in Chemistry with emphasis in Chemical Education, Department of Chemistry, University of South Florida, Tampa, Florida. Research on self-explaining experiences in large enrollment general chemistry courses. Doctoral mentor: Professor Santiago Sandi-Urena. 2014. GPA: 4.0/4.0.

Master of Arts in Chemistry with emphasis in Chemical Education, Department of Chemistry, University of South Florida, Department of Chemistry, Tampa, Florida. Master work reviewed research on self-explaining experiences in tertiary STEM education. Research Advisor: Professor Santiago Sandi-Urena. 2012. GPA: 4.0/4.0.

Bachelor of Science in Chemistry degree achieved with honors, School of Chemistry, University of Costa Rica, San José, Costa Rica. 2008. GPA: 9.19/10.

RESEARCH EXPERIENCE

Assistant Professor of Chemistry. Research on scientific skills' development in introductory lecture/laboratory chemistry courses at college level. Department of Chemistry, Sam Houston State University. Fall 2016 – to date.

Chemical Education Research. Research on the effect of self-explaining on chemistry conceptual learning in introductory chemistry courses at college level. Department of Chemistry and Biochemistry, California State University, Bakersfield. Fall 2014 – Summer 2016.

Chemical Education Research. Research on self-explaining experiences in large enrollment general chemistry courses. Department of Chemistry, University of South Florida. Research advisor: Dr. Santiago Sandi-Urena. Fall 2011 – Summer 2014.

Organic Chemistry Research. Research on regioselective functionalization and electrochemical characterization of fullerene C₆₀ for molecular electronic and optoelectronic applications. Chemistry Department, University of Texas at El Paso. Research advisor: Professor Luis Echegoyen. Fall 2010 – Spring 2011.

Organic Chemistry Research. Research on carbon nanomaterials (fullerene, carbon nano-onions and graphene) synthesis, chemical functionalization and electrochemical characterization. Chemistry Department, Clemson University. Research advisor: Professor Luis Echegoyen. Fall 2008 – Summer 2010.

MENTORSHIP EXPERIENCE

Mentor for Undergraduates at University of South Florida. Co-mentorship of four undergraduate students who presented their work through poster presentations in six conferences (local and national) and one oral presentation at a national conference. This work yielded two publications. Department of Chemistry, University of South Florida. Spring 2012 – Summer 2014.

Mentor for Undergraduate at University of Texas at El Paso. Co-mentorship of one undergraduate student who presented his work in a poster presentation in an institutional conference. Department of Chemistry, University of Texas at El Paso. Fall 2011.

Mentor for Undergraduates at Clemson University. Co-mentorship of two undergraduate students who presented their work through poster presentations in two local conferences and one national conference. Department of Chemistry, Clemson University. Spring 2010 – Summer 2010.

TEACHING EXPERIENCE

Assistant Professor of chemistry, Department of Chemistry, Sam Houston State University. Introductory and General Chemistry courses. Fall 2016 – to date.

Lecturer in Chemistry, Department of Chemistry and Biochemistry, California State University, Bakersfield. Full-time lecturer in introductory general chemistry, and organic chemistry courses, specifically: CHEM101: Preparation for college chemistry; SCI112: Introduction to Chemistry (pre-service teacher's course); CHEM150: General, Organic and Biochemistry I (Lecture and Laboratories); CHEM203L: General, Organic and Biochemistry II (Laboratory); CHEM211L General Chemistry I Laboratory; CHEM212L General Chemistry II Laboratory; CHEM332L Organic Chemistry II Laboratory; and CHEM333L Organic Chemistry III Laboratory. Fall 2014 – Spring 2016.

Curriculum Development Teaching Assistant, Department of Chemistry, University of South Florida, Curriculum development, implementation and evaluation of the currently in place “Authentic Chemistry Experiment Labs (ACE-Labs)” for General Chemistry I & II. This work yielded the

laboratory manual for the General Chemistry Laboratory Program at USF. Spring 2012 – Summer 2014.

Instruction Teaching Assistant, Department of Chemistry, University of South Florida, Preparation and instruction of General Chemistry II course. Fall 2013 & Summer 2014.

Laboratory Teaching Assistant, Department of Chemistry, University of South Florida, Teaching of Laboratory of General Chemistry I, Fall 2011 & Summer 2013.

Laboratory Teaching Assistant, Chemistry Department, Clemson University, Teaching of Laboratory of General Chemistry I Laboratory. Fall 2008 - Spring 2010.

Lecture Teaching Assistant, School of Chemistry, University of Costa Rica, Classroom assistance and exam marking in Instrumental Analysis (I and II) and Analytical Chemistry (majors and non-majors) courses. 2006 – 2008.

INDUSTRY EXPERIENCE

Chemical Analyst. Safety and quality control of commercial products for import/export purposes. LASA Analytical Laboratories, University of Costa Rica, Costa Rica. 2007 – 2008.

Chemical Analyst. Quality control of commercial products for taxation purposes. Customs Laboratories, Treasury Department of Costa Rica, Costa Rica. 2006 – 2008.

AWARDS AND RECOGNITIONS

ACADEMIC ACHIVEMENTS

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

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

Conference Presentation Grant Program, Student Government, University of South Florida. Assisted conference: 246th 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 – 11th 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.

SCIENTIFIC PUBLICATIONS

JOURNAL ARTICLES

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. 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.**
4. 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.**
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. Breczko, 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

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

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; 249th 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 18th, 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; 247th 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; 247th 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; 246th 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 11th 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; 245th 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; 22nd International Conference on Chemistry Education – 11th 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 10th 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; 243rd 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-C₆₀ derivatives: Synthesis and characterization”. Adrian Villalta-Cerdas, Floriana Foarta, Angy Ortiz, Luis Echegoyen; 66th Southwest and 62nd Southeastern Regional Meeting of the ACS, November 30 - December 4, 2010. New Orleans, LA.
2. “Regioisomers of tetra-aziridine-C₆₀ 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^{II}, Pd^{II}-pyridylpyrrolidino-C₆₀ derivatives”. Adrian Villalta-Cerdas, Angy Ortiz, Luis Echegoyen; SACNAS National Conference, October 15 - 18, 2009. Dallas, TX.

PROFESSIONAL SERVICE

INTERNATIONAL

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

NATIONAL

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.

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

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

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

DEPARTMENTAL

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 243rd 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), 2008-present.

**Society for Advancement of Hispanics/Chicanos and Native Americans in
Science (SACNAS), 2008-present.**

PROFESSIONAL REFERENCES

Dr. Gautam Bhattacharyya

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Missouri State University

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Dr. Nathaniel Grove

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University of North Carolina Wilmington

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San Jose State University

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Dr. Vasiliki Lykourinou

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Northeastern University

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Dr. Robert Potter

Professor of Chemistry – Department of Chemistry
Associate Dean – Office of Graduate and Undergraduate Studies
University of South Florida

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