

Michael L. Gross
CURRICULUM VITAE AND PUBLICATION LIST

PRESENT POSITION:

- Professor of Chemistry, Medicine, and Immunology, Principal Investigator, NIH Mass Spectrometry Research Resource at Washington University

PRESENT ADDRESS:

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- URL: www.wunmr.wustl.edu/msf/

PERSONAL INFORMATION:

- Born: Nov. 6, 1940
- Two children: Matthew R. and Michele R. born, March 28, 1968

EDUCATION:

- B.A. (*Cum Laude*) Chemistry, St. John's Univ. (Minn.), 1962
- Ph.D., Organic Chemistry, Univ. of Minnesota, 1966 Dissertation Title: "Reactivity of Electron-Rich Aromatics"
- Postdoctoral, U. of Penn. (E.R. Thornton), 1966-67
- Postdoctoral, Purdue Univ. (F.W. McLafferty), 1967-68

APPOINTMENTS/AFFILIATIONS:

- Professor of Chemistry, Immunology, and Medicine, Washington University, 1994-
- Principal Investigator, Washington University Research Resource in Mass Spectrometry, 1994-
- Director, NSF Midwest Center for Mass Spectrometry, 1978-1994
- C. Petrus Peterson Professor of Chemistry, University of Nebraska, 1988-1994
- 3M Alumni Professor of Chemistry, University of Nebraska, 1983-88
- Professor of Chemistry, U. of Nebraska, 1978-1994
- Assoc. Professor of Chemistry, U. of Nebraska, 1972-78
- Ass't Professor of Chemistry, U. of Nebraska, 1968-72

RESEARCH INTERESTS:

- Development of Mass Spectrometry Methods (MS/MS and FTMS) for Structural Determination of Biomolecules and for Measuring Biophysical Properties of Proteins
- Development of Fourier Transform Mass Spectrometry (FTMS) for Accurate Mass and Higher Performance
- Understanding of Gas-phase ion chemistry: Metal ions, Distonic ions, Radical cations, and Charge-Remote Fragmentations

HONORS, AWARDS, LECTURESHIPS:

2008	Bruker Daltonics Lectureship	University of Konstanz, Germany
2008	Freiser Lectureship	Purdue University
2006	J.J. Thomson Medal for Service to Int'l MS	Foundation for International Mass Spectrometry
2005	Excellence in Mentoring Award	Washington Univ. Grad. Student Senate
2005	New Jersey Distinguished Lectureship	NJ Section ACS Mass Spectrometry Discussion Group
2004	Outstanding Mentor Award	Washington Univ. Grad. Student Senate
2002	Midwest Award for Achievements in Chem.	American Chemical Society
2002	Excellence in Mentoring Award	Washington Univ. Grad. Student Senate
2001	Watkins Visiting Professor	Wichita State University
2001	Outstanding Mentor Award	Washington Univ. Grad. Student Senate
2000	Frontiers in Chemistry Lectureship	Wayne State University
2000	Plenary Lecture	Vienna Mass Spectrometry Colloquium
2000	Plenary Lecture	EnviroAnalysis 2000
1999	Field and Franklin Award	American Chemical Society
1998	Plenary Lecture	Assoc. Official Anal. Chemists' Int'l Meeting
1998	Plenary Lecture	HPLC International Symposium
1997	Plenary Lecture	Colloquium Spectroscopicum Internationale
1997	Plenary Lecture	Igler MS Tage, Innsbruck
1996	Guest Faculty	NATO School on Biol. Mass Spectrometry
1995	Pioneers in Chemistry Series	Texas A&M University
1995	Plenary Lecture	Western Biotechnology Conference, San Diego
1995	Plenary Lecture	FDA Mass Spectrom. Symposium, Washington, DC
1994	Plenary Lecture	Australia/New Zealand MS Conference, Melbourne
1993	Guest Professor	NATO Adv. Study Inst. Biol. MS, Ischia, Italy
1993	Plenary Lecture	Colloquium Spectroscopicum Internationale
1993	Plenary Lecture	Taiwan Int'l Chemistry Conference
1993	Plenary Lecture	Indian Society for Mass Spectrometry
1993	Lifetime Member	Indian Society for Mass Spectrometry
1993	Kraft Lectureship	Indiana University
1992	Plenary Lecture	European Tandem Mass Spectrom. Conf.
1992	Recognized as 50 Most Cited Chemists	Institute for Scientific Information, 1984-1991
1991	Plenary Lecture	Australian Symposium on Analytical Chem.
1991	Plenary Lecture	Elsevier Anal. Advances for the 90s Symposium
1990	Van't Hoff Visiting Professor	Int'l Graduate School, University of Amsterdam
1990	Guest Professor	NATO Adv. Study Inst. in Biol. Mass Spectrometry
1988	Albright & Wilson Visiting Professor	University of Warwick
1988	Plenary Lecture	American Society for Mass Spectrometry
1987	Pioneer Award	Commonwealth of Mass "In Search for the Health Consequences of Dioxin in Our Environment."
1987	Hertel Lectureship	University of Tennessee
1987	Alan Maccoll Plenary Lectureship	British Society for Mass Spectrometry
1987	Plenary Lecture	British Royal Society "Spectroscopy Across Spectrum"
1986	J.C. Karcher Lectureship	University of Oklahoma

1986	Plenary Lecture	Versailles International Workshop on Ion-Molecule Rxs,
1984	Distinguished Lecture Series	Indiana University
1984	Plenary Lecture	Swiss/French Mass Spectrometry Conference
1984	Third Cycle Lectures	Eidgenössische Technische Hochschule Lausanne

MEMBERSHIPS

2002-	Harvard University Resource on Biological Imaging Advisory Board	Member
2001	International Journal of Mass Spectrometry	Volume Editor
2000-	Encyclopedia of Mass Spectrometry	Co-Editor
1999-04	Advisory Board, NIEHS Toxicology Center at Vanderbilt Univ.	Member
1997	15 th Asilomar Conference on Mass Spectrometry	Organizer
1997	In'l Organizing Committee, Symposia on MS in Biological and Health Sciences	Member
1995-	International Journal of Mass Spectrometry	Member, Editorial Board
1995-96	Asilomar Conference Committee of the American Society for MS	Chairman
1995	Pittsburgh Conf. Symp Future MS Approaches for Struct Determination	Organizer
1994-	Journal of Mass Spectrometry	Member, Editorial Board
1994-96	Chemical Research in Toxicology	Member, Editorial Board
1994	FACSS Symposium on Structure Elucidation by MS	Organizer
1993-99	Asilomar Conference Committee of the American Society for MS	Member
1992	Int'l Organizing Committee, Kyoto Conference on Biological MS	Member
1990-	Journal of the American Society for Mass Spectrometry	Editor in Chief
1990-	Mass Spectrometry Reviews	Member, Editorial Board
1990-94	State of Nebraska EPSCoR Oversight Committee	Member
1990	NATO Adv Study Inst. on Biological MS	Co-Director and Organizer
1987	6 th Asilomar Conference on Mass Spectrometry	Organizer
1986-94	Analytical Chim. Acta	Member, Editorial Board
1986-91	National Research Council, Board on Chemical Technology	Member
1986	NSF Oversight Committee	Member
1985-88	NIH Metallobiochemistry Study Section	Member
1984-90	IRB, St. Elizabeth, Lincoln General and Bryan Memorial Hospitals	Member
1983-	UCSF Research Resource in Mass Spectrometry Advisory Board	Member and Chairman
1982-90	Mass Spectrometry Reviews	Editor in Chief
1982-94	Organic Mass Spectrometry	Member, Editorial Board
1982-85	Analytical Chemistry	Member, Instrument Panel
1982-84	Internation Journal of Mass Spectrometry and Ion Physics	Member, Editorial Board
1982-90	Science Advisory Board, Michael F. Smith Health Care Center, Chicago	Member
1982	EAS Symposium on Anal of Polar or High Mol Wt Materials by MS	Organizer
1982	ASMS Workshop on Tandem MS	Organizer
1981-94	Washington University NIH Research Resource in MS Advisory Board	Member

1981	ACS Symposium Honoring F.W. McLafferty	Organizer
1980-81	US EPA Hearings to Suspend 2,4,5-T and Silvex	Chief Analytical Witness
1979	Dow Chemical Blue Ribbon Panel on Dioxins in Combustion	Member
1979-82	US Gov't Dioxin Implementation Panel	Member
1977-80	High Resolution and Organic Qual. Analysis Committees of the ASMS	Chairman
1972-74	Nebraska Section of the American Chemical Society	Secretary and Chairman

