

Guido Fridolin Verbeck, IV

University of North Texas
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EDUCATION

Ph.D., Chemistry (September 2004) Texas A&M University, College Station, Texas.
Major: Analytical Chemistry, Mass Spectrometry
Thesis: The Development of a Liquid Nitrogen-Cooled Ion Mobility Spectrometry/ Time-of-Flight Mass Spectrometry for the Separation of Electronic Isomers.

M.S., Chemistry (May 1999), University of Alabama at Birmingham, Birmingham, Alabama.
Major: Analytical Chemistry, Separation Science
Thesis: The Analysis of Proteins and Peptides by Capillary Electrophoresis Using Two-Color Laser-Induced Fluorescence Detection.

B.S., Chemistry (December 1996), Northeast Louisiana University, Monroe, Louisiana.

EXPERIENCE

Professor of Chemistry and Biochemistry (2018-Present)

University of North Texas, Denton, TX

- ◆ Continue to develop front-end mass spectrometry tools within Biochemistry, Forensic Science, and Analytical Chemical applications.
- ◆ Continue to develop micro mass spectrometry, computational algorithms, and machine learning, specifically for field portable instrumentation and exposome mass spectrometry.
- ◆ Further develop soft-landing mass spectrometry and ion mobility for nanoparticle characterization, pharmacological effects, and toxicological effects to better understand nanoparticle efficacy.
- ◆ Identify new growth areas within mass spectrometry, and exploit our expertise to find future funding.

Associate Dean of Research and Graduate Studies, College of Science (2018-2020)

University of North Texas, Denton, TX

- ◆ Oversee the college staff of pre-award, post-award, grant development, cost sharing, and grant/contract compliance.
- ◆ Manage college level graduate recruitment, internships, and professional graduate programs.
- ◆ Represent the college with corporate research partners and innovation incubator space. Direct the corporate research event and industry engagement.
- ◆ Create a faculty Seed Grant program to initiate new research projects along College of Science priorities.
- ◆ Represent the College of Science on research and graduate student university committees.

Associate Professor of Chemistry and Biochemistry (2012-2018)

University of North Texas, Denton, TX

- ◆ Develop the nanomanipulation platform and utilize in Direct Analyte Probe Nano-extraction within Biochemistry, Forensic Science, and Analytical Chemical applications.
- ◆ Continue to develop micro mass spectrometry and applications, specifically for field portable instrumentation.
- ◆ Further develop soft-landing mass spectrometry and drift tubes to comb for new materials and aid in understanding a bottom-up approach.
- ◆ Identify new growth areas within mass spectrometry, and exploit our expertise to find future funding.

Assistant Professor of Chemistry (2006-2012),

University of North Texas, Denton, TX

- ◆ Design and development of vacuum and plasma instrumentation for the creation of a new softlanding mass spectrometry material processing tool.
- ◆ Develop new methods for the analysis of intact inorganic and organo-metallic complexes.
- ◆ Identify new growth areas and write proposals for novel material combing.

Staff Scientist (2005-2006),

Zyvex, Richardson, TX

- ◆ Design and development of a commercially available miniature ion trap mass spectrometer for field portable applications.
- ◆ Analytical support for current and new instrument designs for scanning electron microscopes, interferometers, and ion optical devices.
- ◆ Identify new growth areas and write proposals for micro assembled devices as analytical instruments.
- ◆ Develop new vacuum technologies for miniature instrumentation.

Postdoctoral Fellowship (2003-2005),

Oak Ridge Associated Universities, Oak Ridge, TN

- ◆ Design and development of submillimeter cylindrical ion trap mass spectrometer for field portable applications.
- ◆ Design and development of PCBs and interfaces for microinstrumentation.
- ◆ Modify current commercial ion trap mass spectrometers for mobile laboratories.
- ◆ Develop a drift tube inlet for external ionization interface to a micro ion trap.

Graduate Research Associate (1997-2003),

Department of Chemistry, Texas A&M University,

Department of Chemistry, University of Alabama at Birmingham.

- ◆ Design and development of a nitrogen-cooled ion mobility mass spectrometer.
- ◆ Design and development of single, two, and four color laser induced fluorescence capillary electrophoresis instruments.
- ◆ Software development for data acquisition of capillary electrophoresis and mass spectrometry instruments.
- ◆ Maintenance and upkeep of group analytical instrumentation

Teaching Assistant (1997-2001),

Department of Chemistry, Texas A&M University,

Department of Chemistry, University of Alabama at Birmingham.

- ◆ Authored multiple laboratory procedures on data acquisition and instrumentation.

- ◆ Instructed undergraduate laboratories in Instrumental Analysis, Analytical Methods, Inorganic Chemistry, Physical Chemistry, and General Chemistry.

Quality Control Chemist (1995-1996),

ANGUS Chemical Company, Inc., Sterlington, Louisiana.

- ◆ Developed new methods for Gas Chromatography, HPLC, and FTIR.
- ◆ Trained plant personnel in basic math, chemistry and laboratory techniques.
- ◆ Performed bench techniques to certify product.

SKILLS AND EXPERTISE

- ◆ **Instrumentation:** Quadrupole Ion Trap, Cylindrical Ion Trap, Matrix-Assisted Laser Desorption Ionization Time-of-Flight Mass Spectrometry, Electrospray Ionization-Quadrupole Time-of-Flight, Fast Atom Bombardment Sources, Ion Cyclotron Resonance Mass Spectrometry, Ion Mobility Mass Spectrometry, Capillary Electrophoresis, Gas Chromatography, High Performance Liquid Chromatography, UV-Vis Spectroscopy, Fourier Transform Infrared Spectroscopy.
- ◆ **Software:** SolidWorks, AutoCAD, Python, Visual Basic, Visual C++, Qbasic, Fortran, Gaussian 03 09, Unix, Linux, Cerius, Insight, Java, Perl, Apache, PHP, and MySQL.
- ◆ **Data Acquisition:** Keithley Metrabyte's DAS , Data Translation's DT 1600, and National Instrument's GPIB and DAQ interface, 32-bit MicroPIC.

HONORS AND ACTIVITIES

- ◆ Dallas Innovates, Future 50. The 50 disruptive innovators in the Dallas-Fort Worth area. <https://dallasinnovates.com/future50dallasfortworth2021/> (2021)
- ◆ Associate Dean for Research and Graduate Studies (2018-2020)
- ◆ President's Council Service Award (2018)
- ◆ Member International Council on Materials Education (2018-Present)
- ◆ Chair of College of Science Faculty Council (2017-2020)
- ◆ University of North Texas Innovator Award (2016-2017)
- ◆ Member Document Security Alliance, (2015-Present)
- ◆ Chair Faculty Senate, UNT (2015-2016), Vice Chair Faculty Senate, UNT (2014-2015), Member (2012-Present)
- ◆ Teacher Scholar Award, University of North Texas (2014)
- ◆ Excellence in Advising Award, University of North Texas (2014)
- ◆ Member of the Society for Applied Spectroscopy (2013-Present)
- ◆ Member of the Royal Society of Chemistry (2012-Present)
- ◆ Early Career Award for Research Creativity, University of North Texas (2011)
- ◆ Professor of the Year, Alpha Chi Sigma, Beta Eta Chapter, University of North Texas (2011)
- ◆ President of Board for the Harsh Environment Mass Spectrometry Society (2010-2014)
- ◆ Soaring Eagle, University of North Texas, (2009)
- ◆ Air Force Office of Scientific Research Young Investigator Award, YIP (2008).
- ◆ Organizing Committee for 6th, 7th, 8th, 9th, 10th, 11th Workshop on Harsh Environment Mass Spectrometry (2006-Present).
- ◆ Organizing Committee for the 13th International Conference on IMS (2004).
- ◆ George W. Kunze Graduate Fellowship, Texas A&M University (2003).
- ◆ Paul Harris Fellow, Rotary Club of Shreveport, Rotary Foundation (2003).
- ◆ Procter & Gamble Research Fellowship (2002-2003).
- ◆ Pinnacle National Honor Society, Texas A&M University (2002).

