

CURRICULUM VITAE
ELIZABETH A. STEMMLER

Bowdoin College
Department of Chemistry
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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)

E. A. Stemmler, E.A. Bruns*, P. S. Dickinson and A.E. Christie, "Identification, physiological actions, and distribution of TPSGFLGMRamide: a novel tachykinin-related peptide from the midgut and stomatogastric nervous system of *Cancer* crabs", *Journal of Neurochemistry*, in press.

A. E. Christie, K. K. Kutz-Naber, **E. A. Stemmler**, A. Klein, D. I. Messinger, C. C. Goiney, Y. A. Hsu, L. Li, P. S. Dickinson, "Midgut epithelial endocrine cells are a rich source of the neuropeptides APSGFLGMRamide (*Cancer borealis* tachykinin-related peptide Ia) and GYRPPFNGSIFamide (Gly¹-SIFamide) in the crabs *Cancer borealis*, *Cancer magister* and *Cancer productus*", *Journal of Experimental Biology*, in press.

E. A. Stemmler, A. B. Costa*, J. T. Cook*, M. E. Guiney*, N. P. Gardner*, A. E. McBride, P. S. Dickinson, "3-Hydroxypicolinic Acid: A "Cool" Matrix for Minimizing the Metastable Decay of Peptides and Small Protein for Analysis by Vacuum UV Matrix-Assisted Laser Desorption/Ionization Fourier Transform Mass Spectrometry", *Analytical Chemistry*, submitted.

E.A. Stemmler, N.P. Gardner* M. E. Guiney*, E.A. Bruns*, P.S. Dickinson, "The Detection of Red Pigment Concentrating Hormone (RPCH) in Crustacean Eystalk Tissues using Matrix Assisted Laser Desorption/Ionization-Fourier Transform Mass Spectrometry: $[M+Na]^+$ Ion Formation in Dried Droplet Tissue Preparations", *Journal of Mass Spectrometry*, **41**, 295-311 (2006).

A. E. Christie, **E.A. Stemmler**, B. Peguero*, D.I. Messinger, H.L. Provencher*, P. Scheerlinck*, Y. A. Hsu, M. E. Guiney*, H.O. de la Iglesia, P. S. Dickinson, "Identification, Physiological Actions and Distribution of VYRKPPFNGSIFamide (Val¹-SIFamide) in the Stomatogastric Nervous System of the American Lobster *Homarus americanus*", *Journal of Comparative Neurology*, **496**, 406-421 (2006).

A. E. McBride, J. T. Cook*, **E. A. Stemmler**, K. L. Rutledge, K. A. McGrath*, J. A. Rubens*, "Arginine methylation of yeast mRNA-binding protein Npl3 directly affects its function, nuclear export and intranuclear protein interactions", *Journal of Biological Chemistry*, **280**, 30888-30898 (2005).

E.A. Stemmler, H.L. Provencher*, M. E. Guiney*, N.P. Gardner*, P.S. Dickinson, "Matrix Assisted Laser Desorption/Ionization-Fourier Transform Mass Spectrometry for the Identification of Orcokinin Neuropeptides in Crustaceans using Metastable Decay and Sustained Off-Resonance Irradiation", *Analytical Chemistry*, **77**, 3594-3606 (2005).

J. Lichter, S. H. Barron*, C. E. Bevacqua*, A. C. Finzi, K. F. Irving*, **E. A. Stemmler**, and W. H. Schlesinger, "Soil carbon sequestration and turnover in a pine forest after six years of atmospheric CO₂ enrichment", *Ecology*, **86**, 1835-1847 (2005).

E.A. Stemmler. Book review: "Analytical Mass Spectrometry. Strategies for Environmental and Related Applications" by William L. Budde. *J. Am. Chem. Soc.* **124**, 12627-12628 (2002).

E.A. Stemmler and C. Segovis* "Formation of $\bullet\text{CH}_2\text{OC}(\text{O})\text{CR}_2$ Distonic Radical Anions by the Reaction of O^\cdot with Dimethyl Glutarates", *Journal of Mass Spectrometry*, **36**, 685-688 (2001).

E.A. Stemmler, E. Yoshida*, J. Pacheco*, J. Brunton*, E. Woodbury*, and T. Solouki. "The Reactions of O^\cdot with Methyl Benzoate: An NICI and FT-ICR Study", *Journal of the American Society of Mass Spectrometry*. **12**, 694-706 (2001).