Consultantships

- Aventis
- Air Products (1990-)
- Schering-Plough (1989-)
- Eli Lilly (1997-2004)
- Vinyl Institute (1996- 2004)
- Smith Kline Beecham (1997-1999)
- Metaphore (1996-1998)
- Pimentel Committee to Survey the Chemical Sciences (1983)
- Union Carbide (1982-87)
- Midwest Research Institute (1982-86)
- New York State, Dept. of Law (1982-85)
- Board of Advisors, National Institutes of Environmental Health Sciences (1981, 1983)
- National Bureau of Standards on the Quality of Analytical Data on Love Canal Survey (1981-82)
- U.S. Veterans Administration on the Question of Human Exposure to Agent Orange (1979-80)
- U.S. Forest Service on the Question of Dioxin Uptake in Biological Tissue (1979-80)
- Food and Drug Administration on Analysis Methods for TCDD (1979)
- U.S. Air Force on Various Questions on Agent Orange (1978-80)
- State of Nebraska, Gasohol Committee (1972-75)
- Ad hoc Consultant
 - IBM, San Jose Res. Center (1986)
 - Proctor and Gamble (1985)
 - Tennessee Eastman (1984 and 1988)
 - Kratos Analytical Instruments (1984)
 - 3M (1983)
 - Shell Oil, United Kingdom (1983), Netherlands (1987)
 - Eastman Kodak (1981 and 1985)
 - Exxon (1981 and 1986)
 - Nicolet Instruments (1981)
 - Chevron (1980)
 - Hooker Chemical (1980)
 - Waste Management (1980)
 - Unico Japan (1978)
 - Brunswick (1976)

PROFESSIONAL AND HONORARY MEMBERSHIPS

- American Chemical Society
- American Society for Mass Spectrometry
- Sigma Xi
- Phi Lambda Upsilon
- Union of Concerned Scientists
- Indian Society for Mass Spectrometry

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EDITED BOOKS, PUBLISHED PAPERS, AND BOOK CHAPTERS

A. Ph.D. Thesis:

Reactivity of Electron-Rich Aromatics, University of Minnesota, 1966, 192 pp.

B. Edited Books:

1. High Performance Mass Spectrometry: Chemical Applications, Michael L. Gross, American Chemical Society Symposium Series, 70, 1978, 358 pp.
2. Mass Spectrometry in the Biological Sciences: A Tutorial, NATO ASI Series, Michael L. Gross, Kluwer Academic Publishers, Dordrecht, 1992, 451 pp.
3. Biological Mass Spectrometry Present and Future, Eds., T. Matsuo, R. M. Caprioli, M. L. Gross and Y. Seyama, John Wiley & Sons, Ltd., Chichester, England, 1994, 653 pp.
4. Applied Electrospray Mass Spectrometry, Eds., B.N. Pramanik, A.K. Ganguly, and M.L. Gross, Marcel Dekker, Inc., New York, 2002, 434 pp.
5. Biological Applications. Part A: Peptides and Proteins, R. M. Caprioli and M.L. Gross, Encyclopedia of Mass Spectrometry, Vol 2, M.L. Gross and R.M. Caprioli, Series Eds, Elsevier, 2005, 435 pp.
6. Ionization Methods, M.L. Gross and R.M. Caprioli, Encyclopedia of Mass Spectrometry, Vol. 6, M.L. Gross and R.M. Caprioli, Series Eds., 2007, 1007 pp.

C. Papers and Book Chapters:

1. Substituent Effects in Unimolecular Ion Decomposition. Formation of PhCO^+ Ions with Varying Internal Energies, M.L. Gross and F.W. McLafferty, *Chem. Commun.*, 254-255 (1968).
2. Stereochemical Effects in the Mass Spectra of 1,2-Diphenylcyclobutanes, M.L. Gross and C.L. Wilkins, *Tetrahedron Letters*, 3875-3878 (1969).
3. Electron Rich Aromatics I. Solvolysis of 1-Arylethyl Acetates, E.A. Hill, M.L. Gross, M. Stasiewicz, and M. Manion, *J. Am. Chem. Soc.*, 91, 7381-7392, (1969).
4. A Proposed Technique for Signal Multiplexing in Mass Spectrometry, C.J. Eckhardt and M.L. Gross, *Int. J. Mass Spectrom. Ion Phys.*, 5, 223-227 (1970).
5. A Study of the C_3H_7^+ Ion by Ion Cyclotron Resonance Spectrometry, M.L. Gross, *J. Am. Chem. Soc.*, 93, 253-255 (1971).
6. 1,4-Elimination of C_6H_6 in the Mass Spectral Fragmentation of 1-Phenyltetralin, M.L. Gross, C.L. Wilkins, and T.G. Regulski, *Org. Mass Spectrom.* 5, 99-101 (1971).
7. A Study of the Styrene Ion-Molecule Reaction by Ion Cyclotron Resonance, C.L. Wilkins and M.L. Gross, *J. Am. Chem. Soc.*, 93, 895-901 (1971).
8. Identification of C_3H_6^+ Structural Isomers by Ion Cyclotron Resonance Spectroscopy, M.L. Gross and F.W. McLafferty, *J. Am. Chem. Soc.*, 93, 1267-1268 (1971).
9. An Interactive On-Line System for Computer Assisted Ion Cyclotron Resonance, C.L. Wilkins, M.L. Gross, and R.S. Marianelli, *Proceedings Conference on Computers in Chemical Education and Research*, 8/29, No. Illinois University Press, July 1971.
10. The Effect of Vibrational Energy on the Rates of Ion-Molecule Reactions, M.L. Gross and J. Norbeck, *J. Chem. Phys.*, 54, 3651-3652 (1971).
11. Computer-Assisted Ion Cyclotron Resonance Appearance Potential Measurements for C_3H_{10} Isomers, M.L. Gross and C.L. Wilkins, *Anal. Chem.*, 43, 1624-1628 (1971).
12. Ion Cyclotron Resonance Spectrometry. Recent Advances of Analytical Interest, M.L. Gross and C.L. Wilkins, *Anal. Chem.*, 43 (14), 65A-68A (1971).
13. Ion Cyclotron Resonance Spectrometry. A Means of Evaluating Kinetic Shift, M.L. Gross, *Org. Mass Spectrom.*, 6, 827-831 (1972).
14. Analytical Applications of Ion-Molecule Reactions. Identification of C_3H_{10} Isomers by Ion Cyclotron Resonance Spectrometry. M.L. Gross, P.H. Lin, and S.J. Franklin, *Anal. Chem.*, 44, 974-978 (1972).

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PUBLISHED PAPERS AND BOOK CHAPTERS

15. An Ion Cyclotron Resonance Study of the Structure of $C_3H_6^+$ and the Mechanism of its Reaction with Ammonia, M.L. Gross, *J. Am. Chem. Soc.*, **94**, 3744-3748 (1972).
16. A Metastable Study of Various C_3H_6 Radical Cations, M.L. Gross and P.H. Lin, *Org. Mass Spectrom.*, **7**, 795-803 (1973).
17. The Unusual Loss of H from Ionized 1,5-Hexadiene, M.L. Gross and R.J. Aerni, *J. Am. Chem. Soc.*, **95**, 7875-7877 (1973).
18. The Internal Energy of Product Ions Formed in Mass Spectral Reactions, D.J. McAdoo, P.F. Bente III, M.L. Gross, and F.W. McLafferty, *Org. Mass Spectrom.*, **9**, 525-535 (1974).
19. Analytical Applications of Ion-Molecule Reactions. Reactions of Various Substituted Cyclopropane Molecular Ions with Ammonia, M.L. Gross and P.H. Lin, *Org. Mass Spectrom.*, **9**, 1194-1199 (1974).
20. Determination of the Appearance Potentials of $[C_3H_7]^+$ Ions by a Computerized Electron Distribution Difference Procedure, M.L. Gross, C.L. Wilkins and G. Leung, *Org. Mass Spectrom.*, **9**, 1217-1222 (1974).
21. Illustrating GCMS, An Undergraduate Experiment, M.L. Gross, V.K. Olson, and K.R. Force, *J. Chem. Ed.*, **52**, 535-537 (1975).
22. A Mechanism for Hydrogen Scrambling in Ionized Benzene, G.A. Gallup, D. Steinheider, and M.L. Gross, *Int. J. Mass Spectrom. Ion Phys.*, **22**, 185-188 (1976).
23. Ionic Cycloreversion Reactions in Tetralin Derivatives. Structure of C_8H_8O Ions from 1-Tetralol, M.L. Gross and F.L. DeRoos, *J. Am. Chem. Soc.*, **98**, 7128-7132 (1976).
24. Regiospecificity for Water Elimination. A Mass Spectral Study of 1-Tetralol and 2-Tetralol, M.L. Gross, E. Chiu, D. Pokorny, and F.L. DeRoos, *Org. Mass Spectrom.*, **12**, 55-62 (1977).
25. Ionic Dehydration Reactions: The Effect of Location of the Activated Complex on Kinetic Energy Release, M.L. Gross, F.L. DeRoos and M.K. Hoffman, *Org. Mass Spectrom.*, **12**, 258-260 (1977).
26. The Ion-Molecule Reaction Chemistry of Various Gas-Phase C_6H_6 Radical Cations, M.L. Gross, D.H. Russell, R.J. Aerni, and S.A. Bronczyk, *J. Am. Chem. Soc.*, **99**, 3603-3609 (1977).
27. The Interpretation of the Mass Spectrum of an Ornithine-Containing Lipid from *Thiobacillus Thiooxidans*, D.R. Hilker, M.L. Gross, H.W. Knoche, and M.M. Shiveley, *Biomed. Mass Spectrom.*, **5**, 64-71 (1978).
28. Keto-Enol Tautomerism of Gas-Phase Ions. Structure of Reactive C_6H_6O Radical Cations, D.H. Russell, M.L. Gross, and N.M.M. Nibbering, *J. Am. Chem. Soc.*, **100**, 6133-6137 (1978).
29. Mass Spectral Studies of Probe Pyrolysis Products of Intact Oligoribonucleotides, M.L. Gross, P.A. Lyon, A. Dasgupta, and N.K. Gupta, *Nucleic Acid Research*, **5**, 2695-2704 (1978).
30. Possible Polar Cycloadditions. Mechanisms of the Reactions of Ionized 1,3-Butadiene and Ethene and Ionized Furan and 1,3-Butadiene, M.L. Gross, D.H. Russell, R. Phongbetchara and P.H. Lin, *Advances in Mass Spectrom.*, **7A**, 129-135 (1978).
31. Mass Spectrometry, M.L. Gross in H.H. Bauer, G.C. Christian, and J.E. O'Reilly (Eds), *Instrumental Analysis*, Allyn and Bacon, Inc., Boston, 1978 pp 443-486.
32. Gas-Phase Polar Cycloaddition Reactions, D.H. Russell and M.L. Gross, in "Ion Cyclotron Resonance Spectrometry II", H. Hartmann and K.-P. Wanczek, eds., Springer-Verlag, Berlin, Heidelberg, *Lecture Notes in Chemistry*, **7**, 209-231, (1978).
33. The Mechanism for Elimination of Acetic Acid from 1-Acetoxy- and 2-Acetoxytetralin, S.F. Wojinski and M.L. Gross, *Org. Mass Spectrom.*, **14**, 135-139 (1979).
34. The Electrocyclic Ring Opening of the Cyclobutene Radical Cation, M.L. Gross and D.H. Russell, *J. Am. Chem. Soc.*, **101**, 2082-2086 (1979).