- ◆ Texas A&M University Chapter of the American Chemical Society's Outstanding Graduate leadership Award (2002).
- ◆ President of the Graduate Student Advisory Committee (2001-2002).
- ◆ Member of Phi Lambda Upsilon Graduate Honor Society, Texas A&M University (2001).
- ◆ Active on Local TAMU Sigma Xi Science Promotion Committee, Texas A&M University (2000-2001).
- ◆ Dean's Graduate Scholar Award, Texas A&M University (2000).
- ◆ Member of Sigma Xi National Research Organization (1999-2007).
- ◆ Alabama Section of the American Chemical Society Graduate Student Award, University of Alabama at Birmingham (1998).
- ◆ Third Place Award, Sigma Xi Graduate Student Research Competition, University of Alabama at Birmingham (1998, 1999).
- ◆ First Place Award, Student Research Competition, 75th Annual Meeting of the Alabama Academy of Science, University of South Alabama (1998).
- ◆ Received the American Chemical Society's Certified Degree in Chemistry, Northeast Louisiana University (1996)
- ◆ Member of Phi Kappa Phi Honor Society, Northeast Louisiana University (1996).
- ◆ American Institute of Chemists Award for Outstanding Graduating Senior, Northeast Louisiana University (1996).
- ◆ American Chemical Society Award for Outstanding Analytical Chemistry Student, Northeast Louisiana University (1996).
- ◆ President and Member of Mortar Board National Honor Society, Northeast Louisiana University (1995).
- ◆ President of NLU Chapter of the American Chemical Society Student Affiliate (1995,1996).
- ◆ Frances Baldwin Scholarship, Northeast Louisiana University (1995).
- ◆ Robert L. Holt Memorial Scholarship, Northeast Louisiana University (1994).
- ◆ (1988).

Editorial Boards

- ◆ Journal of the American Society for Mass Spectrometry, Member (2017-2022)
- ◆ Journal of Forensic Chemistry, Member (2017-2020)

RESEARCH PRODUCTIVITY

Funded Grants, Contracts, and Gifts:

External Funded (\$5,341,907)

- InspectIR Contract Funding – (2023-2023), Verbeck, G.F., Development of Software Solution for Analysis and AI of Mass Spectrometry Data. \$32,199.
- Bill and Melinda Gates Foundation (2022-2023) Verbeck, G.F. UNT/Inspect IR Tuberculosis and Malaria (To develop low-cost breath-based diagnostics for diagnosing tuberculosis and malaria in low- and middle-income countries), \$145,064.
- DoD Air Force STTR Phase 2, (2022-2023) Verbeck, G.F.; Gardner, A. STTR Phase 2, F2-14840 Airborne Contaminant Trap (ACT) for Risk Mitigation and Airmen Safety, \$748,464 (\$255,681).
- DoD Air Force STTR X21.A CSo, (2021) Verbeck, G.F.; Gardner, A.; Respiratory Augmentation of Disease Surveillance (RADS), 21-1-FX 21A-TCSO1-0231, Phase 1, \$50,000 (\$18,972).
- DoD Air Force STTR X21.A CSo, (2021) Verbeck, G.F.; Gardner, A.; USAF Augmented Maintenance Prediction (AMP), 21-1-FC20C-TCSO1-0222, Phase 1, \$50,000 (\$18,900).

- Thermo Finnigan LLC, (2021) Verbeck, G.F., Utilizing Teslin Substrate for Paperspray Mass Spectrometry. \$50,000.
- InspectIR Contract Funding – (2020-2021), Verbeck, G.F., Development of Uses and Methods for Portable and Benchtop Mass Spectrometry Techniques for Health and Wellness. \$164,971
- Worlds Contract (2020) Verbeck, G.F., Portable, Non-Invasive, COVID-19 Detection and Analysis. \$90,087.
- LaCore Labs Contract (2019-2024) Verbeck, G.F., Establishment of the LaCore/UNT Research Facility and QA Lab for Creation and Determination of New Methods within the Nutraceutical Industry. \$483,693.
- LaCore Labs Instrumentation Gift (2019) Verbeck, G.F., Development of a QA Laboratory with Inspire Park, UNT Frisco. \$1,000,000.
- University of Texas at Dallas/Defensewrx/Sofwrx Subcontract – (2019), Verbeck, G.F., Development of a Portable Mass Spectrometer for the Detection of CWAs at the Water/Air Interface. \$100,848.
- LaCore Contract – (2019), Verbeck, G.F., Development of a Uniform Method for Supplement Analysis Utilizing ESI-Ion Mobility TOF Mass Spectrometry. \$54,700
- NexGen Aquaculture Contract – (2018-2020), Verbeck, G.F., Validation and Characterization of the Proteins from Tungara Frog Foam. \$180,964 (NAVI \$31,119, URC \$43,828, Biome \$106,017).
- InspectIR Project Funding – (2018-2019), Verbeck, G.F., Development of a Broad Spectrum Drug Breathalyzer for a Portable Mass Spectrometer Platform. \$138,450 (\$5,049 Seed, \$133,401 Development).
- Inficon, Instrument Grant – (2013-2019), Verbeck, G.F., Development of a Portable Quadrupole Mass Analyzer for the Analysis on In-Situ Field Measurements, \$450,000.
- National Institute of Justice (NIJ-2013-3361), (2014-2016) (PI) Verbeck, G.F.; Golden, T., Microscopy with Direct Analyte Probe Nanoextraction (DAPNe)-Coupled to Nanospray Mass Spectrometry for Localized Chemical Analysis of Document Inks, \$380,986.
- Cancer Prevention & Research Institute of Texas – R-13-HIHR-1 – High Impact/High Risk Research Award (2012-2015), Verbeck G.F., Single organelle analysis for metabolite in tumor cells using microfluidic devices coupled to direct Nanoextraction-Nanospray, \$181,419
- Semiconductor Research Corporation (SRC) – Center for Electronic Materials Processing and Integration (CEMPI) – (06/01/2012-05/31/2013), Verbeck, G.F., *In Situ Characterization of ULK ILD and its Film Stacks under Active RIE Processing using MIR-IR Spectroscopy and Mass Spectrometry*, \$33,300.
- FY11 Battlefield Forensic Proposal (DOD) – (08/15/2011-02/14/2013), Verbeck, G.F., *Extraction of Chemical Residue with Fingerprint Transfer and Lifts*, \$186,033.
- Semiconductor Research Corporation (SRC) – Center for Electronic Materials Processing and Integration (CEMPI) – (06/01/2010-05/31/2011), Verbeck, G.F., *Supersonic Expansion-Coupled to Softlanding Mass Spectrometry for the Combing, Deposition, and Interrogation of New Dielectric Materials*, \$35,000.
- Defense University Research Instrumentation Program – (05/01/2009-04/30/2011) Verbeck G.F.; Scharf T., *Acquisition of an Inductively-Coupled Plasma Mass Spectrometer with Laser Ablation Source for Surface Characterization*, \$244,516.
- MRCEM Grant – (01/15/09-06/01/10) Billo, R.; Dennis, B., Verbeck, G. *A MEMS Microreactor Device for Synthetic Fuel Refining*, \$66,711 (GV \$33,897).
- GN1804 – 1st Detect Research Grant (02/01/2008-05/31/2014) Verbeck, G.F., *Development of a Deployable Mini Mass Spectrometer and Peripheral Technology*, \$592,413.

- DOD AFOSR-BAA-2007-07 (2008) Young Investigator Award, Verbeck, G.F. *Development of Novel Preparative Mass Spectrometry Instrumentation for the Advancement of New Materials and Nanofabrication*, \$300,000.
- GN1281 – SpaceHab Research Grant (10/01/2006-09/31/2007) Verbeck, G.F., *Design and Development of Miniature Ion Trap Mass Spectrometer for Environmental Analysis in Space Vehicles*, \$70,000.
- GN1371 – Zyvex Instrument Grant (01/01/2007-12/31/2008) Verbeck, G.F., *Nanomanipulation-coupled mass spectrometry for biomaterials and intra and extracellular characterization*, \$67,000.

