

Jennifer E. Lewis

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Education

- Grad. Cert. (2011) University of South Florida, Tampa, FL
Area: Evaluation
- Ph.D. (1998) The Pennsylvania State University, University Park, PA
Thesis advisor: Mark Maroncelli
Dissertation title: Solvent Effects on Electronic Spectra: Liquid Solvents & Supercritical Fluids
- B.S. (1992) North Dakota State University, Fargo, ND
Major: Chemistry

Professional Positions

Professor and Associate Chair	University of South Florida	8/14-present
Director, CITRUS	University of South Florida	8/14-present
Visiting Professor	Curtin University (Australia)	9/11-8/14
Associate Professor	University of South Florida	8/07-7/14
Interim Chair, Women's & Gender Studies	University of South Florida	8/10-8/11
Assistant Professor	University of South Florida	8/01-7/07
Assistant Professor	University of Wisconsin-Milwaukee	8/00-7/01
Visiting Assistant Professor	Beloit College	8/98-7/00
Post-doctoral Associate	ChemConnections, Beloit College	8/98-7/00
Lecturer	The Pennsylvania State University	6/97-8/97

Honors and Awards

Fellow of the American Chemical Society
American Chemical Society/Division of Chemical Education/Committee on Research in Chemical Education
Exemplary Chemistry Education Research Publication Recognition, 2012-2013, 2013-2014
American Chemical Society/Division of Chemical Education Scholarship Award, ACS Leadership Development
System, Leading Change Washington, DC, August 2009
2008 Edward Mellon Lectureship in Chemical Education, Florida State University
Outstanding Undergraduate Teaching Award, University of South Florida 2004/2005

Publications

Articles, Refereed (*italics denote USF graduate student; J.E. Lewis is senior author*)

- X. Xu, E. S. Kim, J. E. Lewis, "Sex difference in spatial ability for college students and exploration of measurement invariance" *Learning and Individual Differences* (2015) DOI: 10.1016/j.lindif.2015.11.015
- S. M. Villafaña, B. J. Heyen, J. E. Lewis, J. Loertscher, V. Minderhout, T. A. Murray "Community-based design and national testing of an assessment instrument to measure understanding of protein structure and enzyme inhibition in a new context," *Biochemistry and Molecular Biology Education* (2015) DOI: 10.1002/bmb.20931
- J. Loertscher, D. Green, J. E. Lewis, S. Lin, V. Minderhout, "Identification of threshold concepts for biochemistry" *CBE-Life Sciences Education*, 13:3 (2014) 516-528. DOI: 10.1187/cbe.14-04-0066