E.A. Stemmler, "Mass Spectrometry", in *Microscale Organic Laboratory*, 4th ed.; D.W. Mayo, R.M. Pike, P.K. Trumper, John Wiley&Sons, New York, 1999; pp 600-617.

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", *Rapid Communications in Mass Spectrometry*, **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", *Analytical Chemistry*, **67**, 2924-2930 (1995).

E. A. Stemmler, "Oxygen-18 Incorporation in NICI Mass Spectrometry: The Role of O₂, H₂O, and Rhenium Oxides in Surface-Assisted Oxidation Reactions", *International Journal of Mass Spectrometry and Ion Processes*, **142**, 177-193 (1995).

E. A. Stemmler, J.L. Diener*, and J. A. Swift*, "Gas-Phase Reactions of O₂⁻ with Alkyl and Aryl Esters of Benzenedicarboxylic Acids", *Journal of the American Society of Mass Spectrometry*, **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", *Analytical Chemistry*, **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 *Polycyclic Aromatic Compounds; 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", *Analytical Chemistry*, **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", *Rapid Communications in Mass Spectrometry*, **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 *Laser Ablation: Mechanisms and Applications - II*; 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]⁺ and [M+11]⁻ Ions in the N₂-Positive and Negative Ion Chemical Ionization Mass Spectra of Aromatic Amines", *Organic Mass Spectrometry*, **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", *Organic Mass Spectrometry*, **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", *Organic 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", *Organic Mass Spectrometry*, **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", *Organic Mass Spectrometry*, **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", *Rapid Communications in Mass Spectrometry*, **2**, 184-188 (1988).

E. A. Stemmler and R. A. Hites, "The Fragmentation of Negative Ions Generated by Electron Capture Negative Ion Mass Spectrometry: A Review with New Data", *Biomedical and Environmental Mass Spectrometry*, **17**, 311-328 (1988).

E. A. Stemmler and R. A. Hites, "A Systematic Study of Instrumental Parameters Affecting Electron Capture Negative Ion Mass Spectra", *Biomedical and Environmental Mass Spectrometry*, **15**, 659-667 (1988).

E. A. Stemmler and R. A. Hites, "The Electron Capture Negative Ion Mass Spectra of Halogenated Diphenyl Ethane Derivatives", *Analytical Chemistry*, **60**, 787-792 (1988).

E. A. Stemmler, B. Arbogast, W. L. Budde, M. L. Deinzer, R. C. Dougherty, J. W. Eichelberger, R. L. Foltz, C. C. Grimm, E. P. Grimsrud, C. Sakashita, L. J. Sears, and R. A. Hites, "An Interlaboratory Comparison of Methane Electron Capture Negative Ion Mass Spectra", *Analytical Chemistry*, **60**, 781-787 (1988).

E. A. Stemmler and R. A. Hites, "The Electron Capture Negative Ion Mass Spectra of 2,6-Dinitroaniline and 2,4-Dinitrophenol Herbicides and Related Nitrobenzene Derivatives", *Biomedical and Environmental Mass Spectrometry*, **14**, 417-434 (1987).

E. A. Stemmler and R. A. Hites, "Methane Enhanced Negative Ion Mass Spectra of Hexachlorocyclopentadiene Derivatives", *Analytical Chemistry*, **57**, 684-692 (1985). (Reprinted in *Applications of New Mass Spectrometry Techniques in Pesticide Chemistry*, J. D. Rosen, Ed.; John Wiley and Sons, N.Y. 1987, 42-59.)

R. Jaffe, E. A. Stemmler, B. D. Eitzer, and R. A. Hites, "Anthropogenic, Polyhalogenated, Organic Compounds in Sedentary Fish From Lake Huron and Lake Superior Tributaries and Embayments", *Journal of Great Lakes Research*, **11**, 156-162 (1985).

PRESENTATIONS (* indicates a Bowdoin undergraduate; presenter is underlined)

C. R. Cashman, E.A. Stemmler, N.A. Horvath, S. Rus, C.C. Goiney, D.I. Messinger, Y.A. Hsu, H. R. Brennan, A. E. Christie, P.S. Dickinson, "Diversity of orcokinin family peptides among the decapod crustaceans: sequences and distributions across infraorders", 36th Annual Meeting of the Society for Neuroscience, Atlanta, Ga, Oct. 14, 2006.