Internal Funded (\$46,000)

- 63483, Research Support Grant,(12/15/2012-12/14/2013) Verbeck, G.F.; DeCaen, A., *Juried Art Selection and Show for The Art of Metabolism*, \$5000.
- GA9152 Faculty Research Grant (09/01/2011-08/31/2012) Verbeck, G.F., *Softlanding Mass Spectrometry of Mo_xP_y Clusters to Comb for Novel Catalysts for the Hydrodesulfurization (HDS) and Hydrodenitrogenation (HDN) Reactions*, \$7500
- GXXXX Learning Enhancement Grant (06/01/2011-08/31/2011) Golden, T.; Verbeck, G.F.; Cooke, S.A. *Development of a Forensic Chemistry Professional Science Masters Program*, \$18,890 (G.V. \$6000).
- GA9250 Faculty Research Grant (09/01/2009-08/31/2010) Verbeck, G.F. *MEMS Ion Optics and Mass Analyzers*, \$7500.
- G33519 Faculty Research Grant(09/01/2008-08/31/2009) Verbeck, G.F. *Implementation of Softlanding Mass Spectrometry for Fabrication of Smectic and Cluster Surfaces.*, \$5,000.
- G33598 Faculty Research Grant(09/01/2007-08/31/2008) Verbeck, G.F. *Development of Softlanding Mass Spectrometry for Fabrication of Nanostructures*, \$5,000.
- G34267 - Faculty Research Grant(01/01/2007-08/31/2007) Verbeck, G.F. *Development of Softlanding Mass Spectrometry for Fabrication of Nanostructures*, \$5000.
- Junior Faculty Summer Research Fellowship(06/01/2007-08/31/2007) Verbeck, G.F. *Development of an Ion Mobility coupled Time-of-Flight Mass Spectrometer for High-Throughput analysis of Biothreat Agents*, \$5,000.

Publications:

Thomas, B.; Anderson, K.; W. De Silva, I.; Verbeck, G.; Taylor, S., “ATR-FTIR Spectroscopy is Sensitive to Thermal Decay of Bone Collagen”, *App. Spect.*, 77 (2023) 53.

Smart, K.; Reyes, K.; Wilder, K., Acree, W.; Verbeck, G.; Golden, T., “Ionic liquids as stationary phases for the gas chromatographic separation of fentanyl analogues”, *For. Chem.* 31 (2022) 100452.

Nayek, S.; Lund, A.K., Verbeck, G.F., “Inhalation exposure to silver nanoparticles induces hepatic inflammation and oxidative stress, associated with altered renin-angiotensin system signaling, in Wistar rats”, *Environ. Tox.* 37 (2022) 457-467.

Virgen, C. A.; Fox, J.D.; Santariello, P.; Winfield, J.L.; Wright, K.C.; Verbeck, G.F., “Portable membrane inlet mass spectrometric detection and analysis of chemical warfare agent simulants at the U.S. Army Dugway Proving Ground S/K Challenge event” , *Int. J. Mass Spectrom.* **Invited**, 468 (2021) 116635.

Subedi, D.R.; Jang, Y.; Ganesan, A.; Schoellhorn, S.; Reid, R.I Verbeck, G.F.; D’Souza, F., “Donor–acceptor conjugates derived from cobalt porphyrin and fullerene via metal-ligand axial coordination: Formation and excited state charge separation”, *J. Porphyrins Phthalocyanines*, 25 (2021) 533-546.

De Silva, I.W.; Couch, A.; Verbeck, G.F., “Paper spray mass spectrometry utilized with synthetic microporous polyolefin silica matrix substrate in rapid detection and identification of more than 190 synthetic fentanyl analogs”, *J. Am. Soc. Mass Spectrom.* 32 (2021) 420-428.

Benitz, A.; Thomas, M.B.; De Silva, I.W.; Nesterov, V.N.; Verbeck, G.F.; D’Souza, F. “Photoinduced Electron Transfer in Axially Coordinated Supramolecular Zinc Tetrapyrrole Bis(styryl)BODIPY Donor-Acceptor Conjugates”, *ChemPhotoChem*, 5 (2021) 260-269.

Nayek, S.; DeSilva, I.W.; Aguilar, R.; Lund, A.; Verbeck, G.F. “Toxicological alterations induced by sub-acute exposure of silver nanoparticles in Wistar rats”, *J. App. Tox.* 41 (2021) 972-986.

Gurung, S.; Dubansky, B.; Virgen, C.A.; Verbeck, G.F.; Murphy, D.W. “Effect s of crude oil vapors on the cardiovascular flow of embryonic Gulf killifish”, *Sci. Total Env.* 751 (2021) 141627.

Nayek, S.; Aguilar, R.; Juel, L.A.; Verbeck, G.F. “Metallic Nanoparticle Production and Exposure/Deposition System for Toxicological Research Applications using Zebrafish”, *Rev. Sci. Inst.*, 91 (2020) 94101:1-94101:10. DOI: 10.1063/5.0013428

Sturtevant, D.; Lu, S.; Zhou, Z.; Shen, Y.; Wang, S.; Song, J.; Zhong, J.; Burks D.; Yang, Z.; Yang, Q.; Cannon, A.E.; Herrfurth, C.; Feussner, I.; Borisjuk, L.; Munz, E.; Verbeck, G.F.; Wang, X.; Azad, R.K.; Singleton, B.; Dyer, J.M.; Chem, L.; Chapman, K.D., Guo, L. “The genome of jojoba (*Simmondsia chinensis*): A taxonomically isolated species that directs wax ester accumulation in its seeds”, *Sci. Adv.*, 6 (2020) 1-13.

De Silva, I.W.; Nayak, S.; Singh, V.; Reddy, J.; Granger, J.K.; Verbeck, G.F. “Paper Spray Mass spectrometry utilizing Teslin® substrate for rapid detection of lipid metabolite changes during COVID-19 infection”, *Analyst*, 145 (2020) 5725-5732.

Kiselak, T.D.; Koerber, R.; Verbeck, G.F., “Synthetic Route Sourcing of Illicit at Home Cannabidiol (CBD) Isomerization to Psychoactive Cannabinoids Using Ion mobility-coupled-LC-MS/MS”, *Forensic Sci. Int.*, 308 (2020) 110173-110180.

Cao, D.J.; Aldy, K.; Hsu, S.; Getrick, M.; Verbeck, G.F.; DeSilva, I, Feng, S. “Review of Health Consequences of Electronic Cigarettes and the Outbreak of Electronic Cigarette, or Vaping, Product Use-Associated Lung Injury”, *J. Med. Tox.*, 16 (2020) 295-310.

Aldy, K.; Cao, D.J.; Hsu, S.; McGetrick, M.; Willcuts, D.; Verbeck, G.F.; DeSilva, I, “Severe E-cigarette, or Vaping, Product Use Associated Lung Injury (EVALI) Requiring Venovenous Extracorporeal Membrane Oxygenation”, *Pediatric Critical Care Medicine*, 21 (2020) 385-388.

Lewis, H; Webb, R; Verbeck, G.F.; Bunch, J.; de Jesus, J.; Costa, C.; Palitsin, V.; Swales, J.; Goodwin, R.; Sears, P.; Bailey, M., “Nanoextraction coupled to liquid chromatography mass spectrometry delivers improved spatially resolved analysis”, *Anal. Chem.*, 91 (2019) 15411-15417.

De Silva, I.W.; Kretsch, A.R.; Lewis, H-M; Bailey, M.; Verbeck, G.F., “True One Cell Chemical Analysis: A Review”, *Analyst*, 144 (2019) 4733-4749.

De Silva, I.W.; Converse, D.T.; Juel, L.A.; Verbeck, G.F., “A Comparative Study of a Microporous Polyolefin Silica-Based Paper and Cellulose Paper Substrates Utilizing Paper Spray-Mass Spectrometry in Drug Analysis”, *Anal. Meth.*, 11 (2019) 3066-3072.