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PUBLISHED PAPERS AND BOOK CHAPTERS

35. Decomposition of the 1,3-Butadiene Radical Cation on the Microsecond to Picosecond Time Scale, D.H. Russell, M.L. Gross, J. van der Greef, and N.M.M. Nibbering, *J. Am. Chem. Soc.*, *101*, 2086-2090 (1979).
36. Thermolysis Chemical Ionization of a Complex Polar Lipid, D.R. Hilker, H.W. Knoche, and M.L. Gross, *Biomed. Mass Spectrom.*, *6*, 356-358 (1979).
37. The Chemistry of C₆H₆O Radical Cations: A Study of Rearrangement Reactions of Halogen Substituted Ethyl Phenyl Ethers, D.H. Russell, M.L. Gross, J. van der Greef, and N.M.M. Nibbering, *Org. Mass Spectrom.*, *14*, 474-481 (1979).
38. Loss of Hydroxyl Radical from *Cis*- and *Trans*-1-Cyclohexyl-2-Phenyl-3-Benzoylaziridines: A Unique Eight-Centered Rearrangement-Elimination, P. Tarburton, T. Sun, N.H. Cromwell, and M.L. Gross, *Org. Mass Spectrom.*, *14*, 564-566 (1979).
39. The Dioxin Issue. Book Review of THE PENDULUM AND THE TOXIC CLOUD, THE COURSE OF DIOXIN CONTAMINATION. Thomas Whiteside, Yale University Press, New Haven, Conn., 1979. M.L. Gross, *Science*, *206*, 327-328 (1979).
40. TCDD Quantitation in Stack-Collected Coal Fly Ash, B.J. Kimble and M.L. Gross, *Science*, *207*, 59-61 (1979).
41. Exact Mass Measurement by Fourier Transform Mass Spectrometry, E.B. Ledford, Jr., S. Ghaderi, R.L. White, R.B. Spencer, P.S. Kulkarni, C.L. Wilkins, and M.L. Gross, *Anal. Chem.*, *52*, 463-468 (1980).
42. Fourier Transform Mass Spectrometry: Analytical Applications, E.B. Ledford, Jr., S. Ghaderi, C.L. Wilkins, and M.L. Gross, *Adv. Mass Spectrom.*, *8*, 1707-1724 (1980).
43. Convolution-Based Phase Correction in FT/MS, E.B. Ledford, Jr., R.L. White, S. Ghaderi, M.L. Gross, and C.L. Wilkins, *Anal. Chem.*, *52*, 1090-1094 (1980).
44. Mass Spectrometric Fragmentation of Saturated Six Membered Heterocyclic Systems Containing Two Chalcogen Family Atoms, P.S. Kulkarni, M.M. Khan, G.D. Sturgeon, and M.L. Gross, *J. Heterocyclic Chem.*, *17*, 929-935 (1980).
45. Resolution and Signal-to-Noise in Fourier Transform Mass Spectrometry, R.L. White, E.B. Ledford, Jr., S. Ghaderi, C.L. Wilkins, and M.L. Gross, *Anal. Chem.*, *52*, 1525-1527 (1980).
46. Chemical Properties of the Fulvene Radical Cation: A Cycloaddition with 1,3-Butadiene, D.H. Russell and M.L. Gross, *J. Am. Chem. Soc.*, *102*, 6279-6284 (1980).
47. Determination of Tetrachlorodibenzo-*p*-dioxins by Mass Spectrometric Metastable Decomposition Monitoring, E.K. Chess and M.L. Gross, *Anal. Chem.*, *52*, 2057-2061 (1980).
48. Coupling of Capillary Gas Chromatography and Fourier Transform Mass Spectrometer, E.B. Ledford, Jr., R.L. White, S. Ghaderi, C.L. Wilkins, and M.L. Gross, *Anal. Chem.*, *52*, 2450-2451 (1980).
49. Report on the Workshop on "High Mass Measurements in Mass Spectrometry", M.L. Gross, *Biomed. Mass Spectrom.*, *7*, 365-366 (1980).
50. Direct Testimony of Dr. Michael L. Gross Before the Environmental Protection Agency of the United States of America, 2,4,5-T and Silvex Cancellation Hearing, In re: THE DOW CHEMICAL COMPANY, et al. FIFRA Docket Nos. 415, et al. Exhibit No. 223, (1980).
 - i. First Supplement, Exhibit No. 223A (1980).
 - ii. Second Supplement, Exhibit No. 930 (1981).
51. Chemical Ionization in Fourier Transform Mass Spectrometry, S. Ghaderi, P.S. Kulkarni, E.B. Ledford, Jr., C.L. Wilkins, and M.L. Gross, *Anal. Chem.*, *53*, 428-437 (1981).
52. Synthesis and Characterization of *cis* and *trans*-4-*d*₁-1-Tetralol, G.S. Groenewold and M.L. Gross, *J. Labeled Compds and Radio Pharmaceuticals*, *18*, 1809-1816 (1981).
53. Method Validation Study for Analysis of Tetrachlorodibenzodioxin (TCDD) at the Low Parts-Per-Trillion Level, M.L. Gross, T. Sun, P.A. Lyon, S.F. Wojinski, D.R. Hilker, A.E. Dupuy, Jr., and R.G. Heath, *Anal. Chem.*, *53*, 1902-1906 (1981).