- J. Loertscher, S. M. Villafañe, J. E. Lewis, V. Minderhout, "Probing and improving students' understanding of protein alpha-helix structure using targeted assessment and classroom interventions in collaboration with a faculty community of practice" *Biochemistry and Molecular Biology Education*, 42:3 (2014) 213-223. DOI: 10.1002/bmb.20787
- U. Kulatunga, R. S. Moog and J. E. Lewis, "Use of Toulmin's argumentation scheme for student discourse to gain insight about guided inquiry activities in college chemistry" *Journal of College Science Teaching*, 43:5 (2014) 78-86.
- S. M. Villafañe, C.A. Garcia and J. E. Lewis, "Exploring diverse students' trends in chemistry self-efficacy throughout a semester of college-level preparatory chemistry" *Chemistry Education Research and Practice*, 15:2 (2014) 114-127. DOI: 10.1039/c3rp00141e
- U. Kulatunga, R. S. Moog and J. E. Lewis, "Argumentation and participation patterns in general chemistry peer-led sessions" *Journal of Research in Science Teaching*, 50:10 (2013) 1207-1231. DOI:10.1002/tea.21107 (recognized as an Exemplary Publication for 2013/2014 by ACS DivCHED Committee on Research in Chemical Education)
- D. Southam and J. E. Lewis, "Supporting alternative strategies for learning chemical applications of group theory" *Journal of Chemical Education*, 90:11 (2013) 1425-2432. DOI:10.1021/ed400063t
- U. Kulatunga and J. E. Lewis, "Exploration of peer leader verbal behaviors as they intervene with small groups in college general chemistry" *Chemistry Education Research and Practice*, 14:4 (2013) 576-588. DOI: 10.1039/C3RP00081H
- J. Arjoon, X. Xu and J. E. Lewis, "Understanding the state of the art for measurement in Chemical Education Research: Examining the psychometric evidence" *Journal of Chemical Education*, 90:5 (2013), 536-545. DOI: 10.1021/ed3002013
- X. Xu, S. M. Villafañe and J. E. Lewis, "College students' attitudes toward chemistry, conceptual knowledge and achievement: Structural Equation Model analysis" *Chemistry Education Research and Practice*, 14:2 (2013) 188-200. DOI: 10.1039/C3RP20170H (recognized as an Exemplary Publication for 2012/2013 by ACS DivCHED Committee on Research in Chemical Education)
- X. Xu, D. Southam and J. E. Lewis, "Attitude toward the subject of chemistry in Australia: An ALIUS and POGIL collaboration to promote cross-national comparisons" *Australian Journal of Education in Chemistry*, 72 (2012) 32-36.
- K. Heredia and J. E. Lewis, "A psychometric evaluation of the Colorado Learning Attitudes about Science Survey (CLASS) for use in chemistry" *Journal of Chemical Education*, 89:4 (2012), 436-441. DOI: 10.1021/ed100590t
- K. Heredia, X. Xu, and J. E. Lewis, "The application and evaluation of a two-concept diagnostic instrument with students entering college general chemistry" *Chemistry Education Research and Practice*, 13:1 (2012) 30-38. DOI: 10.1039/C0RP90017F
- S. M. Villafañe, C. P. Bailey, J. Loertscher, V. Minderhout, and J. E. Lewis, "Development and analysis of an instrument to assess student understanding of foundational concepts before biochemistry coursework" *Biochemistry and Molecular Biology Education*, 39 (2011) 102-109. DOI: 10.1002/bmb.20464
- A. R. Brandriet, X. Xu, S. L. Bretz, and J. E. Lewis, "Diagnosing changes in attitude in first-year college chemistry students with a shortened version of Bauer's semantic differential" *Chemistry Education Research and Practice*, 12 (2011) 271-278. DOI: 10.1039/C1RP90032C
- S. M. Villafañe, J. Loertscher, V. Minderhout, and J. E. Lewis, "Uncovering students' incorrect ideas about foundational concepts for biochemistry" *Chemistry Education Research and Practice*, 12 (2011) 210-218. DOI: 10.1039/C1RP90026A
- X. Xu and J. E. Lewis, "Refinement of a chemistry attitude measure for college students" *Journal of Chemical Education*, 88 (2011) 561-568. DOI: 10.1021/ed900071q (†)
- B. Jiang, X. Xu, C. A. Garcia, and J. E. Lewis, "Comparing two tests of formal reasoning in a college chemistry context" *Journal of Chemical Education*, 87 (2010) 1430-1437. DOI: 10.1021/ed100222v