Femi-Oyetero, J.D.; Yao, K.; Tang, R.; Ecton, P.A.; Roccapriore, K.; Mhlanga, A.; Verbeck, G.F.; Weathers, D.L.; Perez, J.M., “Mechanism for etching of exfoliated graphene on substrates by low-energy electron irradiation from helium plasma electron sources”, *J. Vac. Sci. Technol. A*, 37 (2019) 021401-1 to 021401-7.

Fallatah, W.; De Silva, I.W.; Verbeck, G.F.; Jagadeeswaran, “Generation of transgenic zebrafish with 2 populations of RFP- and GFP-labeled thrombocytes: analysis of their lipids”, *Blood Adv.*, 3 (2019) 1406-1415.

Femi-Oyetero, J.D.; Yao, K.; Roccapriore, K.; Ecton, P.A.; Tang, R.; Jones, J.D.; Verbeck, G.F.; Perez, J.M., “Effects of high-dosage focused electron-beam irradiation at energies ≤ 30 keV on graphene on SiO₂”, *App. Surf. Sci.*, 469 (2019) 325-330.

De Jesus, J.; Bunch, J.; Verbeck, G.F.; Webb, R.; Costa, C.; Goodwin, R.; Bailey, M., “Application of Various Normalisation Methods for Microscale Analysis of Tissues Using Direct Analyte Probed Nano-extraction (DAPNe)”, *Anal. Chem.*, 90 (2018) 12094-12100.

McBride, E.M.; Verbeck, G.F., “Investigation by Direct Inject ESI-MS and GC-MS of an Alleged Leuckart Route-Specific Impurity of Methamphetamine”, *For. Sci Int.*, 288 (2018) 278-282.

McBride, E.M.; Verbeck, G.F., “A Mass Spectrometer in Every Fume Hood”, *J. Am. Soc. Mass Spectrom.*, 29 (2018) 1555-1566.

McBride, E.M.; Verbeck, G.F., “Direct-Infusion Electrospray Ionization-Mass Spectrometry Profiling of Fentanyl and Acetyl-fen-tanyl Reaction Mixtures will be published in International Journal of Mass Spectrometry”, *Int. J. Mass Spectrom.*, 428 (2018) 55-61.

- Dubansky B.I Verbeck, G.F.; Mach, P.; Burggren W.**, “Methodology for exposing avian embryos to quantified levels of airborne aromatic compounds associated with crude oil spills”, *Env. Tox. Pharm.* 58 (2018) 163-169.
- McBride, E.M.; Keller, R.E., Verbeck, G.F.**, “Investigation of a Novel Route to N-Phenethyl-4-piperidone, An Intermediate of Fentanyl, by Direct-Inject Electrospray Ionization-Mass Spectrometry“, *J Clandestine Lab. Investigating Chemists Assoc.* 28 (2018) 12-19.
- Mach, P.M.; Winfield, J.L.; Aquilar, R.A.; Wright, K.C.; Verbeck, G.F.**, “A Portable Mass Spectrometer Study Targeting Anthropogenic Contaminants in Sub-Antarctic Puerto Williams, Chile” *Int. J. Mass Spectrom.* 422 (2017) 148-153.
- Hamilton, J.S.; Aguilar, R.; Petros, R.A.; Verbeck, G.F.**, “DAPNe with micro-capillary separatory chemistry-coupled to MALDI-MS for the analysis of polar and non-polar lipid metabolism in one cell”, *J. Am. Soc. Mass Spectrom* 28 (2017) 918-928.
- Huynh, V.; Phelps, M.S.; Golden, T.D.; Verbeck, G.F.**, “Direct analyte-probed nanoextraction (DAPNe) coupled to matrix-assisted laser desorption ionization (MALDI) for examination of the ink chemistry on documents”, *For. Chem.* 2 (2016) 86-92.
- Giannoukos, S.; Brkic, B.; Taylor, S.; Marshall, A.; Verbeck, G.F.**, “Chemical sniffing instrumentation for security applications”, *Chem. Rev.* 116 (2016) 8146-8172.
- McBride, E.; Kretsch, A.; Garibay, L.K.; Brigance, K.; Buss, B.; Verbeck, G.F.**, “Rapid Experimental and Theoretical Analysis of Synthetic Phenethylamine Drug Analogues”, *For. Chem.* 1 (2016) 58-65.
- Hildebrand, Z.; Mach, P.; McBride, E.; Dorreyatim, M.N.; Tayloe, J.; Carlton, D.; Meik, J.; Fontenot, B.; Wright, K.C.; Schug, K.A.; Verbeck, G.F.**, “Point source attribution of ambient contamination events near unconventional oil and gas development ”, *Sci. Total Environ.* 573 (2016) 382-388.
- Huynh, V.; Sasiene, Z.J.; Mach, P.M.; Golden, T.D.; Verbeck, G.F.**, “Laser Ablation-Coupled with DAPNe-NSI-MS Applied to Redacted Documents”, *Sci. & Just.* 56 (2016) 329-340.
- Ecton, P.A.; Beatty, J.; Verbeck, G.F.; Lakshantha, W.; Rout, B.; Perez, J.M.**, “Low-energy Electron Irradiation of Preheated and Gas-exposed Single-Wall Carbon Nanotubes”, *App. Surf. Sci.* 387 (2016) 822.
- Hildebrand, Z.; Carlton, D.; Fontenot, B.; Meik, J.; Walton, J.; Thacker, J.; Korlie, S.; Shelor, C.P.; Kadjo, A.; Clark, A.; Usenko, S.; Hamilton, J.S.; Mach, P.; Verbeck, G.F.; Hudak, P.; Schug, K.A.**, “Temporal Variation in Groundwater Quality in the Permian Basin of Texas, a Region of Increasing Unconventional Oil and Gas Development”, *Sci. Total Environ.* 562 (2016) 906-913.
- Nnaji, C.N.; Mach, P.M.; Acheampong, J.S.; Falconer, T.M.; Verbeck, G.F.**, “Analysis of Trace Amounts of Adulterants Found in Powders/Supplements Utilizing Raman Spectroscopy coupled to Direct Analyte-Probed Nanoextraction-Nanospray Ionization-Mass Spectrometry”, *Anal. Meth.* 8 (2016) 4798.

Hamilton, J.S.; Verbeck, G.F., “One-Cell Analysis as a Technique for True Single-Cell Analysis of Organelles in Breast Tumor and Adjacent Normal Tissue to Profile Fatty Acid Composition of Triglyceride Species”, *J. Anal. Oncology*, 5 (2016) 47-54.

Hamilton, J.S.; Gorishek, E.L.; Mach, P.M.; Sturtevant, D.; Ladage, M.L.; Suzuki, N.; Padilla, P.A.; Mittler, R.; Chapman, K.D.; Verbeck, G.F., “Evaluation of a custom single Peltier-cooled ablation cell for elemental imaging of biological samples in laser ablation-inductively coupled plasma-mass spectrometry (LA-ICP-MS)”, *J. Anal. At. Spectrom.*, 31 (2016) 1030-1033.

Suzuki N, Bassil E, Hamilton JS, Inupakutika MA, Zandalinas SI, Tripathy D; Luo, Y.; Dion, E.; Fukui, G.; Kumazaki, A.; Nakano, R.; Rivero, R.M.; Verbeck, G.F.; Azad, R.K.; Blumwald, E.; Mittler, R. “ABA Is Required for Plant Acclimation to a Combination of Salt and Heat Stress.” *PLoS ONE* 11 (1): e0147625. doi:10.1371/journal.pone.0147625 (2016).

