

Dr. Thomas G. Chasteen
Professor of Chemistry
Department of Chemistry
College of Arts and Sciences

Degrees Earned:

- Degree:** **Doctor of Philosophy** in Chemistry
1986-1990
University of Colorado, Boulder
Field: Analytical Environmental Chemistry
Dissertation Title: **Fluorine-Induced Chemiluminescence Detection of Biologically Methylated Tellurium, Selenium, and Sulfur Compounds & Methyl-dithiocarbonylhydrazide as a Formaldehyde Derivatization Reagent**
National Center for Atmospheric Research Cooperative Thesis No. 129
- Degree:** **Masters of Science** in Chemistry
1983-1985
East Texas State University
Field: Analytical Geochemistry
Thesis Title: **Geochemical Study of Uranium & Vanadium in Lignite Coal Seams**
- Degree:** American Chemical Society Certified **Bachelor of Science** in Chemistry
1976-1980
East Texas State University (now Texas A&M, Commerce, TX)

Peer-Reviewed Publications

Articles

- Cysteine Metabolism-Related Genes and Bacterial Resistance to Potassium Tellurite
D. E. Fuentes, E. L. Fuentes, M. E. Castro, J. M. Pérez, M. A. Araya, T. G. Chasteen, S. E. Pichuantes and C. C. Vásquez
Journal of Bacteriology, 2007, **187**, 8953-8960.
- Capillary Electrophoretic Determination of Selenocyanate and Selenium and Tellurium Oxyanions in Bacterial Cultures
B. K. Pathem, G. A. Pradenas, M. E. Castro, C. C. Vásquez and T. G. Chasteen
Analytical Biochemistry, 2007, **364**, 138-144.
- The Expression of the *ubiE* Gene of *Geobacillus stearothermophilus* V in *Escherichia coli* K-12 Mediates the Evolution of Selenium Compounds into the Headspace of Selenite- and Selenate-Amended Cultures
J. W. Swearingen, Jr., D. E. Fuentes, M. A. Araya, M. F. Plishker, C. P. Saavedra, T. G. Chasteen, and C. C. Vasquez.
Applied Environmental Microbiology, 2006, **72**, 963-967.
- Identification of biogenic dimethyl selenodisulfide in the headspace gases above genetically-modified *Escherichia coli*
J. W. Swearingen, Jr., D. P. Frankel, D. E. Fuentes, C. P. Saavedra, C. C. Vasquez, and T. G. Chasteen
Analytical Biochemistry, 2006, **348**, 115-122.
- Identification of biogenic organotellurides in *Escherichia coli* K-12 headspace gases using solid phase microextraction and gas chromatography
J. W. Swearingen, Jr., M. M. Araya, M. F. Plishker, C. P. Saavedra, C. C. Vasquez, and T. G. Chasteen
Analytical Biochemistry, 2004, **331**, 106-114.
- Geobacillus stearothermophilus* V *ubiE* gene product is involved in the evolution of dimethyl telluride in *Escherichia coli* K-12 cultures amended with potassium tellurate but not potassium tellurite
M. M. Araya, J. W. Swearingen, Jr., M. F. Plishker, C. P. Saavedra, T. G. Chasteen, and C. C. Vasquez
Journal of Biological Inorganic Chemistry, 2004, **9**, 609-615.

Articles (continued):