D. I. Messinger, E.A. Bruns, C.C. Goiney, C.R. Easton, Y.A. Hsu, H.M. Day-Bazhaw, E.E. Savage, E.A. Stemmler, P.S. Dickinson, A.E. Christie, "Identification and distribution of pEGFYSQRYamide: A crab neuropeptides Y (NPY)-like peptide", 36th Annual Meeting of the Society for Neuroscience, Atlanta, Ga, Oct. 14, 2006.

C. C. Goiney, H. R. Brennan, C. Cashman, B. Peguero*, W. Rabacal*, D.I. Messinger, C.R. Easton, Y.A. Hsu, C. M. Smith, D. W. Towle, E.A. Stemmler, P.S. Dickinson, A.E. Christie, "VYRKPPFNGSIFamide is a genus (*Homarus*)-specific isoform within the SIFamide peptide family", 36th Annual Meeting of the Society for Neuroscience, Atlanta, Ga, Oct. 14, 2006.

B. Peguero*, E.A. Bruns*, W. Rabacal*, D.I. Messinger, A.E. Christie, P.S. Dickinson, E.A. Stemmler, "Identification of a novel tachykinin-related peptide from the midgut and stomatogastric nervous system of Cancer crabs", 36th Annual Meeting of the Society for Neuroscience, Atlanta, Ga, Oct. 14, 2006.

C. R. Cashman*, Y. A. Hsu, D. I. Messinger, P. S. Dickinson, A. E. Christie, E. A. Stemmler, "Application of MALDI-FTMS to Determine Variations in Peptide Isoforms Between Individuals using Single Tissues or Organs from Decapod Crustaceans" 54th ASMS Conference on Mass Spectrometry, Seattle, Washington, May 29-June 3, 2006.

E. A. Bruns*, C. R. Cashman*, L. M. Amundson*, N. P. Gardner*, P. S. Dickinson, E. A. Stemmler, "Methyl Esterification and Acetylation Reactions to Improve Detection and SORI-CID Efficiency for the Analysis of Orcokinin Family Neuropeptides using MALDI-FTMS" 54th ASMS Conference on Mass Spectrometry, Seattle, Washington, May 29-June 3, 2006.

E. A. Stemmler, "MALDI-FTMS with In-Cell Accumulation Techniques: Optimized Conditions for Calibration and Ion Trapping" 54th ASMS Conference on Mass Spectrometry, Seattle, Washington, May 29-June 3, 2006.

B. Peguero*, P. H. Scheerlinck*, E. A. Stemmler, H. L. Provencher*, M. E. Guiney*, D. I. Messinger, P.Y. Soon, Y. A. Hsu, H. O. de la Iglesia, M. Coito, A. E. Christie, and P. S. Dickinson. "The Peptide VYRKPPFNGSIFamide (Val¹-SIFamide) Activates Multiple Patterns in the Lobster Nervous System" 35th Annual Meeting of the Society for Neuroscience, Washington, DC, Nov. 12-16, 2005.

A. E. Christie, A. Klein, M. Coito, E. A. Stemmler, D. I. Messinger, K. K. Kutz, Y. A. Hsu, M. Pott*, E. E. Savage, L. Li, P. S. Dickinson, "Midgut Endocrine Cells Are A Rich Source Of Neuropeptides In Crabs From The Genus *Cancer*", 35th Annual Meeting of the Society for Neuroscience, Washington, DC, Nov. 12-16, 2005.

P.S. Dickinson; D.I.Messinger; J.J.Schmidt; Y.A.Hsu; W.Rabacal*; T.N.Ho; M.Pott*; B.Peguero*; E.A.Stemmler; L.Li; A.E.Christie "SIF-Amides In Stomatogastric Nervous System And Neuroendocrine Organs Of Decapod Crustaceans", 35th Annual Meeting of the Society for Neuroscience, Washington, DC, Nov. 12-16, 2005.

Y. A. Hsu, D.I. Messinger, E.A. Stemmler, P.S. Dickinson, A.E. Christie, H.O. de la Iglesia, "Molecular Characterization and Putative Circadian Cycling of β -Pigment Dispersing Hormone in the Sinus Gland of the Crab *Cancer Productus*" 35th Annual Meeting of the Society for Neuroscience, Washington, DC, Nov. 12-16, 2005.

