

Timothy P. Causgrove, Ph.D.

Department of Physical & Environmental Sciences
Texas A&M University-Corpus Christi
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Corpus Christi, TX 78412-5802

Education:

University of Nebraska-Lincoln	Chemistry	B. S.	1982
Iowa State University	Physical Chemistry	Ph.D.	1988

Professional Experience:

2003-Present	Associate Professor of Chemistry, Texas A&M Univ.-Corpus Christi
2002-2003	Professor of Chemistry, Mississippi University for Women
1999-2002	Associate Professor of Chemistry, Mississippi University for Women
1994-1999	Assistant Professor of Chemistry, Mississippi University for Women
1991-1994	Postdoctoral Associate, Los Alamos National Laboratory
1989-1991	Postdoctoral Associate, Arizona State University
1983-1988	Graduate Research Assistant, Iowa State University
1982-1983	Graduate Teaching Assistant, Iowa State University

I. Teaching

A. Courses taught at TAMU-CC:

CHEM 1311/1411 General Chemistry I
CHEM 1111 General Chemistry I Laboratory
CHEM 1312/1412 General Chemistry II
CHEM 4292 Senior Seminar
CHEM 4420 Physical Biochemistry (lecture and laboratory)
CHEM 4423 Physical Chemistry I (lecture and laboratory)
CHEM 4424 Physical Chemistry II (lecture and laboratory)
CHEM 4696 Directed Independent Study
CHEM 4490/5352 Computational Chemistry

II. Research

A. Grants Awarded (since 2003):

1. "Molecular Modeling using a Graphics Processing Workstation", Texas A&M University-Corpus Christi University Research Enhancement Grant, \$5,000, September 2013-August 2014

Outcomes: Manuscript in progress including simulations of α -synuclein, an intrinsically disordered protein; currently working on calculations for a second project

2. "RUI: Application of Temperature-Derivative Spectroscopy to Protein Folding", National Science Foundation Research Grant, \$171,305, September 2006 – September 2009, PI

Outcomes: International publication in *Chemical Physics*; four presentations at national meetings; four undergraduate students mentored

3. "Application of Temperature-Derivative Spectroscopy to Proton Transfer", Texas Research Development Fund (TRDF), \$22,200, September 2006 – September 2007, PI

Outcomes: Three presentations at national meetings; two undergraduate students mentored

4. "Contribution of Charged Side Chains to α -Helix Stability: Charge Cluster Formation", \$2,685, Texas A&M University-Corpus Christi College Research Enhancement Grant, September 2005 – August, 2006, PI

Outcomes: One presentation at a regional meeting

5. "Acquisition of a 300 MHz NMR for the Enhancement of Research/Teaching at Texas A&M University-Corpus Christi", \$223,418, Co-PI, Eugene Billiot, PI

Outcomes: Purchase of instrumentation for teaching and research

6. "Side Chain Stabilization of Protein Helices", Texas Excellence Fund (TEF), \$16,710, January 2005 – August, 2005, PI

Outcomes: International publication in *Journal of Molecular Modeling*; two undergraduate students mentored

7. "Welch Foundation Departmental Grant", \$75,000, The Welch Foundation, Co-PI, Patrick Larkin, PI

Outcomes: Mentoring of undergraduate students

8. "Equilibrium and Kinetics of the Folding of Designed β -turn Peptides", \$6,126, Texas A&M University-Corpus Christi University Research Enhancement Grant, September 2004 – August, 2005, PI

Outcomes: Development of methods for National Science Foundation proposal

B. Journal Publications:

1. Aaron M. Keller, Matthew S. DeVore, Dominik G. Stich, Dung M. Vu, Timothy Causgrove, and James H. Werner, "Multicolor 3-dimensional tracking for single-