- Environmental Volatile Organosulfur Compounds--Formation and Degradation of Dimethyl Sulfide, Methanethiol, and Related Materials
R. Bentley and T. G. Chasteen
Chemosphere, 2004, **55**, 291-317.
- Organotellurium Compound Toxicity in a Promyelocytic Cell Line Compared to a Non-Tellurium Containing Organic Analog
B. L. Sailer, N. Liles, S. Dickerson, S. Summers, and T. G. Chasteen
Toxicology in Vitro, 2004, **18**, 475-482.
- Volatile Organic Sulfur Compounds of Environmental Interest: Dimethyl Sulfide and Methanethiol. An Introductory Overview
T. G. Chasteen and R. Bentley
Journal of Chemical Education, 2004, **81**, 1524-1528.
- Determination of Elemental and Precipitated Selenium Production by a Facultative Anaerobe Grown Under Sequential Anaerobic/Aerobic Conditions
S. Hapuarachchi, J. Swearingen, Jr., and T. G. Chasteen
Process Biochemistry, 2004, **39**, 1607-1613.
- Frederick Challenger, 1887-1983: Chemist and Biochemist
T. G. Chasteen and R. Bentley
Applied Organometallic Chemistry, 2003, **17**, 201-211.
- Biomethylation of Selenium and Tellurium: Microorganisms and Plants
T. G. Chasteen and R. Bentley
Chemical Reviews, 2003, **103**, 1-26.
- Cytometric Determination of Novel Organotellurium Compound Toxicity in a Promyelocytic (HL-60) Cell Line
B. L. Sailer, N. Liles, S. Dickerson, and T. G. Chasteen
Archives of Toxicology, 2003, **77**, 30-36.
- Oxidation Numbers in the Study of Metabolism
R. Bentley, J. Franzen, and T. G. Chasteen
Biochemistry and Molecular Biology Education, 2002, **30**, 288-292.
- Of Garlic, Mice, and Gmelin: The Odor of Trimethylarsine
T. G. Chasteen, M. Wiggli, and R. Bentley
Applied Organometallic Chemistry, 2002, **16**, 281-286.
- Microbial Methylation of Metalloids: Arsenic, Antimony and Bismuth
R. Bentley and T. G. Chasteen
Microbiology and Molecular Biology Reviews, 2002, **66**(2), 250-271.
- Arsenical Curiosa and Humanity
R. Bentley and T.G. Chasteen
The Chemical Educator, 2002, **7**(2) 51-60.
- Teaching with Chemical Instrumentation on the Web
T. G. Chasteen
Journal of Chemical Education, 2001, **78**(9), 1144-1148.
- Production of Dimethyl Telluride and Elemental Tellurium by Bacteria Amended with Tellurite or Tellurate
R. S. T. Basnayake, J. H. Bius, O. M. Akpolat, and T. G. Chasteen
Applied Organometallic Chemistry, 2001, **15**(6), 499-510.
- The Fate of Selenate and Selenite Metabolized by *Rhodobacter sphaeroides*
V. Van Fleet-Stalder, T.G. Chasteen, I. J. Pickering, G. N. George, and R.C. Prince
Applied and Environmental Microbiology, 2000, **66**(11), 4849-4853.
- X-ray Absorption Spectroscopy of Selenium-Containing Amino Acids
I. J. Pickering, G. N. George, V. Van Fleet-Stalder, T. G. Chasteen, and R. C. Prince
Journal of Biological and Inorganic Chemistry, 1999, **4**(6), 791-794.

Articles (continued):