H.O. de la Iglesia, Y.A. Hsu, E.A. Stemmler, D.I. Messinger, J.R. Weller, P.S. Dickinson, A.E. Christie, "Molecular Cloning of cDNAs Encoding Crustacean Hyperglycemic Hormone (CHH) and its Precursor-Related Peptide (CPRP) from the Sinus Gland of the Crab *Cancer Productus*", 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*, E.A. Bruns*, P.S. Dickinson, E.A. Stemmler, "The Development of a Microscale Tissue Extraction and Delipidation Procedure for the Analysis of Crustacean Neuronal System Tissues Using Matrix Assisted Laser Desorption/Ionization Fourier-Transform Mass Spectrometry", American Chemical Society Northeast Regional Meeting, Sacred Heart University, Fairfield, CT, July 14-17, 2005.

L.M. Amundson*, C. Pelton*, R.L. Christensen, R.D. Broene, E.A. Stemmler, "The Development of Sample Preparation Techniques for the Analysis of Long Polyenes by Matrix Assisted Laser Desorption/Ionization Fourier-Transform Mass Spectrometry (MALDI-FTMS)", American Chemical Society Northeast Regional Meeting, Sacred Heart University, Fairfield, CT, July 14-17, 2005.

C.R. Cashman, H.L. Provencher, P.S. Dickinson, E.A. Stemmler, "The Application of Matrix Assisted Laser Desorption/Ionization Fourier-Transform Mass Spectrometry to the Comparative Analysis of Crustacean Neuronal Tissues", American Chemical Society Northeast Regional Meeting, Sacred Heart University, Fairfield, CT, July 14-17, 2005.

E.A. Stemmler, H.L. Provencher*, M.E. Guiney*, N.P. Gardner*, P.S. Dickinson, "Strategies for the Identification of Orcokinin Neuropeptides in Crustaceans Using Asp-Xxx Cleavages and Matrix Assisted Laser Desorption/Ionization Fourier-Transform Mass Spectrometry", 53rd Annual Conference on Mass Spectrometry and Allied Topics, San Antonio, TX, 2005.

E.A. Stemmler, A.B. Costa*, C.K. Prudenté, M.C. Hausman, "The Characterization of an Organomercury Hapten and Bioconjugate Using MALDI-FTMS" 52nd Annual Conference on Mass Spectrometry and Allied Topics, Nashville, TN, 2004.

E.A. Stemmler, M. Guiney*, P. Dickinson, "A Little Mass Spectrometry with your Lobster? The Detection and Identification of Neuropeptides in Crustaceans by MALDI-FTMS", Colby College, Department of Chemistry, October 3, 2003.

E.A. Stemmler, M. Guiney*, J. Cook*, "3-Hydroxypicolinic Acid: A "Cool" Matrix for the Analysis of Peptide and Small Proteins by External Source MALDI-FTMS" 51st Annual Conference on Mass Spectrometry and Allied Topics, Montreal, Quebec, Canada, 2003.

E.A. Stemmler, R.L. Christensen, A. Faksh*, C.M. Hansen*, J.A. Meyers*, "The Analysis of Soluble Polyenes by MALDI-FTMS", 50th Annual Conference on Mass Spectrometry and Allied Topics, Orlando FL, 2002.

J. Licher, J. Hardison*, E. A. Stemmler, J.Reblin, "The Legacy of Intense Deer Browsing on Plant and Microbial Community Composition and Diversity", Ecological Society of American, Tuscon AZ, August 2002.

"Theoretical Study of the [M-2H]⁻ Radical Anion Products of Methyl Benzoate", F. Abu-Hasanayn, H.-Y. Cheong*, and E. Stemmler, Meeting of the American Chemical Society, Chicago, IL, Aug. 26-Aug. 30, 2001.

"The Reactions of O⁻ with Diesters of Aliphatic Dicarboxylic Acids Using NICI and FT-ICR", E.A. Stemmler and C. Segovis*, 49th Annual Conference on Mass Spectrometry and Allied Topics, Chicago, IL, May 28-June 1, 2001.

"The Reactions of O⁻ with Alkyl and Aryl Esters of Benzoic Acid: An NICI and FT-ICR Study", E.A. Stemmler, E. Yoshida*, J. Pacheco*, J. Brunton*, E. Woodbury*, T. Solouki, 48th Annual Conference on Mass Spectrometry and Allied Topics, Long Beach, CA, 2000.