- molecule fluorescence resonance energy transfer measurements”, *Analytical Chemistry*, **90**, 6109-6115 (2018) DOI: [10.1021/acs.analchem.8b00244](https://doi.org/10.1021/acs.analchem.8b00244)
2. Michael J. Gregory, Mathew Anderson, and Timothy P. Causgrove, “Measurement of energy barriers to conformational change in poly-L-glutamic acid by temperature-derivative spectroscopy”, *Chemical Physics*, **420**, 1-5 (2013) DOI: [10.1016/j.chemphys.2013.04.014](https://doi.org/10.1016/j.chemphys.2013.04.014)
 3. Kristen D. Walker and Timothy P. Causgrove, “Contribution of arginine-glutamate salt bridges to helix stability”, *Journal of Molecular Modeling*, **15**, 1213-1219 (2009) DOI: [10.1007/s00894-009-0482-5](https://doi.org/10.1007/s00894-009-0482-5)
 4. Timothy P. Causgrove and R. Brian Dyer, "Non-equilibrium Protein Folding Dynamics: Laser-Induced pH-jump Studies of the Helix-Coil Transition", *Chemical Physics*, **323**, 2-10 (2006) DOI: [10.1016/j.chemphys.2005.08.032](https://doi.org/10.1016/j.chemphys.2005.08.032)
 5. Benjamin H. McMahon, Marian Fabian, Farol Tomson, Timothy P. Causgrove, James A. Bailey, Francisca N. Rein, R. Brian Dyer, Graham Palmer, Robert B. Gennis, and William H. Woodruff, “FTIR studies of internal proton transfer reactions linked to inter-heme electron transfer in bovine cytochrome *c* oxidase”, *Biochimica et Biophysica Acta* **1655**, 321-331 (2004) DOI: [10.1016/j.bbabi.2004.01.007](https://doi.org/10.1016/j.bbabi.2004.01.007)
 6. Shelia J. Maness, R. Brian Dyer, J. Alan Gibbs, Timothy P. Causgrove, and Stefan Franzen, "Transition State Determination in Cyclic β -sheet Structures", *Biophysical Journal* **84**, 3874-3882 (2003) DOI: [10.1016/S0006-3495\(03\)75115-7](https://doi.org/10.1016/S0006-3495(03)75115-7)
 7. Skip Williams, Timothy P. Causgrove, Karen S. Fang, Robert H. Callender, R. Brian Dyer and William H. Woodruff, "Fast Events in Protein Folding: Helix Melting and Formation in a Small Peptide", *Biochemistry*, **35**, 691-697 (1996) DOI: [10.1021/bi952217p](https://doi.org/10.1021/bi952217p)
 8. Timothy P. Causgrove and R. Brian Dyer, "Picosecond Structural Dynamics of Myoglobin following Photolysis of Carbon Monoxide", *Journal of Physical Chemistry*, **100**, 3273-3277 (1996) DOI: [10.1021/jp952483c](https://doi.org/10.1021/jp952483c)
 9. Timothy P. Causgrove and R. Brian Dyer, “Protein Response to Photodissociation of CO from Carbonmonoxymyoglobin Probed by Time-Resolved Infrared of the Amide I Band”, *Biochemistry*, **32**, 11985-11991 (1993) DOI: [10.1021/bi00096a007](https://doi.org/10.1021/bi00096a007)
 10. Timothy P. Causgrove, Peiling Cheng, Daniel C. Brune and Robert E. Blankenship, "Optical Spectroscopy of a Highly Fluorescent Aggregate of Bacteriochlorophyll *c*", *Journal of Physical Chemistry*, **97**, 5519-5524 (1993) DOI: [10.1021/j100123a011](https://doi.org/10.1021/j100123a011)
 11. Valentina I. Godik, Robert E. Blankenship, Timothy P. Causgrove and Neal W. Woodbury, "Time-resolved Fluorescence of Tryptophan in Photosynthetic Reaction Centers from *Rhodobacter sphaeroides*", *FEBS Letters*, **321**, 229-232 (1993)

