

George Edward Yefchak

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Born:

July 19, 1962, Wichita Falls, Texas, USA

Education:

1990 Ph. D. in Analytical Chemistry, Michigan State University (MSU)
1984 B.S. in Chemistry (minor in mathematics), University of Dayton (UD)

Skills:

- *Computer Programming:* Laboratory instrument control, data acquisition, and data analysis, with an emphasis on graphical user-interfaces using Microsoft Visual Basic .Net.
- *Calculations:* Mathematical analyses such as ion trajectory modeling and spectral deconvolution using Visual Basic .Net, C++ , SIMION, Mathcad, and Excel.
- *Instrumentation:* Design, construction, and operation of vacuum systems, ion-optics, detection, automation, and signal acquisition systems for scientific instruments.
- *Mass Spectrometry:* Simulation, construction, operation, and maintenance of a wide variety of time-of-flight mass spectrometer systems.
- *Computer Skills:* Microsoft Vista, XP, and Unix systems, Microsoft Office suite applications including Word, Excel, and Publisher, Expression Web, CorelDraw graphics suite applications, Mathcad, OneSpace Designer, database design using Microsoft Access and ASP.net, and video editing with Adobe Premiere Elements.
- *Presentations:* Effective writing and presentation styles, including web design and public speaking.

Current Position:

1992– Research Scientist. Agilent Laboratories, Agilent Technologies
(Previously Hewlett-Packard Laboratories, Hewlett Packard)

Past Positions:

1990–1992 Research Chemist. Meridian Instruments, Inc., Okemos, Michigan,
and Adjunct Research Associate, Department of Biochemistry,
Michigan State University
1984–1988 Teaching assistant. Various courses including senior physical chemistry
lab, analytical lab and lecture, and freshman chemistry tutoring
1983–1984 Teaching assistant. Freshman chemistry labs, University of Dayton
1981–1982 Student Programmer. University of Dayton Research Institute

Honors:

- 1989 Walter and Margaret Yates Summer Scholarship (MSU)
- 1988 Federation of Analytical Chemistry and Spectroscopy Societies Student Award
- 1988 ACS Analytical Fellowship Honorable Mention
- 1988 College of Natural Science Fellowship (MSU)
- 1986 Merit-Level Teaching Assistant (MSU)
- 1983 ACS Undergraduate Award in Analytical Chemistry (UD)
- 1982 Zaidain Award for Outstanding Sophomore Chemistry Major (UD)
- 1981 CRC Press Achievement Award in Freshman Chemistry (UD)

Publications:

Papers

- “Models for Mass-Independent Space and Energy Focusing in Time-of-Flight Mass Spectrometry”, G. E. Yefchak, C. G. Enke, and J. F. Holland, *Int. J. Mass Spectrom. Ion Processes*, 1989, 87, 313.
- “Second-Order Space-Time Transfer Matrix of the Two-Stage Electrostatic Mirror”, D. Ioanoviciu, G. E. Yefchak, and C. G. Enke, *Int. J. Mass Spectrom. Ion Processes*, 1989, 94, 281.
- “Mass Dependence of Time-Lag Focusing in Time-of-Flight Mass Spectrometry—An Analysis”, E. D. Erickson, G. E. Yefchak, C. G. Enke, and J. F. Holland, *Int. J. Mass Spectrom. Ion Processes*, 1990, 97, 87.
- “Metastable Peak Shapes Induced by Internal Energy Release in Electrostatic Mirror Time-of-Flight Mass Spectrometers”, D. Ioanoviciu, G. E. Yefchak, and C. G. Enke, *Int. J. Mass Spectrom. Ion Processes*, 1991, 104, 83.
- “Beam Deflection for Temporal Encoding in Time-of-Flight Mass Spectrometry”, G. E. Yefchak, G. A. Schultz, J. Allison, and C. G. Enke, *J.A.S.M.S.*, 1990, 1, 440.
- “Analytic expression for non-linear ion extraction fields which yield ideal spatial focusing in time-of-flight mass spectrometry”, C. A. Flory R. C. Taber, and G. E. Yefchak, *Int. J. Mass Spectrom. Ion Processes*, 1996, 152, 169.
- “Analytic expression for the ideal one-dimensional mirror potential yielding perfect energy focusing in TOF mass spectrometry”, C. A. Flory R. C. Taber, and G. E. Yefchak, *Int. J. Mass Spectrom. Ion Processes*, 1996, 152, 177.
- “Improved Method for Designing a Cylindrical Zhang-Enke Ion Mirror”, G. E. Yefchak and C. A. Flory, *Int. J. Mass Spectrom.*, 2002, 214, 89.
- “Identification of Compounds in Commercial Kava Extracts by Gas Chromatography with Electron Ionization High-Resolution Mass Spectrometry”, V. Lopez-Avila and George Yefchak, *Open Anal. Chem. J.*, 2009, 3, 22.