- T. Holme, S. L. Bretz, M. Cooper, J. Lewis, P. Paek, N. Pienta, A. Stacy, R. Stevens and M. Towns, "Enhancing the role of assessment in curriculum reform in chemistry" *Chemistry Education Research and Practice*, 11 (2010) 92-97. DOI: 10.1039/C005352J
- S. L. Crawley, J.E. Lewis, and M. Mayberry "Introduction to Special Issue of *Feminist Teacher*", *Feminist Teacher* 19:1 (2008) 1-12.
- S.E. Lewis and J.E. Lewis "Seeking effectiveness and equity in a large college chemistry course: An HLM investigation of Peer-Led Guided Inquiry" *Journal of Research in Science Teaching* 45:7 (2008) 794-811. DOI: 10.1002/tea.20254
- S.E. Lewis and J.E. Lewis "Predicting at-risk students in general chemistry: Comparing formal thought to a general achievement measure" *Chemistry Education Research and Practice* 8 (2007) 32-51.
- G. Kersaint, J.E. Lewis, R. Potter, and G. Meisels "Why teachers leave: Factors that influence retention or resignation" *Teaching and Teacher Education* 6 (2007) 775-794. DOI: 10.1016/j.tate.2005.12.004
- S.E. Lewis and J.E. Lewis "Effectiveness of a Workshop to Encourage Action: Evaluation from a post-workshop survey" *Journal of Chemical Education*, 83 (2006) 299-304. DOI: 10.1021/ed083p299
- Troy D. Sadler, Teresa M. Eckart, Jennifer Lewis and Katherine Whitley "It's a gas! An exploration of the physical nature of gases" *Science Scope* November/December (2005) 10-12.
- S.E. Lewis and J.E. Lewis "The same or not the same: Equivalence as an issue in educational research, *Journal of Chemical Education* 82 (2005) 1408-1412. DOI: 10.1021/ed082p1408
- S.E. Lewis and J.E. Lewis "Departing from lectures: An evaluation of a Peer-Led Guided Inquiry alternative" *Journal of Chemical Education* 82 (2005) 135-139. DOI: 10.1021/ed082p135
- J.E. Lewis, R. Biswas A.G. Robinson, and M. Maroncelli "Local density augmentation in supercritical solvents: Electronic shifts of anthracene derivatives" *Journal of Physical Chemistry B*, 105 (2001) 3306-3318.
- R. Biswas, J.E. Lewis and M. Maroncelli, "Electronic spectral shifts, Reorganization energies, and local density augmentation of C153 in supercritical solvents" *Chemical Physics Letters*, 310 (1999) 485-494.
- J.E. Lewis and M. Maroncelli, "On the (uninteresting) dependence of the absorption and emission transition moments of C153 on solvent," *Chemical Physics Letters*, 282 (1998) 197-203.

Books

- March, J. L., Caswell, K. K., & Lewis, J.E. (2007). Introductory Chemistry Modules: A Guided Inquiry Approach. Boston: Houghton Mifflin.

Book Chapters

- R. Potter, G. Meisels, P. Stiling, J. Lewis, C. Beneteau, K. Yee, R. Pollenz. (2015) "Planning transformation of STEM education in a research university" (2015). In G. C. Weaver, W. D. Burgess, A. L. Childress & L. Slakey (Eds.), Transforming Institutions: 21st Century Undergraduate STEM Education (pp. 140-152) West Lafayette, IN: Purdue University Press.
- X. Xu, K. Alhooshani, D. Southam, and J. E. Lewis, "Gathering psychometric evidence for ASCIv2 to support cross-cultural attitudinal studies for college chemistry programs" (2015). In M. Kahveci and M. K. Orgill (Eds.), Affective Dimensions in Chemistry Education. Heidelberg: Springer.
- J. E. Lewis, "Doing chemistry education research in the real world: Challenges of multi-classroom collaborations" (2014). In D. M. Bunce and R. S. Cole (Eds.), Tools of Chemistry Education Research. ACS Symposium Series 1166, American Chemical Society: Washington, DC; Chapter 14.
- J.E. Lewis, Whistling for a wind. (2010) In K. Scantlebury, J. B. Kahle, and S. N. Martin (Eds.), Revisiting Science Education from Feminist Perspectives: Challenges, Choices, and Careers (pp. 79-88). Rotterdam: Sense Publishers.
- Zeidler, D. L., & Lewis, J. (2003). Unifying themes in moral reasoning on socioscientific issues and discourse. In D. L. Zeidler (Ed.), The Role of Moral Reasoning on Socioscientific Issues and Discourse in Science (pp. 289-306). Dordrecht: Kluwer Academic Publishers.

