

**Michael L. Gross**

**CURRICULUM VITAE, PUBLICATION LIST, LECTURESHIPS**

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**PRESENT POSITION:**

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

**PRESENT ADDRESS:**

- Washington University, St. Louis, MO 63130 Phone: (314) 935-4814, FAX: (314) 935-7484
- E-Mail: <mgross@wustl.edu>
- URL: <http://msr.dom.wustl.edu/>

**PERSONAL INFORMATION:**

- Born: Nov. 6, 1940
- Two children: Matthew R. and Michele R. born, March 25, 1968
- Married to Paula E., June 23, 2007

**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 (one year)
- Postdoctoral, Purdue Univ. (F.W. McLafferty), 1967-68 (one year)

**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
- Editor, *Mass Spectrometry Reviews*, 1982-1990.

**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
- Elucidation of Gas-phase ion chemistry: Metal ion interactions, Distonic ions, Radical cations, Charge-Remote Fragmentations, Gas-Phase Solution Analogies

**EDITORIAL ACTIVITIES**

- Editor, *J. Amer. Soc. Mass Spectrometry*, 1990-present
- CoEditor, *Encyclopedia of Mass Spectrometry* (with R. Caprioli)
- CoEditor, *International Journal of Mass Spectrometry*, Vol 287, dedicated to CL Wilkins Co-editor, 2009 (with I Fritsch and JO Lay).
- CoEditor, *International Journal of Mass Spectrometry*, Volumes 210/211 dedicated to NMM Nibbering (with KR Jennings and A Heck)
- Editor, *Mass Spectrometry Reviews*, John Wiley, Publisher, 1982-1990.

## HONORS, LECTURESHIPS:

2018	ACS Award in Analytical Chemistry	American Chemical Society
2017	Election as Fellow to AAAS	American Association for the Advancement of Science
2016	Plenary Lecture	American Society for Mass Spectrometry, Sanibel Conference
2013	Opening Plenary Lecture on History on first 50 y of Mass Spectrometry (1913-1963)	American Society for Mass Spectrometry, Annual Conference
2013	EAS Award for Achievements in Mass Spectrometry	Eastern Analytical Symposium
2012	Opening Tutorial Lecture	International Conference on Mass Spectrometry, Kyoto
2012	Wolfgang Paul Lectureship	Mass Spectrometry Societies of Germany and Poland, Poznan
2011	Honorary Lifetime Membership	Mass Spectrometry Society of Japan
2011	Michael L. Gross 70th Birthday Honor Issue	<i>International Journal of Mass Spectrometry</i> , 301 (1-3), 1-240 (2011), Edited by DH Russell, Yinsheng Wang, NMM Nibbering
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	Nolan and Gloria Sommer Award	University of Nebraska—Lincoln
2004	Outstanding Mentor Award	Washington Univ. Grad. Student Senate
2002	Midwest Award for Achievements in Chemistry	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, Austria
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	Honorary 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 Rx's,
1984	Distinguished Lecture Series	Indiana University
1984	Plenary Lecture	Swiss/French Mass Spectrometry Conference
1984	Third Cycle Lectures	Eidgenössische Technische Hochschule Lausanne
1978	Amoco Teaching Medal	University of Nebraska-Lincoln

## ADVISORY, CONFERENCE AND EDITORIAL BOARDS

2016-17	<i>International Journal of Mass Spectrometry</i> , Tribute Volume for NMM Nibbering	Co-editor
2016-	University of Wisconsin, NIH National Center for Quantitative Biology of Complex Systems	Member, Adv. Brd.
2012-16	Vanderbilt University, National Research Resource for Imaging Mass Spectrometry	Chair, Adv Brd
2010-	University of Arkansas, Statewide Mass Spectrometry Facility	Member, Adv Brd
2010-	<i>Journal of the Mass Spectrometry Society of Japan</i>	Senior Editorial Advisory Board
2009	<i>International Journal of Mass Spectrometry</i> , Vol 287, dedicated to C.L. Wilkins	Co-editor
2009-	University of Georgia, National Research Resource for Integrated Glycotechnology	Member, Adv Brd
2007-09	University of Minnesota, Proteomics Center	Member, Review Panel
2004-	University of Illinois, NIH Center for Neuroproteomics	Member, Adv Brd
2004-07	Indiana University, NIH Center for Glycomics and Glycoproteomics	Member, Adv Brd
2002-14	Harvard University, NIH Resource on Biological Imaging	Member, Adv Brd
2001	<i>International Journal of Mass Spectrometry</i> , Volumes 210/211 dedicated to NMM Nibbering	Volume Editor
2000-	Encyclopedia of Mass Spectrometry, Elsevier	Co-Editor
1999-04	Vanderbilt University, NIEHS Toxicology Center	Member, Adv Brd
1997	15 <sup>th</sup> Asilomar Conference on Mass Spectrometry	Organizer
1997	In'l Organizing Committee, Symposia on MS in Biological and Health Sciences	Member
1995-	<i>International Journal of Mass Spectrometry</i>	Member, Editorial Brd
1995-96	Asilomar Conference Committee of the American Society for MS	Chairman
1995	Pittsburgh Conf. Symp Future MS Approaches for Sturct Determination	Organizer