"Negative Ions in Mass Spectrometry: Controlling Reactions in the Chemical Ionization Source", Invited lecture, Department of Chemistry, University of Maine, 1999.

"A Low Volume Ion Source for Negative Ion Chemical Ionization Mass Spectrometry", E.A. Stemmler, C. Segovis*, J. Pacheco*, S. Abramson*, F. Lucas*, 47th Annual Conference on Mass Spectrometry and Allied Topics, Dallas, TX, 1999.

"The Effect of Ion Source Design, Pressure, and Flow on Electron Capture Negative Ion Mass Spectra", C. M. Segovis*, S. B. Abramson*, F. L. Lucas*, E.A. Stemmler, American Chemical Society Conference, Boston, MA, 1998.

"Examining the Structures of Biomolecules with FTICR", M.V. Buchanan, R.L. Hettich, and E. Stemmler, Abstracts of Papers of the American Chemical Society, 213: 229-ANYL Part 1, April 13, 1997.

"The Detection and Study of Electronically Excited Species in the Chemical Ionization Source", E.A. Stemmler and B.P. Wert*, Proceedings of the 44th Annual Conference on Mass Spectrometry and Allied Topics, Portland, OR, 1996.

"Development of MALDI- and ES-FTICR for the Characterization of DNA Adducts", R. Hettich, E.A. Stemmler, L. Tang, M. Buchanan, and G.B. Hurst, Proceedings of the 44th Annual Conference on Mass Spectrometry and Allied Topics, Portland, OR, 1996.

"MALDI FTICR Characterization of Modified Nucleic Acids", M.V. Buchanan, E. A. Stemmler, R.L. Hettich, and G.B. Hurst, Abstracts of Papers of the American Chemical Society, 209: 106-ANYL Part 1, April 2, 1995.

"Minimizing Neutral Analyte Alterations Prior to Ionization in Electron Capture Negative Ion Mass Spectrometry", E.A. Stemmler, B.P. Wert*, A. Dierks*, 42nd Annual Conference on Mass Spectrometry and Allied Topics, Chicago, IL, 1994.

"Matrix-Assisted Laser Desorption FTMS for the Structural Examination of Modified Nucleotides and Oligonucleotides", R.L. Hettich, E.A. Stemmler, G.B. Hurst, M.V. Buchanan, 42nd Annual Conference on Mass Spectrometry and Allied Topics, Chicago, IL, 1994.

"Light, Ions, and DNA: The Analysis of Nucleic Acids by Mass Spectrometry", Invited lecture. Department of Chemistry, Colby College, 1993.

"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: Ion Source Reactions in Mass Spectrometry", Invited lecture, Department of Chemistry, Montana State University, 1991.

"Negative Ions in Mass Spectrometry", Invited lecture, American Chemical Society, Maine Section 105, March Meeting 1991, Bowdoin College, 1991.

"Negative Ions in Mass Spectrometry", Science Faculty Lunch, Bowdoin College, 1991.

"Gas-Phase and Surface-Catalyzed Reactions of PAH in Negative Ion Chemical Ionization Mass Spectrometry", E. A. Stemmler and M. V. Buchanan, Invited paper, 16th Annual Meeting of the Federation of Analytical Chemistry and Spectroscopy Societies, Chicago, Illinois, 1989.

"Negative Ions in Mass Spectrometry", Invited lecture, Department of Chemistry, Bates College, 1989.

"Gas-Phase and Surface-Assisted Reactions in Negative Ion Mass Spectrometry", Invited lecture. The Greater Boston Mass Spectrometry Discussion Group, Boston, Massachusetts, 1989.

"Surface-Catalyzed Reactions of Aromatic Amines with Oxygen and Nitrogen in NICI Mass Spectrometry", E. A. Stemmler and M. V. Buchanan, 37th Annual Conference on Mass Spectrometry and Allied Topics, Miami Beach, Florida, 1989.

"Gas-Phase and Surface-Catalyzed Reactions with Oxygen in NICI Mass Spectrometry", Invited lecture. Department of Chemistry, University of Maine, Orono, 1988.

"Isomeric Differentiation of PAH and Methyl-PAH Using Surface-Catalyzed Oxidation Reactions", E. A. Stemmler and M. V. Buchanan, 36th Annual Conference on Mass Spectrometry and Allied Topics, San Francisco, California, 1988.

