CURRICULUM VITAE
ELIZABETH A. STEMMLER

Bowdoin College
Department of Chemistry
6600 College Station
Brunswick, ME 04011
(207) 725-3633; (207) 725-3017 (Fax)
estemmle@bowdoin.edu

EDUCATION

Ph.D. 1986	Indiana University, Bloomington, Indiana. Major: Analytical Chemistry, Minor: Organic Chemistry
	Thesis: "Electron Capture Negative Ion Mass Spectrometry: A Technique for Environmental Contaminant Identification," Professor Ronald A. Hites, advisor.
B.S. 1982	Bates College, Lewiston, Maine Major: Chemistry

PROFESSIONAL EXPERIENCE

2006-present	Professor of Chemistry, Bowdoin College.
2001- 2003	Chair, Department of Chemistry, Bowdoin College.
1995-2006	Associate Professor of Chemistry, Bowdoin College.
1992-1993	Visiting Research Fellow, Oak Ridge National Laboratory, Oak Ridge, Tennessee.
1988-1995	Assistant Professor of Chemistry, Bowdoin College.
1987-1988	Postdoctoral Fellow, Oak Ridge National Laboratory, Oak Ridge, Tennessee.
1983-1986	Research Assistant, Indiana University.
1982-1983	Associate Instructor, Indiana University.

PUBLICATIONS (* indicates a Bowdoin undergraduate)

C. Scriban, B.S. Amagai*, **E. A. Stemmler**, R. L. Christensen, "Synthesis and Optical Spectroscopy of Oligo(1,6-Heptadiynes) with a Single Structures and Terminal Methylene Groups Prepared Using Adamantylimido-based: Molybdenum Wittig and Metathesis Chemistry" , in press.

E. A. Stemmler, E. A. Bruns*, C. R. Cashman*, P. S. Dickinson, and A. E. Christie, "Molecular and mass spectral identification of the broadly conserved decapod crustacean neuropeptide pQIRYHQCYFNPISCF: The first PISCF-allatostatin (Manduca sexta- or C-type allatostatin) from a non-insect" , in press.

P. S. Dickinson, T. Wiwatpanit*, E. R. Gabranski*, R. J. Ackerman*

J. Lichter, S. Billings, A. C. Finzi, D. Gaindh*, R. B. Jackson, R. Ryals, **E. A. Stemmler**, S. Ziegler, W. H. Schlesinger, "Forest soil carbon dynamics under elevated CO_2: Soil carbon sequestration in a pine forest after nine years of atmospheric CO_2 enrichment", , **14**, 2910-2922 (2008).

P. S. Dickinson, **E. A. Stemmler**, E. E. Barton*, C. R. Cashman*, N. P. Gardner*, S. Rus*, H. R. Brennan*, T. S. McClintock, A. E. Christie "Molecular, mass spectral, and physiological analyses

vertebrate neuropeptide Y (N

R. L. Hettich and **E.A. Stemmler**, "Investigation of Oligonucleotide Fragmentation with Matrix-assisted Laser Desorption / Ionization Fourier-transform Mass Spectrometry and Sustained Off-resonance Irradiation", , **10**, 321-327 (1996).

E. A. Stemmler, G. B. Hurst, M. V. Buchanan, and R. L. Hettich, "The Analysis of Modified Oligonucleotides By Matrix-Assisted Laser Desorption / Ionization Fourier Transform Mass Spectrometry", , **67**, 2924-2930 (1995).

E. A. Stemmler, "Oxygen-18 Incorporation in NICI Mass Spectrometry: The Role of O_2, H_2O, and Rhenium Oxides in Surface-Assisted Oxidation Reactions", , **142**, 177-193 (1995).

E. A. Stemmler, J.L. Diener*, and J. A. Swift*, "Gas-Phase Reactions of $O_2^{-\cdot}$ with Alkyl and Aryl Esters of Benzenedicarboxylic Acids", , **5**, 990-1000 (1994).

E. A. Stemmler, M. V. Buchanan, G. B. Hurst, R. L. Hettich, "The Structural Characterization of Polycyclic Aromatic Hydrocarbon Dihydrodiol Epoxide DNA Adducts Using Matrix-Assisted Laser Desorption / Ionization Fourier Transform Mass Spectrometry", , **66**, 1274-1285 (1994).