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PUBLISHED PAPERS AND BOOK CHAPTERS

54. Four Isomers of $C_3H_8O^+$ Distinguished by Collisional Activation, F.W. Crow, M.M. Bursey, and M.L. Gross, *Org. Mass Spectrom.*, 16, 309-311 (1981).
55. Fourier Transform Mass Spectrometry for Analysis, C.L. Wilkins and M.L. Gross, *Anal. Chem.*, 53, 1661A-1668A (1981).
56. Consecutive Reactions in Triple Analyzer Mass Spectrometry and Applications to Mixture Analysis, D.J. Burinsky, R.G. Cooks, E.K. Chess, and M.L. Gross, *Anal. Chem.*, 54, 295-299 (1982).
57. A Photodissociation Study of C_6H_6O Ions in an Ion Cyclotron Resonance Spectrometer, P.N.T. Van Velzen, W.J. van der Hart, J. van der Greef, N.M.M. Nibbering, and M.L. Gross, *J. Am. Chem. Soc.*, 104, 1208-1212 (1982).
58. Stereochemistry of HOH and HOAc Elimination from 1-Tetralol and 1-Acetoxytetralin Radical Cations, G.S. Groenewold and M.L. Gross, *Org. Mass Spectrom.*, 17, 269-273 (1982).
59. The Question of Tautomerism of Alkyl nitrile and Isonitrile Radical Cations, E.K. Chess, R.L. Lapp, and M.L. Gross, *Org. Mass Spectrom.*, 17, 475-480 (1982).
60. A Mass Spectral Investigation of Water and Acetic Acid Elimination from 1- and 2-Indan Derivatives, G.S. Groenewold, M.L. Gross, and R. Zey, *Org. Mass Spectrom.*, 17, 416-423 (1982).
61. Triple Analyzer Mass Spectrometry for High Resolution MS/MS Studies, M.L. Gross, E.K. Chess, P.A. Lyon, F.W. Crow, S. Evans, and H. Tudge, *Int'l J. Mass Spectrom. Ion Phys.*, 42, 243-254 (1982).
62. Application of Mass Spectrometric Methods to Analysis of Xenobiotics in Biological Systems, Michael L. Gross, Chapter in "Host Factors in Human Carcinogenesis", International Agency for Research on Cancer, Lyon, France, 1982, pp 443-462.
63. Gas-Phase Radical-Ion Cycloadditions: Experiment and Theory, J.O. Lay, Jr. and M.L. Gross, in "Ion Cyclotron Resonance Spectrometry II", H. Hartmann and K.-P. Wanczek, eds., Springer-Verlag, Berlin, Heidelberg, *Lecture Notes in Chem.*, 31, 237-257 (1982).
64. Analytical Fourier Transform Mass Spectrometry, M.L. Gross and C.L. Wilkins, in "Ion Cyclotron Resonance Spectrometry II", H. Hartmann and K.-P. Wanczek, eds., Springer-Verlag, Berlin, Heidelberg, *Lecture Notes in Chem.*, 31, 392-408 (1982).
65. Power Supplies and Scan Generators for Electrostatic and Magnet Analyzers to be Used in MS/MS, D. Giblin, P.A. Lyon, D.L. Rempel, M.L. Gross, *Chemical, Biomedical and Environmental Instrumentation*, 12, 15-31 (1982).
66. Methods of Analysis of Picogram Quantities of Organic Substances in Real Samples, M.L. Gross, *J. Chem. Ed.*, 59, 921-925 (1982) (invited article).
67. Unimolecular and Collision Induced Decompositions of Gas-Phase Group IVA Enium Ions $(CH_3)_3M^+$, G.S. Groenewold, M.L. Gross, M.M. Bursey, and P.R. Jones, *J. Organometal. Chem.*, 235, 165-175 (1982).
68. Laser Desorption Fourier Transform Mass Spectrometry, D.A. McCrery, E.B. Ledford, Jr., and M.L. Gross, *Anal. Chem.*, 54, 1435-1437 (1982).
69. Persistence of 2,3,7,8-Tetrachlorodibenzo-*p*-dioxin in Fat of a Rhesus Monkey (*Macaca mulatta*), W.P. McNulty, K.A. Nielsen-Smith, J.O. Lay, Jr., D.L. Lippstreu, N.L. Kangas, P.A. Lyon, and M.L. Gross, *Food Chem. Toxicol.*, 20, 985-987 (1982).
70. Electrophilic Aromatic Substitution: Comparison of Gas-Phase and Solution Chemistry, D.L. Miller, J.O. Lay, Jr., and M.L. Gross, *J. Chem. Soc. Chem. Commun.*, 970-972 (1982).
71. Structure of the Toxin from *Helminthosporium Carbonum*, M.L. Gross, D. McCrery, F. Crow, K.B. Tomer, M.R. Pope, L.M. Ciuffetti, H.W. Knoche, J.M. Daly, and L.D. Dunkle, *Tetrahedron Letters*, 23, 5381-5384 (1982).
72. Mass Resolution in Mass Spectrometry/Mass Spectrometry, F.W. Crow, K.B. Tomer, and M.L. Gross, *Mass Spectrom. Revs.* 2, 47-76 (1983) (invited review).

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PUBLISHED PAPERS AND BOOK CHAPTERS

73. The Mechanisms of Decomposition of the 1- and 2-Phenyltetralin Radical Cations, J.J. Gallagher, E.K. Chess, S.M. Arghestani, and M.L. Gross, *Org. Mass Spectrom.*, *18*, 118-126 (1983).
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478. Efficient Synthesis, Liquid-Chromatography Purification, and Tandem Mass Spectrometric Characterization of Estrogen-Modified DNA Bases, Qiang Zhang and Michael L. Gross, *Chem. Res. Toxicol.*, 21, 1244-1252 (2008).
479. Structure Determination of an Interstrand-Type Cis-Anti Cyclobutane Thymine Dimer Produced in High Yield by UVB Light in an Oligodeoxynucleotide at Acidic pH, Dian G. T. Su, Jeffrey L.-F. Kao, Michael L. Gross, and John-Stephen A. Taylor, *J. Am. Chem. Soc.*, 130, 11328-11337 (2008).
480. Improving the Signal Intensity and Sensitivity of MALDI Mass Spectrometry by Using Nanoliter Spots Deposited by Induction-based Fluidics, Tingting Tu, Andrew D. Sauter, 3rd, and Michael L. Gross, *J. Am. Soc. Mass Spectrom.*, 19, 1086-1090.
481. An Electrically Compensated Trap Designed to Eight Order for FT-ICR Mass Spectrometry, Adam M. Brustkern, Don L. Rempel, and Michael L. Gross, *J. Am. Soc. Mass Spectrom.*, 19, 1281-1285 (2008).
482. Microsecond Time-Scale Hydroxyl Radical Profiling of Solvent-Accessible Protein Residues, David M. Hambly and Michael L. Gross, chapter in *Comprehensive Analytical Chemistry*, Volume 52, 151-177 (2008).
483. Characterization of Structural Variations in the Peptidoglycan of Vancomycin-Susceptible *Enterococcus faecium*: Understanding Glycopeptide-Antibiotic Binding Sites Using Mass Spectrometry, Gary J. Patti, Jiawei Chen, Jacob Schaefer, and Michael L. Gross, *J. Am. Soc. Mass Spectrom.*, 19, 1467-1475 (2008).
484. Self-organised nano-arrays of p-phosphonic acid functionalised higher order calixarenes, Thomas E. Clark, Mohamed Makha, Alexandre N. Sobolev, Dian Su, Henry Rohrs, Michael L. Gross, Jerry L. Atwood, and Colin L. Raston, *New Journal of Chemistry*, 32, 1478-1483 (2008).
485. Estrogen Carcinogenesis: Specific Identification of Estrogen-Modified Nucleobase in Breast Tissue from Women, Q. Zhang, R.L. Aft and M.L. Gross, *Chem. Res. Tox.*, 21, 1509 (2008).
486. Two Approaches to Mass Spectrometric Protein Foot Printing: PLIMSTEX and FPOP, Michael L. Gross, Mei M. Zhu, and David Hambly, in *Mass Spectrometry Analysis for Protein-Protein Interactions and Dynamics*, Chance, M, ed, Wiley, 243-270, 2008.

Michael L. Gross

SUBMITTED ARTICLES AND BOOK CHAPTERS

1. Alkaline Hydrolysis of Fullerene Malonic Esters: a Synthetic Strategy for the e,e,e-Family of Methanofullerene(60-63)-Carboxylic Acids, Eva Lovett, Michael Grayson, Joshua I. Hardt, Sameh S. Ali, Laura L. Dugan, and Michael L. Gross, *Journal of Organic Chemistry*,
2. Radical Cation/Radical Reactions: A Fourier Transform Ion Cyclotron Resonance Study of Allyl Radical Reacting with Aromatic Radical Cations, Amber L. Russell, Henry W. Rohrs, David Read, Daryl, E. Giblin, Peter P. Gaspar, and Michael L. Gross, *Int J. Mass Spectrom.*
3. A Combined Charged Residue-Field Emission Model of Macromolecular Electrospray Ionization, C.J. Hogan Jr, J.A. Carroll, H.W. Rohrs, P. Biswas, and Michael L. Gross, *Anal. Chem.*
4. PILAC Investigates Cell-Wall Architecture by Determining the Sequence of Post-insertional Peptidoglycan Modifications, Gary J. Patti, Jiawei Chen, Jacob Schaefer, and Michael L. Gross, *Cell*
5. Miniaturizing Sample Spots for Matrix-assisted Laser Desorption/Ionization Mass Spectrometry, Tingting Tu, Michael L. Gross, *Trends in Anal. Chem.*
6. The Balance of Beneficial and Deleterious Health Effects of Quinones: A Case Study of the Chemical Properties of Genistein and Estrone Quinones, Qiang Zhang, Tingting Tu, D. André d'Avignon and Michael L. Gross, *J. Am. Chem. Soc.*