- Bacterial Cytotoxicity and Induction of Apoptosis in Promyelocytic (HL-60) Cells by Novel Organotellurium Compounds
B. Sailer, T. Prow, S. Dickerson, J. Watson, N. Liles, S. Patel, V. Van Fleet-Stalder, & T. Chasteen
Environmental Toxicology and Chemistry, 1999, **18**(12), 2926-2933.
- Using Fluorine-Induced Chemiluminescence to Detect Organo-Metalloids in the Headspace of Phototrophic Bacterial Cultures Amended with Selenium and Tellurium
V. Van Fleet-Stalder and T. G. Chasteen
Journal of Photochemistry and Photobiology, 1998, **43**/3, 193–203.
- Effects of the Variation of Growth Conditions on the Production of Methyl Selenides in Cultures of *Rhodobacter Sphaeroides* 2.4.1 Amended With Selenium Oxyanions
V. Van Fleet-Stalder, H. Gürleyük, R. Bachofen, and T. G. Chasteen
Journal Industrial Microbiology and Biotechnology, 1997, **19**, 98-103.
- Confirmation of the Biomethylation of Antimony Compounds
H. Gürleyük, V Fleet-Stalder, and T. G. Chasteen
Applied Organometallic Chemistry, 1997, **11**, 471-483.
- Toxicity of Oxyanions of Selenium and of a Proposed Bioremediation Intermediate, Dimethyl Selenone
R. Yu, J.P. Coffman, V. Van Fleet-Stalder, and T.G. Chasteen
Environmental Toxicology and Chemistry, 1997, **16**(2), 140-145.
- Spreadsheet Approach to the Linear Least Squares Fit
M. L. Carman and T. G. Chasteen
The Chemical Educator, **1**(1); S 1430-4171(96)01012-6 ; March 25, 1996.
- Volatilization of Arsenic Compounds by Mixed Soil Bacteria and Pure Cultures of Methanogenic Bacteria
R. Bachofen, L. Birch, U. Buchs, P. Ferloni, I. Flynn, G. Jud, H. Tahedl, and T. G. Chasteen
In "**Bioremediation of Inorganics**", R. E. Hinchee, J. L. Means and D. R. Burris eds.;
Batelle Press, Columbus, OH, 1995; 103–108.
- Bacterial Bioremediation Of Selenium Oxyanions Using A Dynamic Flow Bioreactor
S. L. McCarty, T. G. Chasteen, V. Stalder, and R. Bachofen
In "**Bioremediation of Inorganics**", R. E. Hinchee, J. L. Means and D. R. Burris eds.;
Batelle Press, Columbus, OH, 1995; 95–102.
- Chromatographic Determination of Phosphine (PH₃) and Hydrogen Sulfide (H₂S) in the Headspace of Anaerobic Bacterial Enrichments Using Flame Photometric Detection
U. Brunner, Th. G. Chasteen, P. Ferloni, and R. Bachofen
Chromatographia, 1995, **40**(7), 399-403.
- A Method of Repeated Sampling of Static Headspace above Anaerobic Bacterial Cultures with Fluorine-Induced Chemiluminescence Detection
V. Stalder, N. Bernard, K. W. Hanselmann, R. Bachofen, and T. G. Chasteen
Analytica Chimica Acta, 1995, **303**, 91-97.
- Amending Cultures of Selenium Resistant Bacteria with Dimethyl Selenone
L. Zhang and T. G. Chasteen
Applied Organometallic Chemistry, 1994, **8**(6), 501-508.
- Confusion Between Dimethyl Selenenyl Sulfide and Dimethyl Selenone Released by Bacteria
T. G. Chasteen
Applied Organometallic Chemistry, 1993, **7**(5), 335-342.
- Phototrophic Bacteria Produce Volatile, Methylated Sulfur and Selenium Compounds
S. L. McCarty, T. G. Chasteen, M. Marshall, R. Fall, and R. Bachofen
Federation of European Microbiology Societies Letters, 1993, **112**, 93-98.
- Solving Equilibria Problems with a Graphing Calculator: A Robust Method, Free of Algebra and Calculus
D. K. Ruch and T. G. Chasteen
Journal of Chemical Education, 1993, **70**(7), A184-185,1993.

Articles (continued):

Fluorine-Induced Chemiluminescence Detection of Phosphine, Alkyl Phosphines, and Monophosphate Esters

T. G. Chasteen, R. Fall, J. W. Birks, H. R. Martin, and R. J. Glinski
Chromatographia, 1991, **31**, 342-346.

Fluorine-Induced Chemiluminescence Detection of Biologically Methylated Tellurium, Selenium, and Sulfur Compounds

T. G. Chasteen, G. M. Silver, J. W. Birks, and R. Fall
Chromatographia, 1990, **30**, 181-185.

Books

Experience the Extraordinary Chemistry of Ordinary Things: *The Laboratory Manual Fourth Edition*

B. C. Richardson and T. G. Chasteen

John Wiley and Sons: New York, 2003, 347 pages with photographs.