R. Hettich, G. Hurst, M. Buchanan, and **E. Stemmler**, "Characterization of Modified Nucleic Acid Constituents by Matrix-Assisted Laser Desorption Mass Spectrometry", in ; Vol 6, Cavaliere, E.; Rogan, E., Ed.; Gordon and Breach Science Publishers, 1994, 95-102.

E. A. Stemmler, M. V. Buchanan, G. B. Hurst, R. L. Hettich, "The Structural Characterization of Polycyclic Aromatic Hydrocarbon Dihydrodiol Epoxide DNA Adducts Using Matrix-Assisted Laser Desorption / Ionization Fourier Transform Mass Spectrometry", , **66**, 1274-1285 (1994).

E. A. Stemmler, R. L. Hettich, G.B. Hurst, M. V. Buchanan, "Matrix-assisted Laser Desorption / Ionization Fourier Transform Mass Spectrometry of Oligodeoxyribonucleotides", , **7**, 828-836 (1993).

G. B. Hurst, R. L. Hettich, M. V. Buchanan, and **E. A. Stemmler**, "Matrix-assisted Laser Desorption / Ionization for the Structural Characterization of Modified Oligonucleotides", in ; J. C. Miller, D. B. Geohegan, Eds; AIP Conference Proceedings 288; American Institute of Physics Press, NY, 1994; pp 519-525.

E.A. Stemmler, "$[M+11]^{+\cdot}$ and $[M+11]^{-\cdot}$ Ions in the N_2-Positive and Negative Ion Chemical Ionization Mass Spectra of Aromatic Amines", , **28**, 945-952 (1993).

E. A. Stemmler and M.V. Buchanan, "Negative and Positive Chemical Ionization Mass Spectra of Aromatic Amines: Surface-Assisted Reactions Involving Oxygen", , **28**, 953-962 (1993).

B. Arbogast, W. L. Budde, M. Deinzer, R. C. Dougherty, J. Eichelberger, R. D. Foltz, C.C. Grimm, R. A. Hites, C. Sakashita, and **E. A. Stemmler**, "Interlaboratory Comparison of Limits of

Detection in Negative Chemical Ionization Mass Spectrometry", , **25**, 191-196 (1990).

E. A. Stemmler and M. V. Buchanan, "Negative Ions Generated by Reactions with Oxygen in the Chemical Ionization Source: II. The Use of Wall-Catalyzed Oxidation Reactions for Differentiation of Polycyclic Aromatic Hydrocarbons and Their Methyl Derivatives", , **24**, 705-717 (1989).

E. A. Stemmler and M. V. Buchanan, "Negative Ions Generated by Reactions With Oxygen in the Chemical Ionization Source: I. Characterization of Gas-Phase and Wall-Catalyzed Reactions of Fluorene, Anthracene, and Fluoranthene", , **24**, 94-104 (1989).

E. A. Stemmler and R. A. Hites, "Electron Capture Negative Ion Mass Spectra of Environmental Contaminants and Related Compounds", VCH Publishers, New York, 1988.

E. A. Stemmler and M. V. Buchanan, "Differentiation of Methyl Substituted Fluorenes, Anthracenes, and Benz[a]anthracenes Using Surface-Catalyzed Oxidation Reactions and Negative Ion CI Mass Spectrometry", , **2**, 184-188

desorption/ionization-Fourier transform mass spectrometry" Maine Neurogenetics Consortium 2007 Fall Conference on Mount Desert Island Bar Harbor, Maine, Mount Desert Island Biological Laboratory, Salisbury Cove, Maine, 14-15 September (2007).

C. R. Cashman*

and its Precursor-Related Peptide (CPRP) from the Sinus Gland of the Crab ", 35th Annual Meeting of the Society for Neuroscience, Washington, DC, Nov. 12-16, 2005.

E. A. Stemmler "Lobsters, Neuropeptides, and Mass Spectrometry: The Application of MALDI-FTMS to the Analysis of Crustacean Nervous System and Neuroendocrine Tissues", Hamilton College, November 11, 2005.