Michael L. Gross
CURRENT FUNDING

<u>Agency</u>	<u>Total Annual Direct Costs</u>	<u>Annual Direct Costs to MLG</u>	<u>Title</u>	<u>Project Period</u>
1. NIH (2P41RR00954-29)	\$1,700,000	\$370,949	Resource for Biomedical Mass Spectrometry (PI: M. L. Gross)	2/05-7/09
2. NIH/NIAID (5 P01 AI031238-15)	\$243,481	\$ 56,829	T Cell Autoimmunity (PI: E. Unanue)	9/04-7/08
3. NIH/NIAID (2 R01 DK058177-06)	\$233,776	\$ 44,038	Diabetogenic Molecular I-Ag7 (PI: E. Unanue)	9/04-7/08
4. NIH/NIAID (5R01 AI024742-20)	\$397,282	\$18,315	Antigen Presentation of IA Molecules (PI: E. Unanue)	5/02-4/07
5. NIH/NIAID (2R01 AI022033-21)	\$250,000	\$ 7,501	Studies of Anigen Stimulation (PI: E. Unanue)	4/05-3/10
6. NIH/NCRR (1S10RR023590-01)	\$500,000	\$500,000	SIG: Mass Spectrometer for Biomedical Research Equipment only	02/07-01/08
6. NIH/NCRR	\$1,800,000	\$1,800,000	High-End Instrumentation: 12-Tesla FTMS for Top-Down	
7. Schering Plough		\$ 10,000	Unrestricted Gift	

Michael L. Gross
INVITED LECTURES: UNIVERSITIES, CONFERENCES,
INDUSTRIAL AND GOVERNMENT LABS—From 1979

- 1979 University of Iowa, Department of Chemistry, Iowa City, IA
1979 Oak Ridge National Laboratory, Analytical Chemistry Group, Oak Ridge, TN
1979 Texas Christian University, Department of Chemistry, Fort Worth, TX
1979 Texas Tech University, Department of Chemistry, Lubbock, TX
1979 University of Texas-El Paso, Department of Chemistry, El Paso, TX
1979 University of Missouri-Kansas City, Department of Chemistry, Kansas City, MO
1979 Kearney State College, Department of Chemistry, Kearney, NE
1979 American Chemical Society Meeting-Washington, D.C.
1980 Purdue University, Department of Chemistry, Lafayette, IN
1980 Eastern Analytical Symposium: "Aqueous Environmental Analysis by GC/MS", New York, NY
1980 Chevron Research, Albany, CA
1980 California Institute of Technology, Symposium: "Chemical Instrumentation in the 80's" (Plenary Lecture), Pasadena, Ca
1980 First Asilomar Conference on Mass Spectrometry, Asilomar, CA
1980 Nicolet Instrument, Madison, WI
1980 Hooker Chemical, Buffalo, NY
1980 Western New York Section ACS, Buffalo, NY
1980 Kansas State University, Department of Chemistry, Manhattan, KS
1980 University of Kansas, Department of Chemistry, Lawrence, KS
1980 Washburn University, Department of Chemistry, Topeka, KS
1980 Dept. of Energy Workshop on Mass Spectrometry, Seattle, WA
1980 University of Nebraska, School of Life Sciences, Lincoln, NE
1981 University of North Carolina, Department of Chemistry, Chapel Hill, NC
1981 Massachusetts Institute of Technology, Department of Chemistry, Boston, MA
1981 Northeastern University, Department of Chemistry, Boston, MA
1981 University of Utah, Department of Chemistry, Salt Lake City, UT
1981 Bay Area Mass Spectrometry Interest Group, Berkeley, CA
1981 Northeastern Ohio Mass Spectrometry Interest Group, Cleveland, OH
1981 Exxon Corporation, Houston, TX
1981 Eastman Kodak, Rochester, NY
1981 American Chemical Society: North Jersey Section, Linden, NJ
1981 Exxon Corporation, Linden, NJ
1981 2nd International Ion Cyclotron Resonance Conference, Maintz, Germany
1981 National American Chemical Society Meeting, Fisher Award, Symposium honoring Fred McLafferty, Atlanta, Georgia
1981 Symposium on Host Factors in Human Carcinogenesis, Cape Sounion, Greece
1981 Summer Symposium on Analytical Chemistry, University of Pittsburgh, Pittsburgh, PA
1981 National American Chemical Society Meeting, Symposium: "Why Fourier Transform Mass Spectrometry?" New York, New York
1981 Second Asilomar Conference on Mass Spectrometry, Pacific Grove, CA

Michael L. Gross
INVITED LECTURES: UNIVERSITIES, CONFERENCES,
INDUSTRIAL AND GOVERNMENT LABS—From 1979

- 1981 International Symposium on Chlorinated Dioxins and Related Compounds, Washington, DC
- 1981 Eastern Analytical Symposium: "Gas Chromatography/High Resolution Mass Spectrometry Using Double Focusing and Fourier Transform Mass Spectrometers," New York, NY
- 1981 American Society for Mass Spectrometry, "Newer Aspects of Ion Cyclotron Resonance," Minneapolis, MN
- 1982 Pittsburgh Conference, "High Resolution Fourier Transform GC-MS Using SCOT Columns," Atlantic City, NJ
- 1982 American Chemical Society Meeting, Symposium honoring F.W. McLafferty, Fisher Award winner, Atlanta, Georgia (served as symposium organizer).
- 1982 Texas A & M University, Department of Chemistry, College Station, TX
- 1982 University of California-Riverside, Department of Chemistry, Riverside, CA
- 1982 American Chemical Society, Symposium: "State of the Art Symposium," Las Vegas, Nev
- 1982 Mount Sinai Hospital, Symposium: "Reproductive Epidemiology in Vietnam," New York, NY
- 1982 NATO Advanced Study Institute, "Chemistry of Ions in the Gas-Phase", Vimeiro, Portugal (Plenary lecturer)
- 1982 Eastern Analytical Symposium: "Symposium on Mass Spectrometry: Analysis of Nonvolatile or High Molecular Weight Substances," New York, NY
- 1982 Society for Applied Spectroscopy, Symposium: "Multidiscipline Symposium," Chicago, IL (presented two invited lectures)
- 1982 Fall ASMS workshop on "MS/MS", Chicago, IL
- 1982 Eastern Analytical Symposium: "Analysis of Polar or High Molecular Wt. Materials by Mass Spectrometry," New York, NY (served as organizer and presented lecture)
- 1982 ASMS Meeting, Workshop, "Resolution in MS/MS," Honolulu, Hawaii (served as organizer).
- 1983 Minnesota Mining and Manufacturing, St. Paul, MN
- 1983 American Society for Mass Spectrometry Meeting (presented two invited symposium lectures) "Analytical Applications of Fourier Transform Mass Spectrometry" and "Do Electrocyclic and Cycloaddition Reactions Occur for Radical Cations"
- 1983 Thirteenth Annual Symposium on the Analytical Chemistry of Pollutants, Jekyll Island, GA
- 1983 Fifteenth Central Regional Meeting of the American Chemical Society. Symposium on Mass Spectrometry
- 1983 Thirty-sixth Annual Summer Symposium on Analytical Chemistry, Fourier Transform Methods, Lincoln, NE
- 1983 American Chemical Society Meeting, Washington, DC
- 1983 British Mass Spectrometry Meeting, Warwick, England (Plenary Lecture)
- 1983 Pacific Coast Spectroscopy Meeting
- 1983 Seventh Annual Symposium on Developments in Mass Spectrometry, University of Alabama-Birmingham, Birmingham, AL
- 1983 Dioxins in the Environment Conference, Michigan State University, East Lansing, MI
- 1984 Hewlett-Packard, Palo Alto, CA
- 1984 University of South Florida, Department of Chemistry, Tampa, FL
- 1984 University of Miami, Department of Chemistry, Miami, FL