Qualitative and Instrumental Analysis of Environmentally Significant Elements

T. G. Chasteen

John Wiley and Sons: New York, 1993, 131 pages.

Chapters

Instrumental Determination of NO_x via Chemiluminescence

Instrumental Determination of Atmospheric Methane;

Electron Capture Detection of Pesticides

Inductively Coupled Plasma Determination of Lead

Ion Chromatography of Environmentally Significant Anions\

Microwave-Assisted Organic Synthesis

Gas Chromatography-Mass Spectrometric Determination of DDE

T. G. Chasteen

Environmental methods of analysis primers in: "Environmental Chemistry"; Fourth Edition; C. Baird and M. Cann. New York: W.H. Freeman; **in press**.

Web-Based Animations in Analytical Chemistry

T. G. Chasteen

Chapter in "Active Learning: Models from the Analytical Science"; ACS Symposium Series; P. Mabrouk, Ed.; American Chemical Society, Washington, DC; 2007.

Web-Based Animations in Analytical Chemistry;

T. G. Chasteen

Chapter in "Active Learning: Models from the Analytical Science"; ACS Symposium Series; P. Mabrouk, Ed.; American Chemical Society, Washington, 2007.

Chalcogens (S, Se, Te) in Microorganisms and Plants

T. G. Chasteen and R. Bentley

Chapter in "Handbook of Chalcogens: New Perspectives in Sulfur, Selenium, and Tellurium"; pp. 671-713; F. Devillanova Ed.; Royal Society of Chemistry, London; 2006.

Chalcogens (S, Se, Te) in Microorganisms and Plants

T. G. Chasteen and R. Bentley

Chapter in "Handbook of Chalcogens: New Perspectives in Sulfur, Selenium, and Tellurium"; F. Devillanova, Ed.; Royal Society of Chemistry, London, 2006.

Volatile Chemical Species of Selenium

T. G. Chasteen

Chapter in "Environmental Chemistry of Selenium", W.T. Frankenberger and R.A. Engberg, Eds.; Marcel Dekker, New York, 1998; 589-612.

Funded External Grants

Fondo Nacional de Desarrollo Cientifico y Tecnologico (FONDECYT) Chile; \$3800; 2007; co-PI
FONDECYT Chile; \$3000; 2004; co-PI
Texas Army National Guard; \$137,060; 2004; co-PI
U.S. Corps of Engineers Research Laboratories; \$24,061; 2000; co-PI
Research Corporation Grant \$38,000; 1996
Hofmann La Roche Corporation \$12,000; 1995
LTV/Loral Corporation \$50,000; 1994-1995; co-PI
National Swiss Foundation (funding for post doc) \$47,000; 1993-1995
Research Corporation Grant \$15,000; 1993

Peer-Reviewed Scientific Presentations

More than 60 **presentations** at local/regional (35), U.S. national (13), and international (17) scientific meetings in the past 15 years.

Work Experience

July 1979 to January 15, 1983

Southern California Chemical Company

Staff chemist in charge of quality control at both Texas and Illinois facilities producing etchants for the semiconductor industry
Promoted to management position to hire, train and supervise plant chemists at Texas and Illinois facilities
Promoted to research and development chemist

Patents

"Chemiluminescent Light Source Using Visible Light for Biotherapy"; M.J. Tolkoff, P. Levin, R. Arcangeli, A. Levine, and T.G. Chasteen; United States Patent Office: USP 7,255,691; USPO Publication Date August 14, 2007.

"Chemiluminescent Light Source Using Visible Light for Biotherapy"; M.J. Tolkoff, A. Levine, P. Levine, R. Arcangeli, and T.G. Chasteen; European Patent Office: US2004010299; EPO Publication January 15, 2004.