GARY M. HIEFTJE

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PRESENT POSITION

Distinguished Professor Emeritus
and Robert and Marjorie Mann Chair
Department of Chemistry
Indiana University
Bloomington, Indiana 47405

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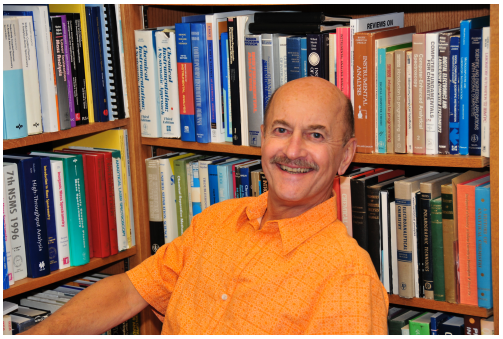

EDUCATIONAL RECORD

University of Illinois, Urbana, Illinois - Ph.D. - June, 1969

Advisor: Prof. H. V. Malmstadt
Thesis title: *A Unique System for Use in Studying Flame Spectrometric Processes*

Hope College, Holland, Michigan - A.B. - Chemistry – 1964

Zeeland High School, Zeeland, Michigan - 1956-60

(Foreign Languages: Read French and German)

RESEARCH INTERESTS

Investigation of basic mechanisms in atomic emission, absorption, fluorescence and mass-spectrometric analysis; development of atomic methods of analysis; chemical instrumentation, on-line computer-control of experimentation, laser applications in chemistry, elemental and molecular mass spectrometry, chemical applications of linear response theory; near-infrared correlation analysis; time-resolved luminescence; fiber-optic sensors.

PROFESSIONAL EXPERIENCE

Robert and Marjorie Mann Chair, Indiana University, 2000-present

Adjunct Professor of Informatics – 2005-2008

Gill Chair, Linda and Jack Gill Center for Instrumentation and Measurement Science, Indiana University, 1999-2000

Director, Linda and Jack Gill Center for Instrumentation and Measurement Science, Indiana University, 1999-2000

Interim Director, Linda and Jack Gill Center for Instrumentation and Measurement Science, Indiana University, 1997-1999

Chairman, Department of Chemistry, Indiana University, 1997-1999

Distinguished Professor of Chemistry, Indiana University, 1985-present

Professor of Chemistry, Indiana University, 1977-1985

Associate Professor of Chemistry, Indiana University, 1973-1977

Assistant Professor of Chemistry, Indiana University, 1969-1973

Assistant in "Electronics for Scientists," NSF-sponsored Short Course, Summer, 1966, 1967, 1968,1969

Graduate Teaching Assistant in Analytical Chemistry, University of Illinois, Fall and Spring Semester, 1965-1969

Research Assistant in Physical Chemistry, Illinois State Geological Survey, Urbana, Illinois, 1964-65

Laboratory Assistant, Organic, Analytical and General Chemistry, Hope College, 1961-1964

HONORS

Hope College Scholarship - 1960-1962

DuPont Scholarship in Chemistry, Hope College - 1962-1964

Phi Mu Alpha (National German Honor Fraternity)

NSF Traineeship in Chemistry, University of Illinois - 1965-1969

Sigma Xi - 1969 - present

Can Test Award (administered by the Chemical Institute of Canada) - 1979

Science & Engineering Research Council Senior Fellowship (England) - 1983

IR 100 Award (one of the 100 most-significant new technical products of the year) - 1983

Anachem Award - 1984

Meggers Award for year 1983, Society for Applied Spectroscopy - 1984

Lester W. Strock Medal, Society for Applied Spectroscopy - 1984

Chemical Instrumentation Award, American Chemical Society, Analytical Division - 1985

Distinguished Professorship, Indiana University, 1985 - Present

Pittsburgh Analytical Chemistry Award, Society for Analytical Chemists of Pittsburgh, - 1986