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Verbeck, G.F., “*Ion Mobility – Softlanding for Characterization and Isolation of Nanoclusters*”, 36th Federation of Analytical Chemistry and Spectroscopy Societies, Louisville, KY, October 2009. INVITED

Verbeck, G.F., “*Nanomanipulation-coupled to Nanospray Mass Spectrometry: Combinatorial Applications and Single Organelle Analysis*”, 36th Federation of Analytical Chemistry and Spectroscopy Societies, Louisville, KY, October 2009. INVITED

Verbeck, G.F., Rafferty, D. “*Achievable Resolution and Efficiency of Tandem Mass Spectrometry for Sub-mm Ion Traps*”, 7th Workshop on Harsh-Environment Mass Spectrometry, Santa Barbara, CA, September 2009. INVITED

Verbeck, G.F. “*Novel IM Applications to Softlanding and Portable Mass Spectrometry*”, ASMS Ion Mobility Workshop, 57th ASMS Conference on Mass Spectrometry, Philadelphia, PA, June, 2009. INVITED

Verbeck, G.F., “Development of a Novel Preparative Mass Spectrometry Instrumentation for the Advancement of New Materials and Nanofabrication”, AFOSR Surface and Interfacial Science Portfolio Annual Review, Arlington, VA, January 2009.

Verbeck, G.F., “Introduction to International Studies at the University of North Texas”, United States Embassy, Kigali, Rwanda, December 2008.

Verbeck, G.F., “MEMS Mass Spectrometers and Ion Optical Devices: The Future of Field-Portable Instrumentation”, SREDI 2008, Scientific Research, Development and Innovations Conference, Kigali, Rwanda, December 2008.

Verbeck, G.F., Maxwell, R.C.; Birdwell, D.O., “Effects of Materials, Space-Charge, Surface-Charge, and Aberrations on Performance for Miniature Mass Spectrometry”, 56th ASMS Conference on Mass Spectrometry, Denver, CO, June, 2008.

Verbeck, G.F., “MEMS Assembled Ion Optical Devices: Current Technology and a Look at Advantages and Disadvantages” 6th Workshop on Harsh-Environment Mass Spectrometry, Cocoa Beach, FL, September 17-20, 2007.

Verbeck, G.F.; Geisberger, A.; Saini, R.; Tsui, K.; Ellis, M., “MEMS Assembled Devices: A Fresh Advance to Miniaturization and Assembly of Spectrometers and Electron and Ion Optics” Commercialization of Micro and Nano Systems Conference 2006, St. Petersburg, FL, August 28-31, 2006.

Verbeck, G.F.; Saini, R.; Wylde, J.W.; Tsui, K., Ellis, M., “MEMS Assembled Mass Spectrometry: A Novel Approach to Miniaturization and Construction of Electron and Ion Optics” 54th ASMS Conference on Mass Spectrometry, Seattle, WA, May 28-June 1, 2006.

Whitten, B.; Hayes, S.; Verbeck, G.; Moxom, J.; Begovich, J.; Carter, J.; Whitaker, M.; Annese, C. “Micro mass spectrometry: a modern technology tool to address the proliferation of weapons of mass destruction.” 46th Annual Meeting Proceedings of the Institute of Nuclear Materials Management 2005.

Verbeck, G.F.; Moxom, J.; Whitten, W.B., “Resistive Glass Drift Tube Used to Inject Externally Formed Ions into a Submillimeter Ion Trap” 53rd ASMS Conference on Mass Spectrometry, San Antonio, TX, June 5-9, 2005.

Moxom, J.; Verbeck, G.F.; Whitten, W.B., “Miniaturization of Mass Spectrometers Based on Submillimeter Cylindrical Ion Traps” 53rd ASMS Conference on Mass Spectrometry, San Antonio, TX, June 5-9, 2005.

Verbeck, G.F. “Development of a Hand Portable Mass Spectrometer for Homeland Security and Nonproliferation/Safeguards Applications” Detector/Sensors Research and Technology for Homeland and National Security, Gatlinburg, TN, September 14-16, 2004.

Verbeck, G.F.; Russell, D.H., “Resolution Equations Revisited for Both High-Field and Low-Field Ion Mobility”, 13th International Conference on Ion Mobility Spectrometry, Gatlinburg, TN, United States, July 25-29, 2004.

Whitten, W.B.; Reilly, P.T.; Ramsey, J.M.; Verbeck, G.F.; Xu, J., “IMS-High Pressure ITMS”, 13th International Conference on Ion Mobility Spectrometry, Gatlinburg, TN, United States, July 25-29, 2004.

Xu, J.; Verbeck, G.F.; Whitten, W.B.; Ramsey, J.M., “Study of Pulse Ionization Miniature Ion Mobility Spectrometry”, 13th International Conference on Ion Mobility Spectrometry, Gatlinburg, TN, United States, July 25-29, 2004.

Verbeck, G.F.; Russell, D.H., “The application of a nitrogen-cooled ion mobility time-of-flight mass spectrometer to the separation of the conventional and distonic radical cations of CH₃OH”, 19th ANZSMS Conference, Lorne, Australia, February 2-6, 2003.

Steelman, K.L.; Verbeck, G.F.; Rowe, M.W., “Little Lost River Cave, Idaho: Ion cyclotron resonance and electrospray ionization mass spectrometry of a deposit associated with pictographs”, Abstracts of Papers, 222nd ACS National Meeting, Chicago, IL, August 26-30, 2001.

Ruotolo, B.T.; Gillig, K.J.; Stone, E.G.; Verbeck, G.F.; Russell, D.H., “The Search for Novel Peptides: A New Application for Ion Mobility-Mass Spectrometry”, 49th ASMS Conference on Mass Spectrometry, Chicago, IL, May 2001.

Sawyer, H.A.; Ruotolo, B.T.; Verbeck, G.F.; Gillig, K.J.; Stone, E.G.; Russell, D.H., “Cesium-Ion Adduction and Cooperative Binding Effects on Peptide Conformation as Probed by Ion Mobility-Mass Spectrometry”, 49th ASMS Conference on Mass Spectrometry, Chicago, IL, May 2001.

Peterman, S.M.; Verbeck, G.F.; Russell, D.H., “Study of Competing Reactions: Direct Dissociation vs. Isomerization Reactions of the C₈H₈O₂⁺ Ions Formed from Methyl Benzoate”, 49th ASMS Conference on Mass Spectrometry, Chicago, IL, May 2001.

Verbeck, G.F.; Peterman, S.M.; Russell, D.H., “The Study of C₈H₈O₂⁺ Chemistry from Methyl Benzoate using and *In Situ* Infrared Emitter” The North American FT-ICR MS Conference, Austin, TX, March 2001.

Verbeck, G.F. and Beale, S.C., “ Analysis of Proteins and Peptides Using Two-Color Laser Induced Fluorescence Detection Capillary Electrophoresis”, Sigma Xi Graduate Research Day, University of Alabama at Birmingham, Birmingham, AL, April 1998.

Verbeck, G.F. and Beale, S.C., “Analysis of Proteins and Peptides by Capillary Electrophoresis Using Two-Color Laser Induced Fluorescence Detection”, 75th Meeting of the Alabama Academy of Science, University of South Alabama, Mobile, AL, March 1998.

Verbeck, G.F., Yang, Z., Beale, S.C., “Capillary Electrophoresis with Laser-Induced Fluorescence Detection for Proteins and Peptides”, 1998 Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, New Orleans, LA, March 1998.

Verbeck, G.F. and Beale, S.C., “Analysis of Proteins and Peptides by Capillary Electrophoresis Using Two-Color Laser Induced Fluorescence Detection”, 1998 Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, New Orleans, LA, March 1998.

Verbeck, G.F. and Beale, S.C., “Protein Molecular Weight Analysis Using Two-Color Laser Induced Fluorescence Detection Capillary Gel Electrophoresis”, HPCE '98, Orlando, FL, January 1998.

Student Presentations:

Reyes, K. De Silva, I.W.; Verbeck, G.F., *Using Paperspray Mass Spectrometry to Measure Viral Markers from Tissue and Serum*, 70th ASMS Conference on Mass Spectrometry and Allied Topics, June 2022.

Emadi, C.; Bonatesta, F.; Nayek, S.; Verbeck, G.; Meager, E. *Effects of Co-Exposure to Hypoxia and Lead on Daphnia magna*, SETAC South Central Regional Chapter Annual Meeting, April 2021.

Emadi, C.; Bonatesta, F.; Nayek, S.; Verbeck, G.; Meager, E. *Acute Effects of Co-Exposure to Hypoxia and Lead on the Cladoceran, Daphnia magna*, SETAC SciCon2, November 2020.