"Gas-Phase Ion-Molecule and Surface-Catalyzed Oxidation Reactions of PAH Under Negative Ion Chemical Ionization Conditions", M. V. Buchanan and E. A. Stemmler, 36th Annual Conference on Mass Spectrometry and Allied Topics, San Francisco, California, 1988.

"The Fragmentation of Negative Ions Formed by Electron Capture Negative Ion Mass Spectrometry", E. A. Stemmler and R. A. Hites, Invited paper, 35th Annual Conference on Mass Spectrometry and Allied Topics, Denver, Colorado, 1988.

"Negative Ion CI Studies of Nitrogen-Substituted Aromatics by GC/MS and FTMS", M. V. Buchanan, I. A. Rubin, and E. A. Stemmler, 35th Annual Conference on Mass Spectrometry and Allied Topics, Denver, Colorado, 1988.

"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, University of Minnesota, Minneapolis, 1984.

INDEPENDENT STUDY AND HONORS RESEARCH PROJECTS

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. Christensen)

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

Summer 2005:

"The Use of Matrix Assisted Laser Desorption/Ionization Fourier Transform Mass Spectrometry and Sustained Off-Resonance Irradiation-Collision Induced Dissociations for the Sequencing of Novel Decapod Orcokinin Neuropeptides", Chris Cashman (with P. Dickinson)

"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 *Panulirus interruptus*”, 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 *Panulirus interruptus*, 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 Phospholipids in Soils”, Christine Bevacqua, part of the Summer of 2004.

Academic Year 2003-2004:

“MALDI-FTMS for the Direct Analysis of Phospholipids in Soils”, Christine Bevacqua, Spring 2004.

“The Detection and Characterization of Neuropeptides in Crustaceans by MALDI-FTMS”, Maureen Guiney, (with Patsy Dickinson) – continuation from Summer 2002, 2003.

“Isolation and Characterization of Long Conjugated Polyene by HPLC and MALDI-FTMS”, Chad Pelton, Summer 2003 (with Ron Christensen) – continuation from Summer 2002, 2003.

"Determination of Soil Microbial Biomass and Composition Using GC/MS", Mark Roberts, (with John Lichter) - continuation from Summer 2003, Honors.

"Arginine Methylation of an RNA-Binding Protein", Jeff Cook, (with Anne McBride - principal advisor) - continuation from Summer 2002, Spring 2002, Summer 2003, Honors

Summer 2003:

"The Detection and Characterization of Neuropeptides in Crustaceans by MALDI-FTMS", Maureen Guiney, Summer 2003 (with Patsy Dickinson) - continuation from Summer 2002.

"Isolation and Characterization of Long Conjugated Polyene by HPLC and MALDI-FTMS", Chad Pelton, Summer 2003 (with Ron Christensen) - continuation from Summer 2002.

"The Effects of Alpha and Beta Methyl Groups on the Hydrolysis of Glutarate Esters in the Gas Phase via BAC2, SN2 and E2 Reaction Pathways", Nupur Jahwar, Summer 2003

"Arginine Methylation of an RNA-Binding Protein", Jeff Cook, Summer 2003, (with Anne McBride - principal advisor) - continuation from Summer 2002, Spring 2002.

"Gas-phase hydrogen/deuterium exchange kinetics and MS/MS structural characterization of peptide mimetics using MALDI-FTMS", Anthony Costa, Summer 2003.

"Determination of Soil Microbial Biomass and Composition Using GC/MS", Mark Roberts, (with John Lichter) Summer 2003.

Academic Year 2002-2003:

"Analysis of Aromatic Phenoxyacids in Soils: The Identification of Allelochemicals in Soil Extracts from a Knapweed Invasion", Sarah Durante, (with John Lichter) - continuation from Summer 2002.

"Arginine Methylation of an RNA-Binding Protein", Jeff Cook, Spring 2003, (with Anne McBride - principal advisor) - continuation from Summer 2002.

"The Identification of Lutein Epoxide in Dwarf Mistletoe Using HPLC and MALDI-Mass Spectrometry", Allison Barz, Fall 2002 (with Barry Logan).

"A Comparative Study of Water Samples Collected From Attractive and Unattractive Female Newts", Madeleine Pott, Fall 2002 - Chem 119 (with Rick Thompson).

"The Synthesis and Gas-Phase Reactions of 18-O Labelled Benzoic Acid Esters", Amber Davis, Fall 2002 - Chem 119.