Theophilus Redwood Award, Royal Society of Chemistry, 1986

ACS Award in Analytical Chemistry Sponsored by Fisher Scientific Company, 1987

American Association for the Advancement of Science, Fellow - 1987

Tracy M. Sonneborn Award, Indiana University - 1987

Pergamon/Spectrochimica Acta Atomic Spectroscopy Award - 1988

R&D 100 Award, Research & Development Magazine - 1988

Society for Analytical Chemists of Pittsburgh, Honorary Membership – 1988

ACS Award in Spectrochemical Analysis - 1989

Indiana Academy of Science, Fellow - 1989

Pergamon/Spectrochimica Acta Atomic Spectroscopy Award - 1991

Eastern Analytical Symposium Award for Outstanding Achievement in the Field of Analytical Chemistry - 1992

Lester W. Strock Medal, Society for Applied Spectroscopy - 1992

Golden Key National Honor Society, Honorary Member - 1993

Distinguished Faculty Award, Indiana University Arts and Sciences Alumni Association - 1993

Honorary Professor of Jilin University, Jilin, China - 1995

Humboldt Research Award for Senior U.S. Scientists, Alexander Von Humboldt - Stiftung, Germany - 1996

Meggers Award for year 1995, Society for Applied Spectroscopy - 1996

Excellence in Teaching Award, American Chemical Society, Analytical Division - 1998

Gill Chair, College of Arts & Sciences, Indiana University - 1999

Society for Applied Spectroscopy, Honorary Membership - 1999

Pittsburgh Spectroscopy Award - 2001

Indiana Academy of Science Speaker of the Year - 2000-2001

Trustees Teaching Award, Indiana University – 2002

New York Section of the Society for Applied Spectroscopy Gold Medal Award – 2004

Distinguished Faculty Research Lecturer, Indiana University – 2004-2005

Monie A. Ferst Award (Sigma Xi) – 2004

Society for Applied Spectroscopy, Fellow of the Society – 2004

Royal Society of Chemistry, Fellow of the Society – 2005

CSI XXXV Award, sponsored by Wiley – 2007

Maurice Hasler Award, 2009

USP Award for an Outstanding Contribution to the Standard-Setting Process – 2010

Robert Boyle Prize for Analytical Science – 2010

American Chemical Society (ACS) Fellow – 2011

R&D 100 Award – Research and Development Magazine - 2011

American Chemical Society-Analytical Division - Distinguished Service Award – 2012

University of Cincinnati – Ralph and Helen Oesper Award – 2012

ASMS Ron Hites Award for Outstanding Presentation of Original Research.
Co-authors: Alexander G. Graham, Gary Hieftje of Indiana University; Christie G. Enke, Adjunct Professor of Chemistry, Indiana University and Professor Emeritus, University of New Mexico-Albuquerque; and Charles J. Barinaga and David W. Koppenaal of Pacific Northwest National Laboratory, Richland, WA.
Sponsor: American Society for Mass Spectrometry – 2013

Winter Conference Award in Plasma Spectrochemistry – 2014

2016 Best Paper Award - Spectrochimica Acta - Part B Atomic Spectroscopy. C.-Y. Chan and G.M. Hieftje (2016): Local cooling, plasma reheating and thermal pinching induced by single aerosol droplets injected into an ICP, Spectrochim. Acta Part B, 121 (2016) 55-66. Received October 2017.

2018 National Academy of Inventors – Elected as Fellow.

NAME LECTURESHIPS

W. Heinlen Hall Lecture Series, Bowling Green State University, 1975.

Barnett Lectureship, Northeastern University, May 7-8, 1986.

Edward Herbert Boomer Lectureship, University of Alberta, May 26-29, 1986.

Neckers Lecture, Southern Illinois University, April 24, 1987.

Mobay Lecture Series, University of New Hampshire, May 5-6, 1987.

W. Allan Powell Chemistry Lectureship, University of Richmond, March 18, 1988.

Distinguished Visiting Professorship, New Mexico State University, March 14-16, 1988.