Michael L. Gross
INVITED LECTURES: UNIVERSITIES, CONFERENCES,
INDUSTRIAL AND GOVERNMENT LABS—From 1979

- 1984 Naval Research Laboratories, Washington, DC
- 1984 Washington, DC, Mass Spectrometry Group, Washington, DC
- 1984 University of Minnesota, Dept. of Biochemistry, Minneapolis, MN
- 1984 University of Minnesota, Dept. of Chemistry, Minneapolis, MN
- 1984 University of Missouri, Dept. of Chemistry, Columbia, MO
- 1984 Swiss/French Mass Spectrometry Conference, Lausanne, Switzerland (Plenary Lecture)
- 1984 Technische Universitat Berlin, West Berlin, Germany
- 1984 American Society for Applied Spectroscopy Symposium, St. Louis, MO
- 1984 Kansas City American Chemical Society, Kansas City, MO
- 1984 Tennessee Eastman, Kingsport, TN (presented workshop and lecture)
- 1984 University of Nebraska, Department of Physics, Lincoln, NE
- 1984 University of Nebraska, Department of Food Science and Technology, Lincoln, NE
- 1984 International Symposium on Mass Spectrometry in the Health and Life Sciences, San Francisco, CA
- 1984 Symposium on SIMS and FAB Mass Spectrometry, Organized by 3M, MCMS, and NSF, St. Paul, MN
- 1984 University of Arizona, School of Pharmacy, Phoenix, AZ
- 1984 University of Indiana, Distinguished Lecture Series, Department of Chemistry, Bloomington, In
- 1984 American Society for Mass Spectrometry, Workshop on High Mass Ion Analysis, Newark, NJ
- 1984 New York State, Dept. of Health, Center for Laboratories and Research, Albany, NY
- 1984 Eastern Analytical Symposium: "Analysis of Toxic Combustion Products by Mass Spectrometry," New York, NY
- 1985 American Society for Mass Spectrometry Annual Meeting (two symposium lectures), "Alternate Ionization Techniques for Environmental Analysis," San Diego, CA
- 1985 American Society for Mass Spectrometry Annual Meeting, "Applications of Collisional Activation of Ions Produced by FAB or in Gas-Phase Reactions," San Diego, CA
- 1985 University of Georgia, Department of Chemistry, Athens, GA
- 1985 Southern Illinois University, Department of Chemistry, Carbondale, IL
- 1985 University of Munster, Workshop on Ionization from Organic Solids, III, Munster, Germany
- 1985 University of Cincinnati Oespers Symposium, Department of Chemistry, Cincinnati, OH
- 1985 University of Colorado, Department of Chemistry, Boulder, CO
- 1985 Gesellschaft fur Biotechnologische Forschung mbH, Mass Spectrometry Workshop, Braunschweig, Germany
- 1985 Oak Ridge National Laboratory Symposium on Analytical Chemistry, Oak Ridge, TN
- 1985 Battelle Pacific Northwest Laboratories, Hanford Life Sciences Symposium, Richmond, WA
- 1985 Symposium on Mass Spectrometry: New Instrumentation for Physical-Organic, Bio- and Environmental Chemistry, Nebraska Academy of Sciences Annual Meeting
- 1985 Eastern Analytical Symposium: "Tandem Mass Spectrometry for the Determination of Biomolecules," New York, NY

Michael L. Gross
INVITED LECTURES: UNIVERSITIES, CONFERENCES,
INDUSTRIAL AND GOVERNMENT LABS—From 1979

- 1985 Proctor and Gamble, Cincinnati, Ohio
- 1985 Eastman Kodak, Rochester, NY.
- 1986 Michigan State University, Department of Chemistry, East Lansing, MI
- 1986 University of Michigan, Department of Chemistry, Ann Arbor, MI
- 1986 University of Oklahoma, J. C. Karcher Lecturer, Department of Chemistry, Norman, OK
- 1986 University of Kansas, Department of Chemistry, Lawrence, KS
- 1986 Pittsburgh Conference on Analytical Chemistry, Symposium on New Instrumentation in Mass Spectrometry
- 1986 2nd Annual Symposium "Environmental Toxicology and Neoplasia", University of Nebraska Medical Center, Omaha, NE
- 1986 Texas Symposium on Mass Spectrometry, Texas A & M University, College Station, TX (lecture delivered by K.B. Tomer)
- 1986 International Workshop on Ion-Molecule Reactions in Applied Mass Spectrometry, Versailles, France
- 1986 American Chemical Society Meeting, Symposium on Fourier Transform Mass Spectrometry, Anaheim, CA
- 1986 5th Annual Asilomar Conference on Mass Spectrometry, Asilomar, CA
- 1986 Federation of Analytical Chemistry and Spectroscopy Societies, XII, St. Louis, MO
- 1986 IBM-San Jose, Research Center.
- 1987 Upjohn Company, Symposium on Mass Spectrometry, Kalamazoo, MI
- 1987 Missouri Western State College, St. Joseph, MO
- 1987 SmithKline and French Laboratories, West Chester, PA (two lectures)
- 1987 Society for Applied Spectroscopy, Pittsburgh, PA
- 1987 The University of Texas, Department of Chemistry, Austin, TX
- 1987 Minnesota Chromatography Symposium, Minneapolis, MN
- 1987 Royal Society of Chemistry, Analytical Division, "Spectroscopy across the Spectrum: Analytical Applications of Spectroscopy", University of East Anglia, Norwich, United Kingdom
- 1987 16th British Mass Spectrometry Society-1987, York, England, (Allan C. Maccoll lecturer)
- 1987 Royal Dutch Shell, Amsterdam, Netherlands
- 1987 International Symposium on Applied Mass Spectrometry in the Health Sciences, Barcelona, Spain
- 1987 University of Aveiro, Department of Chemistry, Aveiro, Portugal
- 1987 6th Annual Asilomar Conference on Mass Spectrometry, Asilomar, CA, (served as program chairman)
- 1987 2YC3 Conference at Southeast Community College, Lincoln, NE
- 1987 University of Tennessee, Department of Chemistry (Hertel Lecturer)
- 1987 Southwest ACS Meeting, Symposium on Biomedical Applications of Mass Spectrometry, Little Rock, AR (Plenary lecturer)
- 1988 Penn State University, Department of Chemistry, College Station, PA
- 1988 Emory University, Department of Chemistry, Atlanta, GA
- 1988 Georgia Tech University, Department of Chemistry, Atlanta, GA
- 1988 St. Olaf College, Department of Chemistry, Northfield, MN
- 1988 Wichita State University, Department of Chemistry, Wichita, KS

Michael L. Gross
INVITED LECTURES: UNIVERSITIES, CONFERENCES,
INDUSTRIAL AND GOVERNMENT LABS—From 1979

- 1988 American Society for Mass Spectrometry, "Interplay Between Ion Chemistry, Instrumental Development, and Applications," San Francisco (Plenary Lecturer)
- 1988 American Chemical Society Meeting, Symposium on Ion Trapping, Los Angeles, CA
- 1988 International Mass Spectrometry Conference, Bordeaux, "Highlights of Ion Chemistry: A Review of Structurally Specific Reactions" (Keynote Lecturer)
- 1988 University of Warwick, Coventry, England, Department of Chemistry, (Albright and Wilson Visiting Professor - presented five research lectures)
- 1988 Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Symposium on Tandem MS, New Orleans, LA
- 1988 Northeast Missouri State University, Department of Chemistry, St. Joseph, MO
- 1989 Schering Corporation, Bloomfield, NJ
- 1989 American Chemical Society, F. W. McLafferty Award Symposium "Tandem Mass Spectrometry for Proving Structures of Biomolecules", Dallas, TX
- 1989 2nd International Symposium on Mass Spectrometry in the Health and Life Sciences, San Francisco, CA
- 1989 Battelle Northwest Laboratories, Richland, Washington
- 1989 Applied Spectroscopy Societies, Symposium on Fourier Transform Mass Spectrometry, Chicago, IL
- 1989 University of Georgia, Department of Chemistry, Athens, GA
- 1989 Madison-Chicago-Milwaukee Mass Spectrometry Discussion Group, Elgin, IL
- 1989 Monsanto, St. Louis, MO
- 1989 Lake Louise Conference on Tandem Mass Spectrometry, Calgary, Alberta, Canada
- 1990 The Third Lake Louise Workshop on Radical Cations, Biology and Tandem Mass Spectrometry, Lake Louise, Canada
- 1990 National ACS Symposium on Mapping and Sequencing the Human Genome, Washington, DC
- 1990 National ACS Symposium on Lasers and Mass Spectrometry--I, Washington, DC
- 1990 National ACS Symposium, Instrumentation Award Symposium Honoring Alan G. Marshall, Washington, DC
- 1990 8th Asilomar Conference on Mass Spectrometry, Pacific Grove, CA
- 1990 National Research Council of Canada, Halifax, Nova Scotia, Canada
- 1990 North Jersey ACS Mass Spectrometry Group, Bloomfield, NJ
- 1990 Southeast Texas Mass Spectrometry Discussion Group, Houston, TX
- 1990 Co-Director of NATO Advanced Study Institute and present invited lectures, Cetraro, Italy
- 1990 Visiting Professor of the International Graduate School, van't Hoff Institute, University of Amsterdam (presented 18 research lectures)
- 1990 University of Houston, Department of Chemistry
- 1990 University of Arizona, Department of Chemistry
- 1990 North Dakota State University, Department of Chemistry, Fargo, ND
- 1990 University of Iowa, Department of Chemistry, Iowa City, IA
- 1990 University of Aveiro, Department of Chemistry, Portugal
- 1990 Cornell University, Department of Chemistry, Cornell, NY
- 1991 University of Colorado, Department of Pharmacology, School of Medicine, Denver, CO
- 1991 Pittsburgh Conference on "Special Mass Spectrometric Techniques", Chicago, IL