N.P. Gardner

“Theoretical Study of the [M-2H]$^{-\cdot}$ Radical Anion Products of Methyl Benzoate”, F. Abu-Hasanayn

“Experimental Conditions for the Matrix-Assisted Laser Desorption FTMS Analysis of Modified Oligonucleotides.”, E.A. Stemmler, R.L.Hettich, G.B. Hurst, and M.V. Buchanan, 41st Annual Conference on Mass Spectrometry and Allied Topics, San Francisco, California, 1993.

“NICI Mass Spectra of Dicarboxylic Acid Esters”, E.A. Stemmler and J.L.Diener*, 40th Annual Conference on Mass Spectrometry and Allied Topics, Washington, D.C. , 1992 .

"Fragment Ions Produced By Ion Source Reactions in the Methane Negative Ion Chemical Ionization Mass Spectra of Phthalates", E.A. Stemmler and J. A. Swift*, 39th Annual Conference on Mass Spectrometry and Allied Topics, Nashville, Tennessee, 1991.

“Exotic Chemistry in Highly Ionized Gases:

"Oxidation of Polycyclic Aromatic Hydrocarbons and Their Methyl Derivatives by Reactions Occurring in the Chemical Ionization Source", E. A. Stemmler and M. V. Buchanan, 30th ORNL-DOE Energy Technology Conference, Knoxville, Tennessee, 1987.

"The Methane Enhanced Negative Ion Mass Spectra of Diphenyl Ethane Derivatives Such as DDT", E. A. Stemmler and R. A. Hites, 34th Annual Conference on Mass Spectrometry and Allied Topics, Cincinnati, Ohio, 1986.

"The Gas Enhanced Negative Ion Mass Spectra of Nitroaniline Herbicides", E. A. Stemmler and R. A. Hites, 33rd Annual Conference on Mass Spectrometry and Allied Topics, San Diego, California, 1985.

"The Gas Enhanced Negative Ion Mass Spectra of Nitroaniline Herbicides", E. A. Stemmler and R. A. Hites, American Chemical Society 19th Great Lakes Regional Meeting, Purdue University, West Lafayette, Indiana, 1985.

"Better NCI Mass Spectra of Hexachlorocyclopentadiene Based Pesticides", E. A. Stemmler and R. A. Hites, 32nd Annual Conference on Mass Spectrometry and Allied Topics, San Antonio, Texas, 1984.

"Analysis of Great Lakes Fish by Negative Ion Mass Spectrometry", E. A. Stemmler and R. A. Hites, 7th Midwest Water Chemistry Workshop,

"Capillary electrophoresis: Application to the separation of neuropeptides", Tracy Tat, '09, Independent study.

Summer 2008

"Investigating the roles of neuropeptides on gut contractions in the American lobster and in the red swamp crayfish , Elizabeth Barton, '09 (with Patsy Dickinson).

"The Determination of the Neuropeptides Present in Crustacean Midgut and Eyestalk Tissues Using Matrix Assisted Laser Desorption / Ionization Fourier Transform Mass Spectrometry", Anna Conterato, '07 Honors (with P. Dickinson)

"Ion Cooling Methods for Efficient In-Cell Accumulation MALDI-FTMS", Mathilde Sullivan, '07 Independent Study.

Summer 2006

"MALDI-FTMS for the Comparative Analysis of Neuropeptides in Crustaceans: The Development of Chemical and Enzymatic Reactions for Peptides Identification", Emily Bruns (with P. Dickinson)

"The Structural Characterizaiton of Polyenes by Matrix Assisted Laser Desorption / Ionization Fourier-Transform Mass Spectrometry (MALDI-FTMS) and MS / MS Techniques" Kevin Hoagland-Hanson

"Matrix Assisted Laser Desorption / Ionization Fourier Transform Mass Spectrometry for the Identification of Orcokinin Neuropeptides", Chris Cashman (with P. Dickinson)

"Characterization of Soil Organic Material using Fractionation, Pyrolysis, and Chemical Derivatization" Lucas Amundson

"The Development of Derivatization Methods for the Identification of Disulfide Bonds in Peptides with Detection by Matrix Assisted Laser Desorption / Ionization Fourier Transform Mass Spectrometry", Mathilde Sullivan

"Determination of Orcokinin Gene Sequences in Crustaceans through Molecular Cloning Techniques" Anna Conterato (with P. Dickinson)