Virgen, C.A.; Gunrung, S.; Murphy, D.; Dubansky, B.; Verbeck, G.F., *Crude Oil Exposure Of Fundulus Grandis For The Quantification And Detection Of Airborne Aromatic Compounds Via Membrane Inlet Mass Spectrometry*, 68th ASMS Conference on Mass Spectrometry and Allied Topics, Online, June 2020.

De Silva, I.W.; Kiselak, T.D.; Couch, A.N.; Castillo, C.; Verbeck, G.F., *Detection Of Chemical Residues, Metabolites And Gaseous Capture Utilizing A Microporous Polyolefin Silica-Based Substrate For Paper Spray Mass Spectrometry*, 68th ASMS Conference on Mass Spectrometry and Allied Topics, Online, June 2020.

Nayek, S. De Silva, I.W.; Lund, A.; Verbeck, G.F., *Liver Toxicity And Alteration Of Renin-Angiotensin System (RAS) Components Induced By Silver Nanoparticle Exposure In Wistar Rats* 68th ASMS Conference on Mass Spectrometry and Allied Topics, Online, June 2020.

De Silva, I.W.; Duncan, R.S.; Koulen, P.; Verbeck, G.F., *Nanomanipulation-Coupled MALDI Imaging Mass Spectrometry for Single Organelle Analysis to Measure Metabolic Changes responding to Oxidative Stress in Neuroblastoma Cells*, 67th ASMS Conference on Mass Spectrometry and Allied Topics, Atlanta, GA, June 2019.

Kiselak, T.D.; De Silva, I.W.; Claassen, A.; Verbeck, G.F.; *Organic Synthesis Reaction Monitoring of a Fentanyl Synthesis using a Microporous Polyolefin Silica Substrate for Paper Spray Mass Spectrometry*, 67th ASMS Conference on Mass Spectrometry and Allied Topics, Atlanta, GA, June 2019.

Anguiano Virgen,C.; Fox, J.D.; Winfield, J.L.; Wright, K.C.; Verbeck, G.F.; *Detection and Analysis of Simulated Chemical Warfare Agents via Portable Mass Spectrometry*, 67th ASMS Conference on Mass Spectrometry and Allied Topics, Atlanta, GA, June 2019.

Nayek, S.; Verbeck, G.F.; *Toxicological and Biochemical changes induced by sub-acute exposure of Wistar Rats to Silver Nanoparticles using Soft Landing Ion Mobility Instrument*, 67th ASMS Conference on Mass Spectrometry and Allied Topics, Atlanta, GA, June 2019.

Anguiano Virgen, C.; Verbeck. G.F.; *Portable Mass Spectrometry Detection and Analysis of Clandestine Fentanyl Laboratories Via Earth-Based Separation*, SACNAS 2018, San Antonio, TX, October 2018.

Anguiano Virgen, C.; Verbeck, G.F.; Wright, K.C.; Winfield, J.L.; Fox, J.D., *Detection and Analysis of Simulated Warfare Agents using Portable Mass Spectrometry*, 13th Harsh Environment Mass Spectrometry Workshop, Myrtle Beach, S.C., September 2019, STUDENT AWARD PRESENTATION

Anguiano Virgen, C.; Verbeck, G.F.; *Detection and Analysis of Simulated Chemical Warfare Agents using Portable Mass Spectrometry*, SWAFS 2018, Shreveport, LA, October 2018, INVITED.

Juel, L.A.; De Silva, I.W.; Kiselak, T.D. Verbeck, G.F.; *A More Efficient Means to Paper Spray Mass Spectrometry in Fentanyl Analysis*, SWAFS 2018, Shreveport, LA, October 2018, INVITED.

De Jesus, J.M.; Bunch, J.; Costa, C.; Webb, R.; Verbeck, G.F.; Bailey, M.; *Investigating and Comparing Internal Standard Addition Methods for Direct Analyte Probed Nanoextraction (Dapne)* 66th ASMS Conference on Mass Spectrometry and Allied Topics, Indianapolis, IN, June 2018.

Costa, C.; Bunch, J.; Goodwin, R; Palitsin, V; Webb, R.; Verbeck, G.F.; De Jesus, J.M.; Bailey, M *Mass Spectrometry–Ion Beam Analysis: A New Tool for Molecular and Elemental Speciation?* 66th ASMS Conference on Mass Spectrometry and Allied Topics, Indianapolis, IN, June 2018.

Kretsch, A.; Verbeck, G.F., : *Plasma Pyrolysis Mass Spectrometry for the Diagnosis of Leishmaniasis*, 65th ASMS Conference on Mass Spectrometry and Allied Topics, Indianapolis, IN, June 2017.

Aguilar, R.; Verbeck, G.F., *Soft-Landed Metallic Nanoparticles for Mass Spectrometry Imaging of Fingermarks*, 65th ASMS Conference on Mass Spectrometry and Allied Topics, Indianapolis, IN, June 2017.

McBride, E.; Mach, P.; Wright, K.C.; Verbeck, G.F., *Detection and On-Site Presumptive Testing of a Clandestine Drug Laboratory using a Portable Mass Spectrometer*, 64rd ASMS Conference on Mass Spectrometry and Allied Topics, San Antonio, TX, June 2016.

Aguilar, R.; Verbeck, G.F., *Utilization of Soft-landing Ion Mobility for the Deposition of Clusters as Matrix Substitutes for Matrix-assisted Laser Desorption/Ionization Mass Spectrometry Imaging*, 64rd ASMS Conference on Mass Spectrometry and Allied Topics, San Antonio, TX, June 2016.

Mach, P.; Wright, K.C.; Verbeck, G.F., *Reverse Gas Stack Model for Localization of Chemical Interests Utilizing Mobile Mass Spectrometry*, 64rd ASMS Conference on Mass Spectrometry and Allied Topics, San Antonio, TX, June 2016.

Huynh, V.; Sasiene, Z. J.; Mach, P. M.; Golden, T. D.; Verbeck, G. F., “*Direct analyte-probed nanoextraction (DAPNe)-coupled to nanospray ionization mass spectrometry applied to document analysis*”,.SciX 2015, Providence, RI, September 2015.

Williams, K.C.; Verbeck, G. F., “*Characterizing and Databasing Drugs and Drug Analogs to Stay Ahead of Clandestine Designer Drug Laboratories*”,.SciX 2015, Providence, RI, September 2015.

Hamilton, J.S.; Phelps, M.; Verbeck, G.F., *Single Cell Nanomanipulation to Identify Heterogeneity of Fatty Acid Profiles within Healthy and Diseased Breast Tissue at the Cancer Forefront*, 63rd ASMS Conference on Mass Spectrometry and Allied Topics, St. Louis, MO, June 2015.

Mach, P.; Wright, K.C.; Verbeck, G.F., *Investigation of NIR Diode Wavelength and Material Combinations for Increased Permeability in Portable Membrane Inlet Mass Spectrometry*, 63rd ASMS Conference on Mass Spectrometry and Allied Topics, St. Louis, MO, June 2015.

Phelps, M.; Verbeck, G.F., *Monitoring Single Cell Lipids: in vitro Tracking of Fatty Acid Uptake via Nanomanipulation-Coupled Mass Spectrometry*, 63rd ASMS Conference on Mass Spectrometry and Allied Topics, St. Louis, MO, June 2015.

Gorishek, E.; Mach, P.; Hamilton, J.S.; Verbeck, G.F., *Phospholipid localization by Cold Cell LA-ICP-MS Imaging of Arabidopsis Thaliana Seeds and Extraction for Analysis by NSI-MS*, 63rd ASMS Conference on Mass Spectrometry and Allied Topics, St. Louis, MO, June 2015.

Hamilton, J.S.; Phelps, M.; Verbeck, G.F., *TiRaNI bioworkstation: Single cell analysis at the cancer forefront*, Southwest Regional Meeting of American Chemical Society, SWARM 2014, Fort Worth, TX, November 2014.