Hobart H. Willard Lectures, University of Michigan, April 27-28, 1988.

Henry Werner Lecture, University of Kansas, October 24, 1988.

Randolph T. Majors Lecture, University of Connecticut, April 5-7, 1989.

Symposium at the Pontifical Academy of Sciences, The Vatican, June 27-28, 1989.

Visiting Professorship, Texas A&M University, March 26-30, 1990

Merck Frosst Lectureship, University of British Columbia, March 11-15, 1991.

L. B. Rogers Lectureship, University of Georgia, May 16-18, 1991.

J. and J. Neckers Lectureship in Chemistry, Hope College, October 11, 1991.

Samuel M. McElvain Seminar Series, University of Wisconsin, April 22-24, 1992.

Francis Clifford Phillips Lecture Series, University of Pittsburgh, May 13-14, 1992.

Visiting Professorship, University of Iowa, April 21-23, 1997.

Conover Lecturer, Vanderbilt University, March 16, 1998.

Clifford C. Hach Lecturer, University of Wyoming, October 26, 2001.

Wolfgang-Paul-Lecture, German Mass Spectrometry Society, University of Mainz, March 5, 2006.

Amy Mellon Lecture, Purdue University, West Lafayette, IN, September 18, 2007.

Herron Lecturer, Florida State University, Tallahassee, FL, April 17, 2009.

Probst Lecture, Southern Illinois University, Edwardsville, IL, March 29, 2010

Ott Lecture, Grand Valley State University, Allendale, MI, November 10-11, 2011

Dasgupta Lecture, Texas Tech University, Lubbock, TX, November 2011

Distinguished Visiting Professor Series, University of Florida, Gainesville, FL – 2013

PROFESSIONAL SERVICE ACTIVITIES

Advances in Inorganic Mass Spectrometry (AIMS), Advisory Editor, 1989-

American Chemical Society, Analytical Division Chairman, 1985-86

American Chemical Society, Analytical Division, Education Committee, 1988-1992

American Chemical Society, Analytical Division, Distinguished Service Award Jury, 1999-02

Analysis europa, Advisory Board, 1994-

The Analyst, Editorial Advisory Board, 2014-

Analytica Chimica Acta, Advisory Board, 1977-1999

Analytical Chemistry, Advisory Board, 1985-87

Analytical Chemistry Bench Top Series, Springer-Verlag, Editorial Board, past

Analytical Chemistry, Instrumentation Advisory Panel, 1978-1980

Analytical Sciences, Japan Society for Analytical Chemistry, Advisory Board 1999-Current

Annual Reports on Analytical Atomic Spectroscopy, Advisory Board, 1980-1984

Applied Spectroscopy, Editorial Board, 1997-2003

Applied Spectroscopy, Focal Point Series Editor, 1994-1996

Arizona State University, Chemistry Department External Review Committee, 1990

Brookhaven National Laboratory, External Review Committee, "Stabilization Tools for Augmenting Local Law Enforcement Response", 2008

Colloquium Spectroscopium Internationale XXXVIII, June 16-21, 2013, Tromsø, Norway
International Advisory Board Member, 2012-13

Colloquium Spectroscopium Internationale-XL, June 11-16, 2017, Pisa, Italy.
International Advisory Board Member 2016-17

Colloquium Spectroscopium Internationale XLI, August 25-30, 2019, Aspen, CO
Organizer and Chair, 2015-19

Commission V-4, Int. Union of Pure and Applied Chemistry, Member

Comprehensive Analytical Chemistry, Book Series, Editorial Advisory Board 1998-present

Council for Chemical Research, Governing Board, 1999-2001

Encyclopedia of Analytical Science, Advisory Board, Current

Encyclopedia of Scientific Instrumentation, International Advisory Board Member, Past

ETH, Department of Chemistry and Applied Biosciences (D-CHAB), Review Committee, Oct 2011