Oral Presentations

- “High Speed Analysis of Natural Gas and Refinery Gas with a Compact GC/TOFMS System”, G. E. Yefchak, B. Prazen, and C. Myerholtz, Presented at the 45th ASMS Conference on Mass Spectrometry and Allied Topics, Santa Fe, N.M., June 2, 1997.

Posters

- “Analysis of Complex Mixtures using High-Speed Chromatography and Time-of-Flight Mass Spectrometry”, R. Grix, G. E. Yefchak, B. D. Gardner, J. F. Holland, R. D. McLane, and C. G. Enke, Presented at the 12th International Mass Spectrometry Conference, Amsterdam, The Netherlands, August 26–30, 1991.
- “Analysis of Complex Biological Samples by Gas Chromatography/Time-of-Flight Mass Spectrometry with Time-Array Detection”, B. D. Gardner, J. A. Johnson, D. A. Gage, J. Allison, J. T. Watson, and G. E. Yefchak, Presented at the 40th ASMS Conference on Mass Spectrometry and Allied Topics, Washington D.C., May 31–June 5, 1992.
- “Deconvolution of Gas Chromatography/Time-of-Flight Mass Spectrometric Data: A Potential Alternative to Two-Dimensional Gas Chromatography/Mass Spectrometry”, R. D. McLane, P. R. Vlasak, C. G. Enke, G. E. Yefchak, P. A. Rodriguez, C. L. Eddy, M. A. Mazzone, and J. D. Pinkston, Presented at the 40th ASMS Conference on Mass Spectrometry and Allied Topics, Washington D.C., May 31–June 5, 1992.
- “Use of GC-QTOFMS to Identify Pesticide Residues in Complex Matrices”, V. Lopez-Avila and George Yefchak, Recent Advances in Food Analysis, 4-6 November, 2009, Prague, Czech Republic.

Patents:

- “Time-Compressed Chromatography in Mass Spectrometry” with C. G. Enke, J. F. Holland, and R. D. McLane. U.S. Patent #5,175,430, December 29, 1992.
- “Time-of-Flight Mass Spectrometer with Post-Deflector Filter Assembly.” U.S. Patent #6,369,384, April 9, 2002.
- “Ion Packet Generation for Mass Spectrometer” with G. Li and C. Myerholtz. U.S. Patent #6,455,845, September 24, 2002.
- “Pressure Measurement using Ion Beam Current in a Mass Spectrometer” U.S. Patent #6,627,874, September 30, 2003.
- “Thermal Drift Compensation to Mass Calibration in Time-of-Flight Mass Spectrometry” with C. Myerholtz and G. Li. U.S. Patent #6,700,118, March 2, 2004.
- “Methods and Apparatus for Introducing Liquids into Microfluidic Chambers” with P. W. Barth. U.S. Patent #6,843,281, January 18, 2005.

Professional Society Memberships:

American Society of Mass Spectrometry
American Chemical Society

Board Membership:

Board of Directors member emeritus (active 2003–2010). Redwood Symphony, Redwood City, California

Other Interests:

Music

- Oboist and pianist in Redwood Symphony
- Frequent appearances with other community orchestras and ensembles
- Principal Conductor of South Bay Philharmonic (known as the Hewlett-Packard Symphony Orchestra until 2009)
- Served as assistant conductor with Nova Vista Symphony during 2006–2007 season

Web Design

Design and maintenance of a wide variety of web sites, including www.yefchak.com, www.redwoodsymphony.org, www.southbayphilharmonic.org, and www.kbentley.com using Microsoft Expression Web, HTML, JavaScript, and ASP.net

Typography

Design, layout, and production of newsletters, brochures, concert programs, advertising materials, and presentations