Phelps, M.; Hamilton, J.S.; Verbeck, G.F., *Single cell nanomanipulation to identify heterogeneity of fatty acid profiles within healthy and diseased breast tissue at the cancer forefront*, Southwest Regional Meeting of American Chemical Society, SWARM 2014, Fort Worth, TX, November 2014.

Mach, P.M.; Wright K.C.; Verbeck, G.F., *Incorporation of NIR diodes for enhanced permeability in portable membrane inlet mass spectrometry analysis of PAHs and BTEX*, Southwest Regional Meeting of American Chemical Society, SWARM 2014, Fort Worth, TX, November 2014.

Huynh, V.; Williams, K.C.; Golden, T.D.; Verbeck, G.F., *Forensic application of nanomanipulation applied to document inks*, Southwest Regional Meeting of American Chemical Society, SWARM 2014, Fort Worth, TX, November 2014.

Williams, K.C.; Kretsch, A.; Verbeck, G.F., *Scheduled drugs and drug analogs: Rapid synthesis of tryptamine analogs and assessment of blood-brain barrier permeability and receptor activity*, Southwest Regional Meeting of American Chemical Society, SWARM 2014, Fort Worth, TX, November 2014.

Clemons, K.; Verbeck, G.F., *Staying ahead of clandestine drug labs*, 41st Meeting of Federation of Analytical Chemistry and Spectroscopy Societies, SciX 2014, Reno, NV, September 2014

Mach, P.; Wright, K.; Verbeck, G.F., *Development of Multi-Membrane Front End Inlets for Membrane Inlet Mass Spectrometry Analysis of PAHs and BTEX*, 41st Meeting of Federation of Analytical Chemistry and Spectroscopy Societies, SciX 2014, Reno, NV, September 2014

Hamilton, J.; Phelps, M.; Verbeck, G.F., *TiRaNI Bioworkstation: Single cell analysis at the cancer forefront*, NCI-CSSI 2014, University of North Texas, Denton, TX September 2014

Hamilton, J.; Phelps, M.; Verbeck, G.F., *Single cell nanomanipulation to identify lipid heterogeneity in mammalian cells at the cancer forefront*, 62st ASMS Conference on Mass Spectrometry and Allied Topics, Baltimore, MD, June 2014

Walton, B.L.; Sturtevant, D.; Chapman, K.; Verbeck, G.F., *Soft-landing ion mobility metal deposition for MALDI-MS imaging of forensic and biological samples*, 62st ASMS Conference on Mass Spectrometry and Allied Topics, Baltimore, MD, June 2014

Sturtevant, D.; Phelps, M.; Hamilton, J.; Walton, B.L.; Verbeck, G.F.; Chapman, K., *Characterization of Gossypol Metabolites in situ in Pigmented Glands of Cotton Embryos Using Laser Desorption Ionization (LDI)-and Nanospray Ionization (NSI)-Mass Spectrometry*, American Society of Plant Biologists-Southern Section (ASPB-SS). Lexington, Kentucky, March 2014.

Huynh, V.; Leveille, J.M.; Joshi, U.; Golden, T.D.; Verbeck, G.F., *Nanomanipulation-coupled to nanospray mass spectrometry applied to document and ink analysis*, 247th ACS National Meeting 2014, Dallas, TX March 2014.

Walton, B.L.; Verbeck, G.F., Chapman, K., *Optimization of soft-landing ion mobility deposition of silver nanoparticles for use as MALDI matrix for biological samples*, Southwest Regional Meeting of American Chemical Society, SWARM 2013, Waco, TX, November 2013.

Clemons, K.; Nnaji, C.; Verbeck, G.F., *Development of a single solvent for extraction of trace inorganic and organic explosives*, Southwest Regional Meeting of American Chemical Society, SWARM 2013, Waco, TX, November 2013.

Walton, B.L.; Verbeck, G.F., *Comparison of Soft-Landed Silver Nanoparticles and Traditional Matrices for Small Molecule MALDI-MS*, 40th Meeting of Federation of Analytical Chemistry and Spectroscopy Societies, SciX 2013, Milwaukee, WI, September 2013.

Robideau, V.; Hamilton, J.; Verbeck, G.F., *Comparison of Trace Metals in Ricochet Bullets to Their Corresponding Cartridges and Ricochet Marks*, 40th Meeting of Federation of Analytical Chemistry and Spectroscopy Societies, SciX 2013, Milwaukee, WI, September 2013.

Hoffmann, W.D.; He, J; Wright, K.C.; Verbeck, G.F., *Development of a Membrane Inlet Mass Spectrometry-Based Strategy for Environmental Monitoring*, 9th Workshop on Harsh-Environment Mass Spectrometry, St. Pete Beach, FL, September 2013

Clemmons, K.; Torabi, S; Mo. H.; Verbeck, G.F., *Nanomanipulation-coupled to Mass Spectrometry for direct Organelle Analysis to explore Lipid Localization chemistry within Single Cells*, 61st ASMS Conference on Mass Spectrometry and Allied Topics, Minneapolis, MN, June 2013.

Hoffmann, W.D.; Verbeck, G.F.; Jackson, G., *Development of a Portable Mass Spectrometer for Operation at 1 Torr*, 61st ASMS Conference on Mass Spectrometry and Allied Topics, Minneapolis, MN, June 2013.

Hamilton, J.; Hoffmann, W.D.; Verbeck, G.F., *Optimizing cold cell LA-ICP-MS conditions for the Analysis of elemental Localization and Imaging of Biological Tissues*, 61st ASMS Conference on Mass Spectrometry and Allied Topics, Minneapolis, MN, June 2013.

Adams, D.H.; Roberts, A.P.; Smith, J.D.; Verbeck, G.F., *Linking mercury to health effects with laser ablation: will it work for marine fishes?*, IRLS 2013, Florida 2013.

Clemmons, K.C.; Verbeck, G.F., *Direct Analyte-Probed Nanoextraction coupled to Nanospray Ionization-Mass Spectrometry for Analysis of Illicit Drugs*, 39th Meeting of Federation of Analytical Chemistry and Spectroscopy Societies, SciX 2012, Kansas City, MO, October 2012.

Walton, B.; Verbeck, G.F., *Alternative MALDI Matrix Found in Silver Nanoparticles Produced via Soft-Landing Ion Mobility*, 39th Meeting of Federation of Analytical Chemistry and Spectroscopy Societies, SciX 2012, Kansas City, MO, October 2012.

Fox, J.D.; Hoffmann, W.D.; Verbeck, G.F., *Multi-analysis Platform Incorporating Raman Microscopy and Multiple Internal Reflection-Infrared Spectroscopy for the in situ Analysis of Soft-Landed Clusters*, 39th Meeting of Federation of Analytical Chemistry and Spectroscopy Societies, SciX 2012, Kansas City, MO, October 2012.

Hoffmann, W.D.; He, J.; Verbeck, G.F., *Portable Linear Quadrupole Membrane Inlet Mass Spectrometer for Environmental Monitoring*, 39th Meeting of Federation of Analytical Chemistry and Spectroscopy Societies, SciX 2012, Kansas City, MO, October 2012.

Hoffmann W.D.; Verbeck, G.F, *Softlanding Preparative Mass Spectrometry Platform for Directing New Materials and Theoretical Elucidation of Electronic Structure and Properties* Proposers' Conference for the Focus Center Research Program (SRC), Dallas, TX, May, 2012

Hoffmann W.D.; Jones, J.; Perez, J.; Verbeck, G.F., *Hafnium Oxide Deposition on Mechanically Exfoliated SiO₂ Supported Graphene by Soft-Landing Ion Mobility*, 60th ASMS Conference on Mass Spectrometry and Allied Topics, Vancouver, BC, May 2012.

Clemons, K.; Wiley R.; Fox, J.D.; Verbeck, G.F., *Direct Analyte-Probed Nanoextraction (DAPNe) Coupled to Nanospray Ionization – Mass Spectrometry for Analysis of Illicit Substances*, 60th ASMS Conference on Mass Spectrometry and Allied Topics, Vancouver, BC, May 2012.