European Winter Conference on Plasma Spectroschemistry, Krakow, Poland, February 10-15, 2013 – International Scientific Advisory Committee, 2012-13

European Winter Conference on Plasma Spectroschemistry, St. Anton, Austria, February 19-24, 2017
International Scientific Organizing Committee, 2012-13

Fresenius' Journal of Analytical Chemistry, Editorial Board, 1993-1998

Florida State University, Chemistry Department Review, 2009

Heinrich Emanuel Merck Award Selection Jury, 1988-2010

Hewlett Packard Labs Research Board, 1991-93

Humana Press, Series Editor for "Contemporary Instrumentation and Analysis",
1991

Indiana Corporation for Science and Technology, Optical Technology Committee, past

Indiana University, Department of Chemistry, Chair 1997-1999

International Symposium on Metallomics (4th), July 8-11, 2013, Ovideo, Spain
Scientific Advisory Committee, 2012-13

Journal of Analytical Atomic Spectrometry, Editorial Board, 2002-2004, 2008-2016

Journal of Analytical Atomic Spectrometry, Editorial Board Chair, 2004-2006

Journal of Analytical Atomic Spectrometry/Metallomics, joint issue dedicated to Joseph A. Caruso, co-editor, 2016

Journal of Analytical Atomic Spectrometry, International Advisory Board, 1986-2002

Journal of Biomedical Optics, Editorial Board, 1998-2002

Journal of Mass Spectrometry, Advisory Board, 1995-1998

Laboratory Microcomputer, Advisory Board, past

Los Alamos National Laboratory, Review Committee - INC Division, Chairman, 1992-93

Los Alamos National Laboratory, Review Committee - CST Division, Current (Chairman, 1994-96)

Los Alamos National Laboratory, Review Committee - NMT Division, 1998-2000

Los Alamos National Laboratory, Review Committee - C Division, Chairman, 2004-2006

Mass Spectrometry Reviews, Editorial Board, 1994-2003

Heinrich Emanuel Merck Award Jury – 1985-2010

Metallomics, Editorial Board, 2009-present

NSF Workshop for evaluating future of Thermal Ionization Mass Spectrometry
Steering Committee – 2005-2006

Pacific Northwest National Laboratory, External Review Committee
NNSA Office of Research and Engineering Review Committee, 2004 and 2009

Pacific Northwest National Laboratory, External Review Committee
Uranium Detection Methods Review, 2009

Pacific Northwest National Laboratory, Environmental and Molecular Sciences Laboratory
Scientific Advisory Committee, 2008-2015

Pacific Northwest National Laboratory/Batelle
Proliferation Deterrence Merit Review Team – June 2012

Progress in Analytical Spectroscopy, Advisory Board, 1982-1990 (Editor 1985-87)

Purdue University, Chemistry Department External Review Committee, 1995

Química Analítica, Editorial Board, 2001

Research Trends, Editorial Advisory Board – past member

Royal Society of Chemistry (RSC), Analytical Division Awards Selection Committee, 2011-13

SIMS International Conference, Krakow, Poland,
International Scientific Organizing Committee – 2013-17

Savannah River National Laboratory
Lithium Isotopic Measurements by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
Review Team, 2008

Savannah River National Laboratory, Proliferation Deterrence Merit Review Team, 2009

Society for Analytical Chemists of Pittsburgh, Short Course, Oct. 7, 1986

Society for Applied Spectroscopy - President, 1991, Honorary Member 1999

Society for Applied Spectroscopy - Fellows Award Committee of the SAS National Committee, Chairman (2005-2006)

Society for Applied Spectroscopy - Lester W. Strock Award Committee, Chair-Elect - 2007-2010, 2012-13

Society for Applied Spectroscopy – Fellows Award Committee, Chairman, 2005-2006

Society for the Advancement of Analytical Sciences e.V., Scientific Board Member 2004-2009