Guest Editor

For Special Issues of *Feminist Teacher*, 19 (1 and 2). "Feminist Pedagogies in Action: Teaching Beyond Disciplines"
S. Crawley, J.E. Lewis, and M. Mayberry, Guest Editor

External Grants and Contracts

NSF-DUE #1503980 IUSE ESL-Exploration: 'Collaborative Research: Development of Learning Progressions for Biochemistry - Concept Linkage through the College Curriculum'
Jennifer Lewis, PI; Adele Wolfson, PI (Wellesley College); Erika Offerdahl (North Dakota State University), evaluator
\$143,276 for USF's portion, 10/1/15-9/30/17

NSF-DUE #1525574 IUSE ICT-D&D: 'Systemic Transformation of Evidence-based Education Reform (STEER)'
Gerry Meisels, PI; Jennifer Lewis, Robert Potter, Peter Stiling, and James Wysong (Hillsborough Community College) co-PIs; Eric Banilower (Horizon Research), evaluator
\$2,975,896, 9/15/15-8/31/20

Evaluation of NSF-DUE #1224868 'Transforming Undergraduate Biochemistry Education: A Community Approach Linking Learning, Assessment and Curricular Innovation' *design and conduct evaluation of materials development, testing, and dissemination grant to include assessment of student outcomes*
Jennifer Lewis, PI, subcontract through Seattle University (Minderhout and Loertscher)
\$214,619 from 10/1/12-9/30/16

NSF-DUE #1347753 WIDER: 'Transforming Stem Teaching in a Large Urban-Serving University' (planning grant)
Gerry Meisels, PI; Catherine Beneteau, Jennifer Lewis, Robert Potter, and Peter Stiling, co-PIs; Michael Howard, Evaluator; \$249,491 from 9/15/13 - 9/14/2015

Evaluation of NSF-DUE #1123061 TUES Type 2: 'POGIL Math- Guided Inquiry Materials for Gatekeeper Courses in Mathematics' *design and conduct evaluation for materials development and testing grant to include assessment of student outcomes*
Jennifer Lewis, PI, subcontract through The POGIL Project (Moog) and Portland State University (Noll)
\$120,268 from 10/1/11-09/30/15

NSF-DUE #1044111 TUES Type 1: Collaborative Research: Climate Change Concepts and POGIL
develop and assess learning modules for college chemistry
Jennifer Lewis, PI; Daniel King, PI (Drexel University), Karen Anderson, co-PI (Madison Area Technical College); Don Wink (University of Illinois Chicago), evaluator
\$116,117 for 36 months for USF's portion from 9/1/11-8/31/14

NSF-DUE #0756847 "A STEP to Grow in Science-Engineering-Mathematics Undergraduate Degrees"
implement systemic changes in STEM education at USF to increase the number of STEM graduates and document the effects of those changes for student outcomes
Kandethody Ramachandran, PI; Catherine Beneteau, Scott Campbell, Gordon Fox, Arcadii Grinshpan, co-PIs; Jennifer Lewis, Marcus McWaters, senior personnel; John Holcomb (Cleveland State University), evaluator
\$1,999,754 for 60 months from 8/1/08-7/31/12

Evaluation of NSF #0717392 'POGIL Biochem: Advancing Active Learning Approaches in Biochemistry'
design and conduct evaluation for dissemination grant and document student learning outcomes
Jennifer Lewis, PI, subcontract through Seattle University (Minderhout and Loertscher)
\$139,063 from 10/1/07-9/30/11

Evaluation of NSF #0733642 'Chemistry Education Research Doctoral Scholars Program'
design and conduct evaluation for training grant

Jennifer Lewis and Maralee Mayberry (USF Sociology), co-PIs, subcontract through Miami University (Bretz) \$151,775 from 9/1/07-8/31/12

NSF-DUE #0817409 Collaborative Research: A Model for Data-driven Reform in Chemistry Education
Tom Holme, PI (Iowa State); Jennifer Lewis, Stacey Bretz (Miami University), Melanie Cooper (Clemson University), Norb Pienta (University of Iowa), Angelica Stacy (University of California Berkeley), Ron Stevens (UCLA), Marcy Towns (Purdue University) co-PIs; Pamela Paek (Center for Improvement of Educational Assessment), evaluator \$52,031 for 18 months for USF's portion from 9/15/2008 to 2/28/2010

NSF-DUE #0618758 "Collaborative Research: The POGIL Project" NSF-CCLI (Phase 3)
The project proposes to disseminate process-oriented guided inquiry learning materials and methods. The role of the PI for USF's portion is primarily to investigate student discourse in small group settings.
Jennifer Lewis, PI; Richard S. Moog, PI (Franklin & Marshall College); Diane Bunce, evaluator (Catholic University) \$200,846 for USF's portion from 10/1/06 to 9/30/09.