1994-	<i>Journal of Mass Spectrometry</i>	Member, Editorial Brd
1994-96	<i>Chemical Research in Toxicology</i>	Member, Editorial Brd
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-	<i>Journal of the American Society for Mass Spectrometry</i>	Editor in Chief
1990-05	<i>Mass Spectrometry Reviews</i>	Member, Editorial Brd
1990-94	State of Nebraska EPSCoR Oversight Committee	Member
1990	NATO Adv Study Inst. on Biological MS	Scientific Director and Organizer
1987	6 <sup>th</sup> Asilomar Conference on Mass Spectrometry	Organizer
1986-94	<i>Analytical Chim. Acta</i>	Member, Editorial Brd
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
1983-15	UCSF, NIH Research Resource in Mass Spectrometry Advisory Board	Chair, Adv Brd
1982-94	<i>Organic Mass Spectrometry</i>	Member, Editorial Brd
1982-85	<i>Analytical Chemistry</i>	Member, Instrum. Panel
1982-84	<i>Internationl Journal of Mass Spectrometry and Ion Physics</i>	Member, Editorial Brd
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, Adv Brd
1981	ACS Symposium Honoring F.W. McLafferty	Organizer
1980-81	US EPA Hearings to Suspend 2,4,5-T and Silvex	Chief Analytical Chemistry 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 Qrganic Qual. Analysis Committees of the ASMS	Chairman
1972-74	Nebraska Section of the American Chemical Society	Secretary and Chairman

## CONSULTANSHIPS

- Aventis (and MBHB Patent Law Firm, Chicago) (2004-)
- Air Products (1990- )
- Schering-Plough (now Merck) (1989- )
- Eli Lilly (and MBHB Patent Law Firm, Chicago) (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, 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
  - Merck, 2004
  - 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
- Mass Spectrometry of Japan

**Michael L. Gross**  
**Publications**

**A. Ph.D. Thesis:**

Reactivity of Electron-Rich Aromatics, University of Minnesota, 1966, 192 pp. under the direction of E.A. Hill.

**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.
7. Peptide and Protein Mass Spectrometry in Drug Discovery, M.L. Gross, Guodong Chen, and Birenda N. Pramanik, eds., John Wiley and Sons, Hoboken, NJ, 464 pp, 2012.

**C. Edited Journal Volumes**

1. Ion Chemistry, Mass Spectrometry, and Infectious Enthusiasm: The Career of a Dutch Scientist - A Collection of Papers dedicated to Nico Nibbering, Edited by Keith R. Jennings, Michael Gross, Albert Heck, *Intl J. Mass Spectrom*, Volumes 210-211 (2001) 708 pages.
2. Leading-Edge Mass Spectrometry and Applications: A Special Issue Honoring Charles L. Wilkins on the Occasion of his 70th Birthday, Edited by Michael L. Gross, Jackson O. Lay, Jr. and Ingrid Fritsch, *Intl J. Mass Spectrom*, Volume 287 (2010) 134 pages.
3. Special Issue; Nico Nibbering Issue: A tribute for N.M.M. Nibbering, 1937-2014, by former PhD students, postdoctoral students, visiting scientists, and collaborators, Edited by Michael L. Gross, Albert Heck, *Int. J. Mass Spectrom*. Vol 413, (2017) 176 pages.

**D. Papers and Book Chapters:**

1. Substituent Effects in Unimolecular Ion Decomposition. Formation of  $\text{PhCO}^+$  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  $\text{C}_3\text{H}_7^+$  Ion by Ion Cyclotron Resonance Spectrometry, M.L. Gross, *J. Am. Chem. Soc.*, 93, 253-255 (1971).
6. 1,4-Elimination of  $\text{C}_6\text{H}_6$  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  $\text{C}_3\text{H}_6^+$  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.

**Michael L. Gross**  
**Publications**

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<sub>5</sub>H<sub>10</sub> 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<sub>5</sub>H<sub>10</sub> Isomers by Ion Cyclotron Resonance Spectrometry. M.L. Gross, P.H. Lin, and S.J. Franklin, *Anal. Chem.*, *44*, 974-978 (1972).
15. An Ion Cyclotron Resonance Study of the Structure of C<sub>3</sub>H<sub>6</sub><sup>+</sup> 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<sub>3</sub>H<sub>6</sub> 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<sub>3</sub>H<sub>7</sub>]<sup>+</sup> 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<sub>8</sub>H<sub>8</sub>O 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<sub>6</sub>H<sub>6</sub> 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<sub>6</sub>H<sub>6</sub>O 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).

**Michael L. Gross**  
**Publications**

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).
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 C<sub>6</sub>H<sub>6</sub>O 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).



**Michael L. Gross**  
**Publications**

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*<sub>1</sub>-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).
54. Four Isomers of C<sub>3</sub>H<sub>8</sub>O<sup>+</sup> Distinguished by Collisional Activation, F.W. Crow, M.M. Bursley, 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).
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