"The Reaction of Hydroxide with Diisopropyl Esters of Methyl-Substituted Glutarates", Lucas Amundson, Fall 2002 - Chem 119.

Summer 2002:

"Analysis of Aromatic Phenoxyacids in Soils: The Identification of Allelochemicals in Soil Extracts from a Knapweed Invasion", Sarah Durante, Summer 2002 (with J. Lichter)

"Characterization of Conjugated polyDEPDM Polymers Using HPLC and MALDI-FTMS and The Generation and Reactions of Distonic Anions", Chad Pelton, Summer 2002.

"MALDI/FTMS for the Analysis of Neuropeptides in the Stomatogastric System of Crustaceans", Maureen Guiney, Summer 2002 (with Patsy Dickinson).

"Arginine Methylation of an RNA Binding Protein", Jeffrey Cook, Summer 2002 (with Anne McBride).

Academic Year 2001-2002:

"The Effect of α - and β -Methyl Substituents on the Gas-Phase Hydrolysis of Dimethyl and Diethyl Glutarates" Shanique Brown, Spring 2002.

"An Exploration of Mass Spectrometric Techniques Applied to the Analysis of Polymer and Environmental Samples" Craig Hansen, Spring 2002.

Summer 2001:

"The Analysis of Archeological Collections for the Determination of Oil Identity Using Fatty Acid Analysis" Ana Conboy (Summer 2001).

"Qualitative and Quantitative Analysis of Microbial Communities found in Soil Sampled From Swan Island, ME" Justin Hardison (Summer 2001).

Research Students prior to 2000:

"The Synthesis of $^{18}\text{O}_2$ Labeled Benzoates and the Gas-Phase Reactions of O^\cdot with Benzoates and Isophthalates", Eri Yoshida (Summer 1999).

"The Synthesis of $^{18}\text{O}_2$ Labeled Isophthalates and the Gas-Phase Reactions of OH^\cdot with Benzoates and Isophthalates", Erik Woodbury (Summer 1999).

"The Effect of Ion Source Design and Pressure on Gas-Phase Radical Reactions in Electron Capture Negative Ion Mass Spectra", Colin M. Segovis, (Summer 1998, Academic year 1998-99)

"Gas-Phase Reactions of O^\cdot with Alkyl Esters of Benzoic and Benzenedicarboxylic acids", Joshua M. Pacheco, 1999.

"The Isolation and Identification of a Series of Sesquiterpene Pyridine Alkaloids from Pogostemon Patchouli", Greg Geddes, 1999 (with Dana Mayo).

"H/D Exchange Reactions in the Reactions of OD^\cdot with Methyl Benzoate", Jennifer R. Brunton, (Summer 1998).

"Gas-Phase Radical Reactions in Electron Capture Negative Ion Mass Spectrometry", Kelly Ann Warner, 1998.

"Optical Studies of the Second Positive and First Negative systems of Nitrogen and Excited States of Methane Produced in the CI Source", Doug Nieh, 1997.

"Development of an Analytical Method for the Detection of Nitrilotriacetic Acid (NTA) and Ethylenediaminetetraacetic acid (EDTA) by Gas Chromatography-Mass Spectrometry", Karen Baur, 1997.

"Eliminating Surface-Assisted Reaction Products in Electron Capture Negative Ion Mass Spectrometry", Sarah Abramson, 1997.

"The Synthesis of Mixed Esters of Dicarboxylic Acids and the Study of Reactions with O⁻", Colin Segovis, 1997.

"The Isolation and Characterization of Novel Sesquiterpene Alkaloids from *Pogostemmon patchouli*", Rahul Koka, 1997 (with D. Mayo)

"The Effects of Pressure, Flow, and Source Design on Electron Capture Negative Ion Mass Spectra", Florence L. Lucas, 1996.

"The Derivatization and Detection of Chelating Acids by Electron Capture Negative Ion Mass Spectrometry", Margot Burke, 1996.

"The Isolation and Characterization of Novel Sesquiterpene Alkaloids from *Pogostemmon patchouli*", Joe Fontaine, 1996 (with Dana Mayo).

"Optical Studies of Electronically Excited Species Produced in the Chemical Ionization Source", B. Wert, 1994.

"The Determination of Aldehydes and Ketones in Indoor Air by GC/MS", M. Kontulis, 1994.

"Organic Contaminants in Androscoggin River Sediments", W. Houston, 1994.