Spectrochimica Acta, Part B: Spectrochimica Acta Electronica, Advisory Board

Spectrochimica Acta, Part B: Atomic Spectroscopy, Editorial Board, 1979-2019

Spectrochimica Acta Reviews, Advisory Board, 1991-1993

Spectroscopy and Spectral Analysis, China, Editorial Board, Current

Spectroscopy Letters, Editorial Board, Current

Talanta, Advisory Board, 1981-1986

USP General Chapters, Expert Committee, 2005-2010

University of Cincinnati, Chemistry Department External Review Committee, 1995

University of Georgia, Chemistry Department Visiting Committee, 1984-86

University of Iowa, Chemistry Department External Review Committee, 1994

University of Manchester Institute of Science and Technology, Visiting Professor, 1983

University of Pittsburgh, Chemistry Department
External Review Committee, 1988 and 1993

University of Buenos Aires, Buenos Aires, Argentina, Chemistry Department External Review Committee, 2002

University of Maryland, Chemistry Department External Review Committee, 2002

ORGANIZATIONS

American Chemical Society Member - 1963-present
(50^{th} Anniversary 2013)

American Chemical Society Fellow - 2011

American Society for Mass Spectrometry, Member, 1987-present

American Association for the Advancement of Science, Fellow, 1983-present

Golden Key Honor Society, Honorary Member, 1993-present

Indiana Academy of Science, Member (1987-1988), Fellow (1989-present)

Royal Society of Chemistry, United Kingdom, Fellow, 2001-present

Society for Applied Spectroscopy – Member (1967-1998), Honorary Member (1999-present)

BOOKS

1. "Chemical Separations and Measurements--The Theory and Practice of Analytical Chemistry" W. B. Saunders, NY, 1974 (with D. G. Peters and J. M. Hayes).
2. "A Brief Introduction to Modern Chemical Analysis", W. B. Saunders, NY, 1976 (with D. G. Peters and J. M. Hayes).
3. "Contemporary Topics in Analytical and Clinical Chemistry", Vol. 1, Plenum Press, NY, 1977 (with D. M. Hercules, L. R. Snyder, and M. A. Evenson).
4. "Contemporary Topics in Analytical and Clinical Chemistry", Vol. 2, Plenum Press, NY, 1978 (with D. M. Hercules, L. R. Snyder, and M. A. Evenson).
5. "New Applications of Lasers to Chemistry", ACS Symposium Series no. 85, American Chemical Society, Washington, D. C., 1978.
6. "Contemporary Topics in Analytical and Clinical Chemistry", Vol. 3, Plenum Press, NY, 1978 (with D. M. Hercules, L. R. Snyder, and M. A. Evenson).
7. "Introduction to Bioinstrumentation", Clifford D. Ferris, The Humana Press, Clifton, NJ, 1978, G. M. Hieftje, ed.
8. "Lasers in Chemical Analysis", The Humana Press, Clifton, NJ, 1981 (with J. C. Travis and F. E. Lytle).
9. "Contemporary Topics in Analytical and Clinical Chemistry", Vol. 4, Plenum Press, NY, 1982 (with D. M. Hercules, L. R. Snyder, and M. A. Evenson).
10. "Liquid Chromatography in Environmental Analysis", James F. Lawrence, The Humana Press, Clifton, NJ, 1984, G. M. Hieftje, series editor.
11. "A New Fiber-Optic-Based Phase-Resolved Phosphorescence Spectrometer", ed: Isiah M. Warner and Linda B. McGown, JAI Press Inc., Greenwich, CT and London, England 1991 (with F.B. Bright and C.A. Monnig)
12. “Microwave Plasmas in Analytical Atomic Spectrometry”, Jilin University Press, Changchun, Jilin, P.R. China, 1993.
13. "Focus on Analytical Spectrometry: A Compendium of Applied Spectroscopy Focal Point Articles (1994-1997)", Society for Applied Spectroscopy, Frederick, MD, 1998. (with J.A. Holcombe and V. Majidi)