NSF-DUE #0443026 "Collaborative Research: The Molecules of Life – A Partnership to Enhance Undergraduate Science Education for Non-Majors" *The project proposes to disseminate interdisciplinary (biology/chemistry) modules featuring molecular visualization and societal relevance. The role of the PI for USF's portion of the collaborative project was to conduct research on student learning outcomes at a range of institutions.*
Jennifer Lewis, PI; Neville Kallenbach, PI (New York University), Trace Jordan, co-PI (New York University) \$59,892 for USF's portion from 5/1/05 to 4/30/08.
On 10/24/06, NSF awarded Lewis a one-time supplement in the amount of \$11,796, total \$71,688.

Evaluation of NSF #051252 'Adapting IMMEX to provide problem solving assessment materials from the ACS Exams Institute' to *design and conduct evaluation for assessment development grant*
Jennifer Lewis, PI, subcontract through University of Wisconsin-Milwaukee (Holme) \$47,002 from 9/1/05-11/30/07

NSF-DUE #0310954 (CCLI-A&I) "Sustainable Reform for General Chemistry: Phased Implementation of Lecture-Based Reforms and Peer-Led Guided Inquiry"
The project's twin goals were implementation of a curricular reform and research on its effectiveness.
Jennifer Lewis, PI
\$99,957 from 8/1/03 – 7/31/06, extended to 7/31/07

USDOE-Florida Multi-University Reading, Mathematics And Science Initiative (MURMSI)
"Understanding Resignations of Science, Mathematics, and Reading Teachers Phase Two: A Proposal to the Multi-University Reading, Mathematics, and Science Initiative for the Second Phase of a Pilot Study"
Gerry Meisels, PI; Jennifer Lewis, Bob Potter Co-PIs (USF); Rogen O'Brien, Co-PI (Polk County School District) \$149,178 for one year (10/6/04-7/18/05)

USDOE-Florida Multi-University Reading, Mathematics And Science Initiative (MURMSI)
"Understanding Resignations of Science, Mathematics, and Reading Teachers: A Proposal to the Multi-University Reading, Mathematics, and Science Initiative for a Pilot Study"
Gerry Meisels, PI; Gladys Kersaint, Jennifer Lewis, Bob Potter Co-PIs (USF); Marian Lauria-Davis, Barbara Anderson, Kim Swartzel Co-PIs (Hillsborough and Pinellas County School Districts); Sandy Schlichting, Project Director \$154,116 for one year (11/1/03-10/31/04)

Evaluation of NSF-DUE#0196527 'Strategies to Promote Active Learning in Chemistry Courses: Multi-Initiative Dissemination Workshops'
Jennifer Lewis, PI, subcontract through University of California-Berkeley \$84,716 from 9/1/02-8/31/0

Professional Society Committees

American Chemical Society

Selection Committee for [National ACS Award], chair, 2014-present

American Chemical Society Division of Chemical Education

Committee on Personnel and Nominations, member, 2013-2014, **Chair**, 2015 – present

General Chemistry Conceptual ACS Exam Committee, member, 2013 – present

Executive Committee (2007-2009, 2010-2012)

New Member Committee, member, 2002-2004 & 2010-2012; **Chair**, 2005 – 2009

Task Force on Meetings, member, 2009 – 2010

Program Committee, member, 2005 – 2010

Strategic Planning Action Plan Development Task Force, 2007-2008

General Chemistry Conceptual ACS Exam Committee, member, 2007 – 2008

Strategic Planning Task Force, member, 2007

Chemical Education Research Committee, member, 2001 – 2006

Second Semester General Chemistry ACS Exam Committee, member, 2003 – 2005

American Evaluation Association

STEM Education Workforce and Development Topical Interest Group, elected co-program chair, 2013-2015

American Chemical Society Tampa Bay Local Section

Executive Committee, chair-elect, 2015 (elected position)