12. Robert E. Blankenship, Peiling Cheng, Timothy P. Causgrove, Jian Wang and Stephanie Hsiao-Hsien Wang, "Redox Dependence of Fluorescence Intensity and Lifetime in Green Photosynthetic Bacteria", *Photochemistry and Photobiology*, **57**, 103-107 (1993) DOI: 10.1111/j.1751-1097.1993.tb02263.x
13. Aileen K. W. Taguchi, Jonathan W. Stocker, Rhett G. Alden, Timothy P. Causgrove, Jeffrey M. Peloquin, Steven G. Boxer and Neal W. Woodbury, "Biochemical Characterization and Electron Transfer Reactions of *sym1*, a *Rhodobacter capsulatus* Reaction Center Symmetry Mutant which Affects the Initial Electron Donor", *Biochemistry*, **31**, 10345-10355 (1992) DOI: 10.1021/bi00157a024
14. Timothy P. Causgrove, Daniel C. Brune and Robert E. Blankenship, "Förster Energy Transfer in Chlorosomes of Green Photosynthetic Bacteria", *Journal of Photochemistry and Photobiology B*, **15**, 171-179 (1992)
15. Terry E. Meyer, Gordon Tollin, Timothy P. Causgrove, Peiling Cheng, and Robert E. Blankenship, "Picosecond Decay Kinetics and Quantum Yield of Fluorescence of the Photoactive Yellow Protein from the Halophilic Purple Phototrophic Bacterium, *Ectothiorhodospira halophila*" *Biophysical Journal*, **59**, 988-991 (1991)
16. Timothy P. Causgrove, Daniel C. Brune, Jian Wang, Bruce P. Wittmershaus and Robert E. Blankenship, "Energy Transfer Kinetics in Whole Cells and Isolated Chlorosomes of Green Photosynthetic Bacteria" *Photosynthesis Research*, **26**, 39-48 (1990)
17. Timothy P. Causgrove, Daniel C. Brune, Robert E. Blankenship and John M. Olson, "Fluorescence Lifetimes of Dimers and Higher Oligomers of Bacteriochlorophyll *c* from *Chlorobium limicola*" *Photosynthesis Research* **25**, 1-10 (1990)
18. Timothy P. Causgrove, Shumei Yang and Walter S. Struve, "Polarized Pump-probe Spectroscopy of Photosystem I Antenna Excitation Transport" *Journal of Physical Chemistry* **93**, 6844-6850 (1989) DOI: 10.1021/j100355a053
19. Timothy P. Causgrove, Sandra M. Bellefeuille and Walter S. Struve, "Excitation Transport in Glycerol Solutions of Rhodamine 640: Absence of Orientational Correlation" *Journal of Physical Chemistry* **92**, 6945-6948 (1988) DOI: 10.1021/j100335a021
20. Timothy P. Causgrove, Shumei Yang and Walter S. Struve, "Polarized Pump-probe Spectroscopy of Exciton Transport in Bacteriochlorophyll *a*-protein from *Prosthecochloris aestuarii*" *Journal of Physical Chemistry* **92**, 6790-6795 (1988) DOI: 10.1021/j100334a058
21. Timothy P. Causgrove, Shumei Yang and Walter S. Struve, "Electronic Excitation Transport in Core Antennae of Enriched Photosystem I Particles from Spinach Chloroplasts" *Journal of Physical Chemistry* **92**, 6121-6124 (1988) DOI: 10.1021/j100332a054

22. Philip A. Anfinrud, Timothy P. Causgrove and Walter S. Struve, "Picosecond Pump-probe Experiments on Surface-Adsorbed Dyes: Ground-State Recovery of Rhodamine 640 on ZnO and Fused Silica" *Journal of Physical Chemistry* **90**, 5887-5891 (1986) DOI: 10.1021/j100280a085
23. *Timothy Causgrove*, Dixie J. Goss and Lawrence J. Parkhurst, "Oxygen Equilibrium Studies on Carp-Human Hybrid Hemoglobins" *Biochemistry* **23**, 2168-2173 (1984)

C. Presentations (since 2003 only):

Aaron Keller, Matthew DeVore, Dung Vu, Timothy Causgrove, and James Werner, (Presenter), "3D Tracking Single Molecule Fluorescence Energy Transfer Measurements," 60th Annual Meeting of the Biophysical Society, Biophysical Society, Los Angeles, CA, February 28, 2016

Timothy P. Causgrove, "Energy barriers to helix nucleation and propagation: a new application of temperature-derivative spectroscopy", Los Alamos National Laboratory, Los Alamos, NM, July 23, 2013

Michael Gregory, Mathew Anderson, and Timothy P. Causgrove, "Measurement of Energy Barriers to Cryogenic Proton Transfer by Temperature-Derivative Spectroscopy", Poster presentation at 238th National Meeting of the American Chemical Society, Washington D.C., Aug. 19, 2009

Johnathan Hatfield, Michael Gregory, and Timothy P. Causgrove, "Measurement of the Activation Barrier to Protein Unfolding via Temperature-Derivative Spectroscopy", Poster presentation at 238th National Meeting of the American Chemical Society, Washington D.C., Aug. 19, 2009

Mitchell Winters and Timothy P. Causgrove, "Fluorescence Detection of Proton Transfer at Cryogenic Temperatures via Temperature-Derivative Spectroscopy", Poster presentation at 238th National Meeting of the American Chemical Society, Washington D.C., Aug. 19, 2009

Michael Gregory, Mathew Anderson, and Timothy P. Causgrove, "Dependence of the Activation Energy of the Helix-Coil Transition: Measurement by Temperature Derivative Spectroscopy", Poster presentation at 8th Annual Sigma Xi Research Symposium, Corpus Christi, TX, Nov. 1, 2008