Michael L. Gross
INVITED LECTURES: UNIVERSITIES, CONFERENCES,
INDUSTRIAL AND GOVERNMENT LABS—From 1979

- 1991 University of Nebraska-Lincoln & ISCO, Inc., "Protein & Peptide Analysis Workshop Separation and Mapping with CE and LC," Lincoln, NE
- 1991 Virginia Commonwealth University, Department of Chemistry, Richmond, VA
- 1991 University of Nebraska-Lincoln, Center for Biological Chemistry, Lincoln, NE
- 1991 University of Nebraska-Lincoln, Libraries' Visiting Scholar Program, Lincoln, NE
- 1991 Vanderbilt University, Department of Chemistry and Department of Pharmacology, Nashville, TN
- 1991 Washington University, Department of Chemistry, St. Louis, MO
- 1991 Iowa State University, Department of Chemistry, Ames, IA (2 lectures)
- 1991 Air Products and Chemicals, Inc., Allentown, PA
- 1991 Harris Laboratories, Scientific Achievement Day Lecture, Lincoln, NE
- 1991 Hoechst Celanese Corporation, Corpus Christi, TX
- 1991 Eleventh Australian Symposium on Analytical Chemistry, Hobart, Tasmania, Australia
- 1991 Analytical Advances for the 90's Workshop, Ootmarsum, Elsevier Publishing Company, Netherlands
- 1991 12th International Mass Spectrometry Conference, Amsterdam, Netherlands
- 1991 American Chemical Society National Meeting, "Characterizing Structure of Large Molecules," Atlanta, GA
- 1992 University of Texas at Austin, Department of Chemistry, Austin, TX
- 1992 Purdue University, Department of Chemistry, Lafayette, IN
- 1992 F.W. McLafferty Retirement Lecture, Cornell University, Cornell, NY
- 1992 Max-Planck-Institute for Experimental Medicine, Goettingen, Germany (Plenary Lecture in Tandem Mass Spectrometry, Dedication Symposium)
- 1992 Technical University of Berlin, Department of Chemistry, Berlin, Germany
- 1992 American Chemical Society National Meeting, "Detection, Characterization and Structure of DNA Adducts," Washington, DC,
- 1992 2nd European Tandem Mass Spectrometry Conference, Warwick, UK (Plenary Lecturer)
- 1992 34th Rocky Mountain Conference, Mass Spectrometry Symposium, Denver, CO (Keynote Lecturer)
- 1992 Kyoto '92 International Conference on Biological MS, Kyoto, Japan (Keynote Lecturer)
- 1992 University of Wisconsin-Madison, Department of Chemistry, Madison, WI
- 1992 Washington University-St. Louis, Department of Chemistry, St. Louis, MO
- 1992 Wichita State University, Department of Chemistry, Wichita, KS
- 1992 Minnesota Mass Spectrometry Discussion Group, St. Paul, MN
- 1993 University of Washington, Department of Chemistry, Seattle, WA
- 1993 Montana State University, Department of Chemistry, Bozeman, MT
- 1993 Indiana University, Department of Chemistry, Bloomington, IN (Kraft Lecturer)
- 1993 University of Amsterdam, Institute for Mass Spectrometry (Plenary Lecture in Dedication of Institute for Mass Spectrometry Symposium)
- 1993 Symposium Environmental Sciences", Denver, Colorado
- 1993 Schering-Plough, Kenilworth, NJ
- 1993 Indian Institute of Chemical Technology, Hyderabad, India
- 1993 Indian Institute of Technology, Madras, India

Michael L. Gross
INVITED LECTURES: UNIVERSITIES, CONFERENCES,
INDUSTRIAL AND GOVERNMENT LABS—From 1979

- 1993 University of Colorado, Department of Chemistry, Boulder, CO
- 1993 International Chemical Conference, Kaohsiung, Taiwan (Plenary Lecturer)
- 1993 National Taiwan University, Department of Chemistry, Taipei, Taiwan
- 1993 Tamkang University, Department of Chemistry, Tamsui, Taiwan
- 1993 Bhabha Atomic Research Center, Bombay, India
- 1993 Air Products and Chemicals, Inc. Allentown, PA
- 1993 41st American Society for Mass Spectrometry Conference, Symposium on Distonic Ions, San Francisco, CA
- 1993 Society for Environmental Toxicology and Chemistry (SETAC), Newark Bay, NJ
- 1993 Sixth National Symposium on Mass Spectrometry, Indian Institute of Petroleum, Dehradun, India
- 1993 XXVIII Colloquium Spectroscopicum International, York, England
- 1993 NATO Advanced Study Institute on Mass Spectrometry in the Biomolecular Science, Ischia, Italy
- 1994 American Chemical Society meeting, San Diego, CA
- 1994 Mass Spectrometry in Health and Life Sciences Symposium, San Francisco, CA
- 1994 ACS Midwest Regional meeting, Kansas City, MO
- 1994 Midwest Mass Spectrometry Discussion Group, St. Louis, MO
- 1994 Pittsburgh Conference, Symposium: "Fourier Transform Mass Spectrometry of Biomolecules," Chicago, IL
- 1994 Pittsburgh Conference, Symposium: "Pittsburgh Analytical Chemistry Awards," Chicago, IL
- 1994 University of New Orleans, Department of Chemistry, New Orleans, LA
- 1994 14th Australia/New Zealand Mass Spectrometry Conference, Bundoora, Victoria, Australia,
- 1994 Federation of Analytical Chemistry and Spectroscopy Societies, Symposium on Advances in Structure Elucidation by Mass Spectrometry, St. Louis, MO
- 1995 University of Texas-Houston, School of Medicine, Houston, TX
- 1995 Department of Health & Human Services, Food & Drug Admin., St. Louis, MO
- 1995 Southern Illinois University, Department of Chemistry, Carbondale, IL
- 1995 University of California—Berkeley, Department of Chemistry, Berkeley, CA
- 1995 Pittsburgh Conference, Symposium on Mass Spectrometry, New Orleans, LA
- 1995 Food and Drug Symposium on Mass Spectrometry, Washington, D.C.
- 1995 Asilomar Conference, Monterey, CA
- 1995 Northern Illinois University, Department of Chemistry, DeKalb, IL
- 1995 Western Biotech Conference, San Diego, CA
- 1995 University of California—San Francisco, School of Pharmaceutical Sciences, San Francisco, CA
- 1995 Mass Spectrometry Group, Research Triangle Park, NC
- 1996 Florida State University, Department of Chemistry, Tallahassee, FL (two lectures)
- 1996 Sanibel Conference on Mass Spectrometry, Sanibel Island, FL
- 1996 Chicago Society for Applied Spectroscopy, Chicago, IL
- 1996 Texas A & M University, Texas, Department of Chemistry, College Station, TX (Frontier Lecturer)

Michael L. Gross
INVITED LECTURES: UNIVERSITIES, CONFERENCES,
INDUSTRIAL AND GOVERNMENT LABS—From 1979

- 1996 University of Missouri—St. Louis, Department of Chemistry, St. Louis, MO
- 1996 University of North Carolina, Department of Chemistry, Chapel Hill, NC
- 1996 American Society for Mass Spectrometry Conference -- Portland, OR
- 1996 NATO Conference on Biological Applications of MS, Torre Normana, Sicily, Italy
- 1996 American Chemical Society Conference, Div. of Chemical Toxicology -- Orlando, FL
- 1996 University of Missouri—Columbia, Department of Chemistry, Columbia, MO
- 1997 2nd Igler MS Tage, Innsbruck, Austria.
- 1997 American Chemical Society Conference, Division of Analytical Chemistry, San Francisco, CA (two invited Symposium Lectures)
- 1997 World Conference Centre, Melbourne Australia - Plenary Lecture for XXX Colloquium
- Spectroscopicum Internationale
- 1997 University of New South Wales, Sydney, Australia
- 1997 University of Wollongong, Wollongong, Australia
- 1997 Kyoto Institute of Technology, Kyoto, Japan
- 1997 Mass Spectrometry Discussion Group, Washington University School of Medicine, St. Louis, MO
- 1997 Grinnell College, Department of Chemistry, Grinnell, IA. Pew Lecturerh (2 lectures)
- 1997 University of Northern Iowa, Department of Chemistry, Cedar Falls, IA
- 1997 Keith Jenning Symposium, Warwick University, Warwick, England
- 1998 University of Nebraska-Lincoln, Chemistry Department, Lincoln, NE
- 1998 American Chemical Society National Meeting, Dallas, TX
- 1998 HPLC'98 International Symposium, St. Louis, MO
- 1998 112th AOAC International Annual Meeting and Exposition, Montreal, Canada
- 1998 State University of New York at Buffalo, Department of Chemistry, Buffalo, NY
- 1999 University of Florida, Department of Chemistry and Division of Biotechnology, Gainesville, FL
- 1999 Washington University, Department of Genetics, St. Louis, MO
- 1999 ACS National Meeting, Anaheim, to participate in a one-day symposium to celebrate ACS Field and Franklin Award to M.L. Gross
- 1999 Louisiana State University, Department of Chemistry, Baton Rouge, LA
- 1999 University of California, Davis, Department of Chemistry, Davis, CA
- 1999 University of Tennessee, Department of Chemistry, Knoxville, TN
- 1999 North New Jersey Mass Spectrometry Discussion Group, Kenilworth, NJ
- 2000 32nd ACS Central Region Meeting, Covington, KY
- 2000 EnviroAnalysis 2000 conference, Ottawa, Canada
- 2000 Mass Spectrometry Colloquium, Vienna, Austria
- 2000 Wayne State University, Department of Chemistry, Detroit, MI
- 2000 Southern Illinois University, Department of Chemistry, Edwardsville, IL
- 2001 University of California-Santa Barbara, Department of Chemistry, Santa Barbara, CA
- 2001 Lake Arrowhead Ion Chemistry Conference, Lake Arrowhead, CA
- 2001 Washington University School of Medicine, BioOrganic Program, St. Louis, MO
- 2001 Gordon Conference on Ion Chemistry, Ventura, CA
- 2001 3rd North American FT-ICR Conference, Austin, TX