Academic Year 2005-2006

"MALDI-FTMS for the Comparative Analysis of Neuropeptides in Crustaceans: The Development of Chemical and Enzymatic Reactions for Peptides Identification", Emily Bruns (with P. Dickinson)

"The Development of Sample Preparation Techniques for the Analysis of Long Polyenes by Matrix Assisted Laser Desorption / Ionization Fourier-Transform Mass Spectrometry (MALDI-FTMS)" Lucas Amundson (with R.(g FraMatrix Au8T90S / atrix x xM l)TjT*.0009 Tc.098 539.9999 745.6801 Tm0

"The Development of Sample Preparation Techni

"The Development of Chemical and Enzymatic Reactions for the Identification of Crustacean Neuropeptides Using Matrix Assisted Laser Desorption / Ionization Fourier Transform Mass Spectrometry", Emily Bruns (with P. Dickinson)

"The Development of a Microscale Tissue Extraction and Delipidation Procedure for the Analysis of Crustacean Neuronal Tissues using Matrix Assisted Laser Desorption / Ionization-Fourier Transform Mass Spectrometry", Noah P. Gardner, INBRE Fellow (with P. Dickinson)

"The Development of Sample Preparation Techniques for the Analysis of Long Polyenes by Matrix Assisted Laser Desorption / Ionization Fourier-Transform Mass Spectrometry (MALDI-FTMS)" Lucas Amundson (with R. Christensen)

Academic Year 2004-2005

"The Analysis of Crustacean Nervous System Tissue by MALDI-FTMS: A Focus on the Identification of New Orcokinin Family Neuropeptides in , Heather Provencher, Honors project in Biochemistry. (with P. Dickinson)

"The Fragmentation of N-Terminal Derivatives of Polyalanine Peptides: A Sustained Off Resonance Irradiation Fourier Transform Mass Spectrometry Study", Anthony Costa, Honors project in Chemistry. (with P. Baures)

"The Development of a Microscale Tissue Extraction and Delipidation Procedure for the Analysis of Crustacean Neuronal Tissues using Matrix Assisted Laser Desorption / Ionization-Fourier Transform Mass Spectrometry", Noah P. Gardner, Honors project in Chemistry. (with P. Dickinson)

Summer 2004

Characterization and Isolation of Conjugated Polyenes by Use of MALDI-FTMS and HPLC-UV-VIS, Lucas Amunson, Summer 2004. (with R. Christensen)

The Analysis of Crustacean Nervous System Tissue by MALDI-FTMS: A Focus on the Identification of New Orcokinin Family Neuropeptides in , Heather Provencher, Summer 2004. (with P. Dickinson)

"The Fragmentation of N-Terminal Derivatives of Polyalanine Peptides: A Sustained Off Resonance Irradiation Fourier Transform Mass Spectrometry Study", Anthony Costa, Summer 2004.

"The Development of a Microscale Tissue Extraction and Delipidation Procedure for the Analysis of Crustacean Neuronal Tissues using Matrix Assisted Laser Desorption / Ionization-Fourier Transform Mass Spectrometry", Noah P. Gardner, Summer 2004. (with P. Dickinson)

"MALDI-FTMS for the Direct Analysis of Phospolipids in Soils", Christine Bevacqua, part of the Summer of 2004.

Academic Year 2003-2004

“The Synthesis and Gas-Phase Reactions of 18-O

"Quantification of 2',3'-Dideoxycytidine in Biological Samples Using Electron Capture Negative Ion Mass Spectrometry", M. A. Mathers, 1991.

"Electron-Capture Negative Ionization Mass Spectrometry of Dialkyl Phthalates", J. A. Swift, 1991.

"Electron-Capture Negative Ionization Mass Spectrometry of Derivatized Phenylthiohydantoins", D. Levine, Spring, 1991.

"A Post-Column Oxidative Reactor for the Detection of Polycyclic Aromatic Hydrocarbons", T. Gosselin, 1990.

"The Synthesis of Derivatized Phenylthiohydantoins", T. Gosselin, Summer, 1989.