CHAPTERS

1. *Correlation Methods in Chemical Data Measurement* in **Contemporary Topics in Analytical and Clinical Chemistry,** Vol. 3, D. M. Hercules, G. M. Hieftje, L. R. Snyder, and M. A. Evenson, eds., Plenum Press, NY, 1978, Ch. 4, pp. 153-216 (with G. Horlick).
2. *New Laser-Based Methods for the Measurement of Transient Chemical Events* in **New Applications of Lasers to Chemistry**, ACS Symposium Series no. 85, American Chemical Society, Washington, D. C., 1978, Ch.8, pp. 118-25 (with G. R. Haugen and J. M. Ramsey).
3. *A Linear Response Theory Approach to Time-Resolved Fluorometry* in **Modern Fluorescence Spectroscopy***,* Vol. 4, E. Wehry, ed., Plenum Press, NY, 1981, Ch. 2, pp. 25-50 (with E. E. Vogelstein).
4. *Operational Characteristics of a Helium Microwave Induced Plasma at Atmospheric Pressure* in **Development in Atomic Plasma Spectrochemistry**, R. M. Barnes, ed., Hayden and Sons, Rochelle Park, NJ, 1982, pp. 209-16 (with A. T. Zander).
5. *Signal-to-Noise Considerations in Fluctuation Analysis Spectroscopic Techniques* in **New Directions in Molecular Luminescence**, D. Eastwood, ed., ASTM Publication 822, Philadelphia, 1983, pp. 82-100 (with J. M. Ramsey).
6. *Energy Transport and Analyte Excitation in* **The ICP in Analytical Chemistry in the Exploration, Mining and Processing of Materials***,* L.R.P. Butler, ed., Blackwell Scientific Publications, 1986, pp. 15-24 (with J. W. Mills, J. W. Carr, G. D. Rayson, H. Huang, and K. A. Marshall).
7. *Torches for Inductively Coupled Plasmas* in **Inductively Coupled Plasma Emission Spectrometry--Part 1: Methodology, Instrumentation and Performance***,* P.W.J.M. Boumans, ed., Wiley, 1987, pp. 258-295 (with P.W.J.M. Boumans).
8. *A New Fiber-Optic-Based Phase-Resolved Phosphorescence Spectrometer* in **Advances in Multidimensional Luminescence, Volume I**, I. M. Warner, ed., JAI Press, Inc., 131, 1991 (with F. V. Bright and C. A. Monnig).
9. *Induction-Coupled Plasmas* in **Analytical Atomic Spectroscopy**, J. A. Holcombe, ed., John Wiley & Sons, Inc. Publishers (1987).
10. *Characterization and Comparison of Three Fiber-Optic Sensors for Iodine Determination Based on Dynamic Fluorescence Quenching of Rhodamine 6G* in **45 Years of the Greatest Science on Earth** (with W. A. Wyatt and F. V. Bright).
11. *Foreword* in **Inductively Coupled Plasmas in Analytical Atomic Spectrometry**, ed: A. Montaser and D.W. Golightly, VCH Publishers, Inc.: New York (1997)
12. *Foreword:* "Alternatives in Plasma-Source Mass Spectrometry: Evolution or Revolution?", J. Anal. Atom. Spectrom., 14, 51N-52N (1999).
13. *Encyclopedia of Analytical Chemistry: Instrumentation Applications - Introduction to Atomic Spectroscopy,* in **Encyclopedia of Analytical Chemistry***,* R.A. Meyers, ed., John Wiley & Sons, Ltd.: Sussex, United Kingdom, (2000), 9357-9361.
14. *Inorganic Time-of-Flight Mass Spectrometry,* in **Inorganic Mass Spectrometry: Fundamentals and Applications***,* C.M. Barshick, D.C. Duckworth, and D.H. Smith, eds., Marcel Dekker: New York, NY, (2000), 23, pp. 447-505 (with D.P. Myers and S.J. Ray).
15. *Time-of-Flight Mass Spectrometry with Atomic Ion Sources* in **Advances in Mass Spectrometry**, E. Gelpi, ed., John Wiley & Sons, Ltd: New York (2001), 15, pp. 61-85 (with S.J. Ray, D.P. Myers, A.M. Leach, and J.P. Guzowski Jr.).