Michael L. Gross
INVITED LECTURES: UNIVERSITIES, CONFERENCES,
INDUSTRIAL AND GOVERNMENT LABS—From 1979

- 2001 Symposium in honor of N.M.N. Nibbering, Kerkrade, Netherlands
- 2001 6th European Workshop on Fourier Transform Ion Cyclotron Resonance Mass Spectrometry, Netherlands
- 2001 Watkins Visiting Professor, Wichita State University, Wichita, Kansas
- 2001 University of Massachusetts, Amherst, MA
- 2001 Washington University School of Medicine, St. Louis, MO
- 2001 Washington University School of Medicine, St. Louis, MO, Biophysics Program
- 2002 223rd ACS National Meeting, Orlando, FL
- 2002 Eli Lilly, Indianapolis, IN
- 2002 37th Midwest Regional Meeting of the American Chemical Society, Lawrence, KS
- 2002 Symposium on Biological Mass Spectrometry, Donald Danforth Plant Science Center, St. Louis, MO
- 2002 Washington University School of Medicine Seminar Series, St. Louis, MO
- 2002 Ohio State, Department of Chemistry, Columbus, OH
- 2003 Gordon Conference on Ion Chemistry, Ventura, CA
- 2003 Mayo Clinic Proteomics Seminar, Rochester, MN
- 2003 Cornell University, Ithaca, NY
- 2003 38th Midwest Regional Meeting of the American Chemical Society, Columbia, MO
- 2004 University of Nebraska, Department of Chemistry, Lincoln, NE, Nolan and Gloria Sommer Award Lecture
- 2004 Genome-Based Drug Discovery Symposium, Florence, Italy
- 2004 227th ACS National Meeting, Anaheim, CA
- 2004 University of New Mexico, Albuquerque, NM
- 2004 Japanese Biological Mass Spectrometry (BMS) Conference, Japan
- 2004 University of Tokyo, Tokyo, Japan
- 2004 7th Asian Conference on Analytical Sciences, Hong Kong, China
- 2004 Indiana Proteomics Symposium, Indiana University, Bloomington, IN
- 2004 Salute to Science, 60th Birthday of the Midwest Research Institute, Kansas City, MO
- 2004 Merck, West Point, PA and Rahway, NY: John D. Gilbert Memorial Lectures
- 2004 56th Southeastern Regional Meeting of the American Chemical Society, Chapel Hill, NC
- 2004 17th Tandem Mass Spectrometry Workshop, Alberta, Canada
- 2005 Plenary lecture, Italian School in Mass Spectrometry, Pontignano, Italy
- 2005 New Jersey ACS and MS Discussion Group Lectureship, Kenilworth, NJ
- 2005 John Hopkins University and Baltimore/Washington MS Discussion Group, Baltimore, MD
- 2006 18th Sanibel Conference on Mass Spectrometry, Biophysics, Sainbel Island, FL
- 2006 Symposium Lecture, ACS National Meeting, Atlanta, GA
- 2006 Department of Chemistry, University of Konstanz, Konstanz, Germany
- 2006 Department of Chemistry, Technical University of Berlin, Berlin, Germany
- 2006 Plenary Lecture, German Mass Spectrometry Group, Annual Meeting, University of Mainz, Mainz, Germany.
- 2006 Symposium Lecture, Pittcon 2006 Annual Conference, Orlando, FL (symposium organized by M. L. Gross)

Michael L. Gross
INVITED LECTURES: UNIVERSITIES, CONFERENCES,
INDUSTRIAL AND GOVERNMENT LABS—From 1979

- 2006 NSF Symposium on Instrumentation in Chemistry, University of Arizona, Tucson, AZ
Invited participant and lecturer.
- 2006 Desorption 2006 Conference, Athens, Greece
- 2006 Washington University, Midwest Mass Spectrometry Discussion Group, St. Louis, MO
- 2006 St. Louis, University, Department of Chemistry, St. Louis, MO
- 2006 Washington University, Breast Cancer Research Working Group, St. Louis, MO
- 2007 55th ASMS Conference, Indianapolis, IN, Symposium on Environmental MS
- 2007 Texas A & M University, Symposium to honor David H. Russell, Department of
Chemistry, College Station, TX
- 2007 Gordon Research Conference, Biomolecules in the Gas Phase, Bates College, ME
- 2007 Seoul National University, Department of Chemistry, Seoul, Korea
- 2007 Yonsei Univeristy, Department of Chemistry, Seoul, Korea
- 2007 Pohang Institute of Technology, Department of Chemistry (2 lectures) Pohang, Korea
- 2007 Korean Mass Spectrometry Society Meeting, Pyeondchang, Korea, Plenary Lecture
- 2007 Heartland Mass Spectrometry Workshop, Lake of the Ozarks, MO
- 2007 FACSS 2007, Symposium on Innovations in MS, Memphis, TN
- 2007 University of California-Riverside, Dept of Chemistry, Riverside, CA
- 2007 Pfizer, St. Louis, MO
- 2008 University of South Florida, Dept of Chemistry, Tampa, FL
- 2008 University of Wisconsin, Dept of Chemistry, Madison, WI
- 2008 University of Wisconsin, Department of Biophysics, Madison, WI
- 2008 Purdue University, Dept of Chemistry, Lafayette, IN, Freiser Lectureship
- 2008 Air Products and Chemicals, Allentown, PA
- 2008 University of Konstanz, Department of Chemistry, Konstanz, Germany, Bruker
Daltonics Lectureship
- 2008 University of Konstanz, Dept of Chemistry, Konstanz, Germany
- 2008 University of Arkansas, Dept of Chemistry, C.L. Wilkins Honor Symposium (2
lectures)
- 2008 Schering Plough Research Institute, Boston, MA

Michael L. Gross
CONFERENCE ORGANIZATION

- 1981 Symposium in honor of F.W. McLafferty, Fisher Award winner, at the Atlanta American Chemical Society Meeting
- 1982 Symposium, "Mass Spectrometry: Analysis of Nonvolatile or High Molecular Weight Substances," Eastern Analytical Symposium, New York, NY
- 1982 Fall ASMS workshop on "MS/MS", Chicago, IL
- 1982 Symposium, "Analysis of Polar or High Molecular Wt Materials by Mass Spectrometry", Eastern Analytical Symposium, New York, NY
- 1982 Workshop, "Resolution in MS/MS", ASMS Meeting, Honolulu, HI
- 1984 Workshop, " Interpretation of Mass Spectra," Tennessee Eastman, Kingsport, TN
- 1987 6th Annual Asilomar Conference on Mass Spectrometry, Asilomar, CA
- 1990 Co-Director of NATO Advanced Study Institute, "Mass Spectrometry in the Biological Sciences," Cetraro, Italy
- 1991 Protein & Peptide Analysis Workshop, "Separation & Mapping with CE and LC," Univ. of Nebraska-Lincoln & ISCO, Inc., Lincoln, NE
- 1992 Kyoto '92 International Conference on Biological MS, Kyoto, Japan, Member of Organizing Committee
- 1994 Symposium, "Advances in Structure Elucidation by Mass Spectrometry," Federation of Analytical Chemistry and Spectroscopy Societies, St. Louis, MO
- 1995 Symposium, "Future Mass Spectrometry Approaches for Structure Determination of Biomolecules," Pittsburgh Conference, New Orleans, LA
- 1996 15th Annual Asilomar Conference on Mass Spectrometry, Asilomar, CA
- 1997 Tutorials in Mass Spectrometry, Kyoto Institute of Technology, Kyoto, Japan
- 1997 16th Annual Asilomar Conference on Mass Spectrometry, Asilomar, CA
- 1997 Fourth International Symposium on Mass Spectrometry in the Health and Life Sciences,
Member of Organizing Committee
- 2006 Symposium "Applications of Mass Spectrometry in Protein Biophysics," Pittsburgh Conference Annual Conference, Orlando, FL