Michael Gregory, Mathew Anderson, Melissa Griffith, and Timothy P. Causgrove, "Measurement of the coil-to-helix transition in poly-L-glutamic acid via temperature derivative spectroscopy", Poster presentation at 235th National Meeting of the American Chemical Society, New Orleans, LA, April 9, 2008

Mathew Anderson, Michael Gregory, Gregory Smith, and Timothy P. Causgrove, “Direct observation of proton transfer at cryogenic temperatures”, Poster presentation at 235th National Meeting of the American Chemical Society, New Orleans, LA, April 9, 2008

Mathew Anderson, Michael Gregory, and Timothy P. Causgrove, “Direct observation of proton transfer at cryogenic temperatures”, Poster presentation at 7th Annual Sigma Xi Research Symposium, Corpus Christi, TX, Nov. 17, 2007

Timothy P. Causgrove and R. Brian Dyer, “Laser-induced pH-jump studies of the helix-coil transition”, Poster presentation at Spectroscopy of Biological Molecules meeting, Santa Fe, NM, Sept. 1, 2005

Peña, Leslie and Causgrove, Timothy P., “Photophysical Properties of Light-Induced pH jump Compounds”, Poster presentation at ACS Local Section Symposium, Edinburg, TX, Nov. 12, 2004

Note: *Italics* indicate undergraduate student.

D. Undergraduate Student Researchers

Student Name	Dates worked (approximate)	Career path
Leslie Peña	1/04-5/04	
Shanda Brandy	8/04-5/05	
Paul Juarez	8/05-5/05	Graduate school, biochemistry
Sheila Murray	8/05-5/06	Medical school, the Netherlands
Melissa Griffith	12/05-5/07	Teaching high school
Kristin Walker	12/05-12/06	Nursing school
Gregory Smith	9/06-7/07	Graduate school (U. of Kansas), chemistry
Mathew Anderson	1/07-9/09	Military
Michael Gregory	9/07-9/09	Private employment, Houston, TX
Gerardo Garza, Jr.	1/08-1/09	Graduate school, Texas A&M-Corpus Christi
Mitchell Winters	11/07-9/09	Changed major to history
Johnathan Hatfield	9/08-12/09	Graduate school (Colo. State), chemistry
John Hattenbach	1/09-5/09	
Harris Weisz	12/09-5/10	Graduate school, UT-Med. Branch, Galveston
Alejandra Budiaman	1/12-12/12	
Michael Montez	1/13-5/14	Graduate school (Comp. Sci.), TAMU-CC
Nhi Nguyen	9/14-12/14	

E. Graduate Students

Keegan Granfor – will complete Master’s in Chemistry, Spring, 2019

Lauren McGregor – started Master’s in Chemistry, Fall, 2018

III. Service

A. Committees

Member, Chemistry Faculty Search Committee (2003-2004)
Reviewer, *Journal of Physical Chemistry* (2004)
Member, TAMU-CC Faculty Senate (2004-2008)
Member, Faculty Senate Awards, By-laws and Elections Committee (2004-2005)
Member, Clinical Laboratory Science Search Committee (2004-2005; 2005-2006)
Vice-President, South Texas Section of the American Chemical Society (2004-2005)
Member, Judging Committee, Coastal Bend Science Fair (2004-2005)
Member, Awards Committee, Coastal Bend Science Fair (2005-2006)
Member, College of Science & Technology Awards Committee (2005-2010; Chair, 2005-2006)
Member, Faculty Senate Academic Affairs Committee (2005-2007)
Chair, Faculty Senate Academic Affairs Committee (2007-2008)
Member, Faculty Senate Executive Committee (2007-2008)
Member, Director of Clinical Laboratory Science Search Committee (2008-2009)
Reviewer, *Journal of Molecular Modeling* (2008-2014)
Member, Biochemistry Search Committee (2009-2010)
Member, Science & Technology Curriculum Committee (2009-2011)
Member, Health Professions Advisory Committee (2010-2012)
Chair, Professor of Physics Search Committee (2013)
Co-Chair, Chemistry Faculty Search Committee (2013-2014)
Member, Promotion and Tenure Committee, Dept. of Physical and Env. Sciences (2010-present)
Member, Student Hearing and Appellate Board Panel (2013-2016)
Reviewer, *Chemistry Select* (2016)
Member, Student Misconduct Panel (2018-2020)
Member, Chemistry PAP Search Committee, (2019)

C. Graduate Student Committees

Thomas Tyler, Computer Science MS, Fall 2005 – Spring 2007
Amber Maynard, Chemistry MS, Fall 2017 – Summer 2019
Terence Palmer, CMSS Ph.D. (GFR Member), Spring 2019 – present