16. *All the Ions All the Time: Dream or Reality?* in **Plasma Source Mass Spectrometry: The New Millennium**, J.G. Holland and S.D. Tanner, eds., The Royal Society of Chemistry: Durham, England (2001), pp. 73-89 (with Ray, S.J., Guzowski Jr., J.P., Leach, A.M., McClenathan, D.M., Solyom, D.A., Wetzel, W.C., and Grøn, O.A.).

17. *Multidimensional Ionization Sources for Plasma-source Mass Spectrometry,* in **Glow Discharge Plasmas in Analytical Spectroscopy**, R. Kenneth Marcus and José A.C. Broekaert, eds., John Wiley & Sons, Ltd: New York (2003), 17, pp. 435-468 (with J.P. Guzowski, Jr.,).

18. *Plasma Source Time-of-Flight Mass Spectrometry: A Powerful Tool for Elemental Speciation,* in the **Handbook of Elemental Speciation***,* R. Cornelis, J. Caruso, H. Crews, and K. Heumann, eds., John Wiley & Sons Ltd. (2003), pp. 313-333 (with A.M. Leach and D.M. McClenathan)

19. *Introduction – A Forward-Looking Perspective*, in **Inductively Coupled Plasma Spectrometry and its Applications**, 2nd ed., S. Hill, ed., Blackwell Publishing Ltd. (2007), pp. 1-26.

20. *Distance-of-Flight Mass Spectrometry: A New Paradigm for Mass Separation and Detection*, in **Annual Review of Analytical Chemistry**, R.G. Cooks and E. Yeung eds., Annual Reviews, Palo Alto, CA (2012), 5, pp 487-504 (with C.G. Enke, S.J. Ray, A.W. Graham, E.A. Dennis, A.J. Carado, C.J. Barinaga and D.W. Koppenaal)

21. *Flowing Atmospheric-Pressure Afterglow (FAPA), the Plasma-Based Source for your ADI-MS Needs*, J. Shelley, K.P. Pfeuffer and G.M. Hieftje in **Ambient Ionization Mass Spectrometry No. 2**. M. Domin and R. Cody editors, Royal Society of Chemistry (2014) pp 164-195.

PATENTS AWARDED

1. "Spectroanalytical System", **U. S. Patent Number: 4,462,685** (with Stanley B. Smith, Jr.); July 31, 1984.
2. "Spectroanalytical System", **United Kingdom Patent Number: 2,093,990** (with Stanley B. Smith, Jr.); 1985.
3. "Spectroanalytical System", **Canadian Patent Number: 1,187,628** (with Stanley B. Smith, Jr.) 1985.
4. "Novel Device for the Accurate Dispensing of Small Volumes of Liquid Samples", **U. S. Patent Number: 4,492,322** (with John G. Shabushnig); January 8, 1985.
5. "Spectroanalytical System", **Australian Patent Number: 546,278** (with Stanley B. Smith, Jr.); 1986.
6. "Spectroanalytical System", **French Patent Number: 2,501,373** (with Stanley B. Smith, Jr.); 1986.
7. "Method and Device for Spectral Reconstruction", **U.S. Patent Number: 4,642,778** (with David E. Honigs); February 10, 1987.
8. "Methods and Devices for Near-Infrared Evaluation of Physical Properties of Samples", **U. S. Patent Number: 4,800,279** (with David E. Honigs and Tomas B. Hirschfeld); January 24, 1989.
9. "Sample Holders or Reflectors for Intact Capsules and Tablets and for Liquid Microcells for Use in Near-Infrared Reflectance Spectrophotometers", **U. S. Patent Number: 4,882,493** (with Robert A. Lodder); November 21,1989.
10. "Rotary Spray Chamber Device for Conditioning Aerosols," **U.S. Patent Number: 5,335,860** (with Min Wu); August 9, 1994.
11. "Rotary Spray Chamber Device for Conditioning Aerosols," **European Patent Number 94300153.7** (with Min Wu); 1994.
12. "Time-of-Flight Mass Spectrometer," **U.S. Patent Number 5,614,711** (with Gangqiang Li); March 25, 1997.
13. "Simultaneous Acquisition of Chemical Information," **U.S. Patent Number 7,294,830** (with Steven J. Ray); November 13, 2007.
14. "Method and Apparatus for Simultaneous Detection and Measurement of Charged Particles at One or More Levels of Particle Flux for Analysis of Same", **U.S. Patent Number 7,498,585** (with M. Bonner Denton, Roger Sperline, David W. Koppenaal, Charles J. Barinaga, James H. Barnes, IV, and Eugene Atlas); March 3, 2009.
15. "Method of Detecting and Correcting Inaccurate Results in Inductively Coupled Plasma-Atomic Emission Spectrometry", **U.S. Patent Number 7,768,639** (with George C.-Y. Chan); August 3, 2010.