AWARDS

American Society for Mass Spectrometry Travel Stipend, 1988
ACS Analytical Chemistry Division Undergraduate Award, 1982
NSF Research Fellowship, Summer 1981

COURSES TAUGHT:

Advanced General Chemistry (Chem 159)
Research Methods in Chemistry (Chem 119)
Quantitative Analysis (Chem 210)
Instrumental Analysis (Chem 310)
Chromatography and Mass Spectrometry (Chem 331)
Introductory General Chemistry (Chem 101)
Introductory Chemistry (Chem 102)
Advanced General Chemistry (Chem 109)

SERVICE TO BOWDOIN:

Curriculum Implementation Committee (2008-2009)
Benefits Committee (2007-2008)
Faculty Resources Committee (2005-2007; Chair 2007)
Committee on Appointments, Promotions and Tenure (2003-2004)
Oversight Committee on the Status of Women (co-Chair, 2002-2003)
Benefits Committee (2001-2002)
Committee on Appointments, Promotions and Tenure (2000-2001)
Bowdoin College Children's Center Building Committee (2000-2002)
Fulbright Committee (1996-1998, 2000)
Curriculum and Education Policy Committee (1997-1999)
Human and Animal Research Committee (1993-1997, Chair: 1996-1997)
Clare Boothe Luce Scholarship Committee, Chair (1995-1997)
Committee on Teaching (1994-1995)
Athletics Committee (1990-1992)
Library Committee (1989-1992)

Board for Sexual Harrassment (1990-1992)
Faculty Selection Committee for the Dean for Academic Affairs (1991)
Faculty Interview Committee for Biology (1998), Economics (1994), Biology (1992), Education and Spanish (1991), Economics (1990)
Faculty Advisor to the Kamerling Society (1989-1992)
Chemistry Department Seminar Program Organizer (1989-1992)

PROFESSIONAL ACTIVITIES

Research Awards Committee, American Society for Mass Spectrometry, 2004.

Symposium Organizer: "Charge Permutation/Transfer", 49th ASMS Conference on Mass Spectrometry and Allied Topics, Chicago, IL, May 28-June 1, 2001.

Education Committee, American Society for Mass Spectrometry, 1989-1991, 1991-1993.

Symposium Organizer: "Environmental Analysis: New Solutions to Old Problems", 40th ASMS Conference on Mass Spectrometry and Allied Topics, Washington, DC, May 31-June 5, 1992.

Workshop Organizer: A Resource Briefing on Mass Spectrometry for Washington Area High School Teachers, Washington, DC, May 30, 1992, with S. Markey and M. Ross.

External Honors Examiner, Bates College, 1991.

Invited Participant: NATO Advanced Study Institute on Mass Spectrometry in the Molecular Sciences, Cetraro, Italy, June 1990.

FUNDING

Merck/AAAS Undergraduate Science Research Program Award, awarded to E.A. Stemmler, P.S. Dickinson, D. J. O'Leary, J. Lichter, D. Vasudevan, P. Woodruff, $60,000, 2009-2012.

"A Request for Equipment to Support a New INS Course Investigations: The Chemistry of Forensics Science"

"Spectroscopic Instrumentation in Introductory Chemistry and Biology Courses at Bowdoin College", Ocean Optics Corporation, $4,000.

"Thermochemical Conversion of Woody Biomass to Fuels and Chemicals" H. Pendse (PI). DOE-EPSCoR Research Implementation Award, 9/1/07-8/31/10. I am a co-PI; $31,525 to Bowdoin.

"The Application of High Performance Liquid Chromatography to the Determination of Neuropeptides in Crustaceans" Faculty Research Fund, $1,644, 2005.

Merck/AAAS Undergraduate Science Research Program Award, awarded to E.A. Stemmler, P.S. Dickinson, J. Lichter, D. Vasudevan, B. Kohorn, $60,000, 2005-2007.

E. A. Stemmler, p.

"Catalytic Oxidation Reactions for the Detection and Differentiation of Polycyclic Aromatic Hydrocarbons", American Chemical Society - Petroleum Research Fund, 8/1/89 - 8/31/91. $18,000 direct costs.

Support for Scientific Instrumentation, Arthur Vining Davis Foundations, w/ P. Dickinson and A. Johnson, 1990, $50,000.

"Gas Chromatography/Mass Spectrometry in the Undergraduate Chemistry Curriculum",