"Ion-Molecule and Radical-Molecule Reactions of Dialkyl Phthalates in Negative Ion Mass Spectrometry", J. L Diener, 1992.

"Fatty Acid Analysis of Potsherd Residues", A. Dierks, Spring, 1992.

"An Investigation of Electron Capture Negative Ion Mass Spectra of Phenyl Isothiocyanates and Phenyl Isocyanates", A. Dierks, Summer, 1991 (Surdna Fellow).

"Mass Spectrometry: Theory and Applications to Organic Structure Determination", J. K. Chin, Spring, 1992.

"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 Phenylthiohydantoin", 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:

Faculty Resources Committee (2006)
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.

Proposal Reviewer: American Chemical Society, Petroleum Research Fund; National Science Foundation; National Institutes of Health; US Civilian Research and Development Foundation.

Referee: *Analytical Chemistry*, *International Journal of Mass Spectrometry and Ion Processes*, *Journal of Mass Spectrometry*; *Environmental Science and Technology*; *Journal of the American Society for Mass Spectrometry*

FUNDING

"Nanoscience and Nanotechnology in Biology and Medicine" subcontract with P. Baures (PI) at University of Tulsa, NIH, submitted.

P.S. Dickinson (PI) and E.A. Stemmler (co-PI) "Multiple Modulators and Modulator Families in a Small Neuronal System: A Comparative Approach", NSF-IOB, \$472,289, declined.

"Bioinspired Supramolecular Assembly with Imidazole-4,5-dicarboxamides", subcontract with P. Baures (PI) at University of Tulsa, NSF-NER, \$26,000, submitted.

"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.

Beckman Scholars Program, one of ten faculty participants, Arnold and Mabel Beckman Foundation, 2005.

"The Development of Fourier Transform Mass Spectrometry Techniques for the Analysis of Biomolecules and Studies of Ion-Molecule Reactions" Faculty Leave Supplement, Bowdoin College.

J. Lichter (PI) and E.A. Stemmler (co-PI) "Soil carbon sequestration and turnover after six years of CO₂ fumigation at the Duke Forest FACE experiment", NSF-DEB, \$352,071, 2/01/03-9/31/05.

"Acquisition of a MALDI/FT-ICR Mass Spectrometer for Multidisciplinary Research" National Science Foundation-Major Research Instrumentation Program, w/ R. Christensen, B. Linton, and C. Prudente, 2001, \$280,530.

"The Characterization of Products of O[•] Reactions with Esters and a Study of Radical Anion Reactions with O₂", Petroleum Research Fund-American Chemical Society, 7/1/01-8/31/03, \$30,000.

"Gaussian on the Computational Server for Computational Chemistry Applications in Upper Level Chemistry Classes and Research", Educational Technology Fund, \$6,000.

"Electron-Molecule and Ion-Molecule Reactions in Mass Spectrometry", Faculty Leave Supplement, Bowdoin College.

"Fourier Transform Ion Cyclotron Resonance Mass Spectrometric Studies of Negative Ion Molecule Reactions and Electrospray Ionization". Faculty Research Fund, Bowdoin College, \$1,000.

"Controlling Neutral and Ionic Reactions in the Negative Chemical Ionization Source", Petroleum Research Fund-American Chemical Society, 7/1/97-8/31/00, \$25,000.

"Gas-Phase Ion Chemistry for Structure Elucidation", Faculty Research Participation Program, Oak Ridge Institute of Science and Education, 1/1/96-12/31/97.

Faculty Research Participation Program, Oak Ridge Institute of Science and Education, 7/1/94-8/5/94.

Faculty Research Fund, Bowdoin College, 1993, \$800.

Faculty Research Fund, Bowdoin College, 1991, \$800.

Faculty Research Fund, Bowdoin College, 1989, \$800.

Faculty Research Program, Oak Ridge Associated Universities, 8/1/92-7/30/93.

Research Travel Contract for Collaborative Research in Gas-Phase Ion Chemistry, Oak Ridge Associated Universities, 8/1/89 - 6/30/91; 7/1/91 - 6/30/93; 10/93-11/95.

"Negative Ion Mass Spectrometry in Peptide Sequencing-Supplement", Research Opportunity Award from the National Science Foundation, 6/1/88 - 9/30/90. \$9,372 direct costs.

"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", Instrumentation and Laboratory Improvement Program - National Science Foundation, 1990, \$40,000.