16. "Methods and Apparatus for Ionization and Desorption Using a Glow Discharge", **U.S. Patent Number 7,893,408** (with Steven J. Ray, Francisco J. Andrade, William C. Wetzel, Michael R. Webb, Gerardo Gomez, and Jacob T. Shelley);
February 22, 2011.

17. "Ambient-Atmosphere Glow Discharge for Determination of Elemental Concentration in Solutions in a High-Throughput or Transient Fashion", **U.S. Patent Number 7,929,138** (with Michael Webb and Francisco Andrade);
April 19, 2011.

18. "Laser Ablation Flowing Atmospheric-Pressure Afterglow for Ambient Mass Spectrometry", **U.S. Patent Number 8,207,494 B2** (with Francisco J. Andrade, Steven J. Ray and Jacob T. Shelley);
June 26, 2012

19. "Method for Enhancement of Mass Resolution Over a Limited Mass Range for Time-of-Flight Spectrometry", **U.S. Patent Number 8,604,423** (with Christie G. Enke, Steven J. Ray, Alexander W. Graham, Elise A. Dennis, Charles J. Barinaga, and David W. Koppenaal);
December 10, 2013

20. "Combined Distance-of-Flight and Time-of-Flight Mass Spectrometer", **U.S. Patent Number 8,648,295** (with Christie G. Enke, Steven J. Ray, Alexander W. Gundlach-Graham, Charles J. Barinaga and David W. Koppenaal);
February 11,2014

21. "Ambient Sampling/Mass Spectrometry and Chemometric Analyses for Screening Plastic-Encapsulated Electronic and Electrical Components for Counterfeits", **U.S. Patent 9,607,306** (with Steven J. Ray, Kevin P. Pfeuffer and Jacob T. Shelley);
March 28, 2017.

22. "Atmospheric-Pressure Ionization and Fragmentation of Molecules for Structural Elucidation", **US Provisional Patent No. 62/211,595** (IURTC 2016-22-01). (with J.T. Shelley*, Kelsey L. Williams*, Andrew J. Schwartz: filed February 27, 2018**.** *Kent State University - Pending

PRESENTATIONS

Prof. Hieftje and his research group have presented over 1017 papers at major universities and at both national and international conferences. Approximately 694 of which were award, plenary, invited or keynote presentations.

PUBLICATIONS

To date there have been over 600 publications from the Hieftje research laboratory as well as several reports, reviews, and editorials.

A separate publication list is available at http://www.indiana.edu/~gmhlab/publications.html.

TEACHING/RESEARCH

There have been 70 PhDs and 27 Masters students mentored in the Hieftje laboratory as well as over 30 postdoctorals, numerous undergraduates and several visiting scientists from multiple countries. A large number undergraduate and graduate level courses have also been taught.