Wiley, R.; Verbeck, G.F., *Direct Analyte Probed Nanoextraction (DAPNe)- Coupled to Nanospray Ionization-Mass Spectrometry of Drug Residues from Latent Fingerprints*, University of North Texas Scholars Day, Denton, TX, April 2012.

Horn, P.; Ledbetter, N. Hoffmann, W.D.; Neogi, P.; Korte, A.; James, C.; Case, C.; Shulaev, V; Lee, Y; Verbeck, G.F.; Chapman, K. “*Direct visualization of lipid heterogeneity in plant tissue by direct organelle mass spectrometry and MALDI mass spectrometry*”, 67th Southwest Regional Meeting of the American Chemical Society (SWARM 2011), Austin, TX, November 2011. INVITED.

Fox, J.D.; Roberts, A.; Verbeck, G.F. “*Raman Imaging-Coupled to Nanoextraction NSI-MS for Quick Screening and Analysis of Astaxanthin and Carotenoid-Protein in Copepods*”, 38th Federation of Analytical Chemistry and Spectroscopy Societies, Reno, NV, October 2011. ORAL

Hoffman, W.D.; Davila, S.J.; Jones, J.; Perez, J.; Verbeck, G.F. “*Investigation of Hf-Doped Graphene by Soft-Landing Ion Mobility*”, 38th Federation of Analytical Chemistry and Spectroscopy Societies, Reno, NV, October 2011. ORAL

Waverka, K.N.; Verbeck, G.F. “*Nanomanipulation-Coupled to Nanospray Mass Spectrometry for Ultra-Trace Forensic Analysis*”, 38th Federation of Analytical Chemistry and Spectroscopy Societies, Reno, NV, October 2011. ORAL

Dziekonski, E.; Hoffmann, W.D.; Verbeck, G.F. “*A Study of How Alternative Buffer Gases can Affect Energetic Materials in an Ion Trap Mass Spectrometers*, 8th Workshop on Harsh-Environment Mass Spectrometry, St. Pete Beach, FL, September 2011.

Hoffmann, W.D.; Davila, S.J.; Verbeck, G.F., “*Generation of Monolayer Protected Clusters on Surfaces by Softlanding of Mass Selected Ions*”, 59th ASMS Conference on Mass Spectrometry and Allied Topics, Denver, CO, June 2011.

Walton, B.L.; Verbeck, G.F., “*Bond Dissociation Energy Determinations of Group-11 (Cu, Ag, Au) Cyanide Complexes Using Electrospray Ionization Mass Spectrometry and Theoretical Calculations*”, 59th ASMS Conference on Mass Spectrometry and Allied Topics, Denver, CO, June 2011.

Davila, S.J.; Hoffmann, W.D.; Verbeck, G.F., “*A Novel MALDI Matrix Source Utilizing Softlanding Ion Mobility to Rapidly Deposit Ag Nanoparticles for Use as MALDI Matrices*”, 59th ASMS Conference on Mass Spectrometry and Allied Topics, Denver, CO, June 2011.

Fox, J.D.; Roberts, A.; Verbeck, G.F., “*Nanomanipulation-Nanospray Ionization Mass Spectrometry-Coupled to Raman Microscopy to Elucidate Astaxanthin-Protein Interaction in Freshwater Copepods*”, 59th ASMS Conference on Mass Spectrometry and Allied Topics, Denver, CO, June 2011.

Hoffmann, W.D.; Wallace, N.M.; Verbeck, G.F., “*Trace Drug Residue Analysis with Microscopy and Microextraction-Coupled to Nanospray Mass Spectrometry from Forensic Lifts*”, 37th Annual FACSS Conference, Raleigh, NC, October 2010, Won 1st Place Poster Presentation

Hoffmann, W.D.; Verbeck, G.F., “*Liquid Nitrogen Cooled Stage for Laser Ablation Inductively Coupled Mass Plasma Spectrometry*”, 37th Annual FACSS Conference, Raleigh, NC, October 2010

Wallace, N.; Verbeck, G.F., “*THC Extraction from Crystal Rain Using Nanomanipulation-coupled to Nanospray Ionization-Mass Spectrometry*”, SWAFS 2010 Annual Meeting and Training Conference, Grapevine, TX, September 2010.

Wallace, N.; Verbeck, G.F., “*Ultra Trace Drug Residue Analysis from Fingerprints using Nanomanipulation-Coupled to Nanospray Ionization-Mass Spectrometry*”, SWAFS 2010 Annual Meeting and Training Conference, Grapevine, TX, September 2010.

Hart A.; Verbeck, G.F., “*Elemental Analysis of Through-and-Through Bullet Holes using Laser Ablation Inductively-Coupled Plasma Mass Spectrometry*”, SWAFS 2010 Annual Meeting and Training Conference, Grapevine, TX, September 2010

Davila, S.J.; Verbeck, G.F., “*Investigation of Silver nanoparticle MALDI matrices deposited at sub-eV kinetic energy using soft landing ion mobility (SLIM)*” 19th International Conference on Ion Mobility Spectrometry, Albuquerque, NM, July 2010.

Wallace, N.; Joshi, U.; Verbeck, G.F., “*Forensic Science Applications with Nanomanipulation-Nanospray Ionization: Analysis of Paint, Drugs, and Ink Samples*”, ASMS 58th Annual Conference on Mass Spectrometry and Allied Topics, Salt Lake City, UT, May 2010.

Hoffmann, W.D.; Davila, S.J.; Verbeck, G.F., “*Soft-Landing of Metal-Carbide Clusters by Rectilinear Ion Trap Mass Spectrometry*”, 58th ASMS Conference on Mass Spectrometry and Allied Topics, Salt Lake City, UT, May 2010

Davila, S.J.; Hoffmann, W.H.; Birdwell, D.O.; Verbeck, G.F., “*Surface Ion Modification and Characterization of Muscovite by Laser Ablated Carbon and Transition Metal Clusters using Soft Landing Ion Mobility*” American Society of Mass Spectrometry 58th Annual Symposium, Salt Lake City, UT, May 2010.

Fox, J.D.; Verbeck, G.F., “*Ruggedized Cylindrical Ion Trap Mass Spectrometer for Field Deployable MS and MS/MS Analysis*”, 58th ASMS Conference on Mass Spectrometry and Allied Topics, Salt Lake City, UT, May, 2010.

Hart A.; Wallace, N.; Verbeck, G.F., “*Lead and Cadmium Levels in Children’s Jewelry using Laser Ablation Inductively Coupled Plasma Mass Spectrometry*”, University of North Texas Scholars Day, Denton, TX, April 2010

Joshi, U.; Golden, T.;**Verbeck, G.F.**, “*Nanomanipulation-Coupled to Nanospray Mass Spectrometry Applied to Document and Ink Analysis*”, American Academy of Forensic Science 62nd Annual Scientific Meeting, Seattle, WA, February 2010.

Wallace, N.; Hueske, E.; **Verbeck, G.F.**, “*Electrostatic Lifting-Coupled with Nanomanipulation-Nanospray Ionization for the Analysis of Illicit Drugs*” American Academy of Forensic Science 62nd Annual Scientific Meeting, Seattle, WA, February 2010.

Davila, S.J.; Birdwell, D.O.; **Verbeck, G.F.** “*Ion Mobility - Soft-Landing for the Production and Characterization of Metal Clusters*” 65th Southwest Regional Meeting of the American Chemical Society, El Paso, TX, November 2009.

Hoffmann, W.D.; Brown, J.; Petros, R.A.; **Verbeck, G.F.**, “*One-Bead, One-Compound Combinatorial Peptide Library Sequencing by Nanomanipulation-Coupled to Nanospray-Mass Spectrometry*”, 65th Southwest Regional Meeting of the American Chemical Society, El Paso, TX, November 2009.

Wallace, N.; Hueske, E.; **Verbeck, G.F.**, “*Electrostatic Lifting-Coupled with Nanomanipulation-Nanospray Ionization for the Analysis of Illicit Drugs*”, 65th Southwest Regional Meeting of the American Chemical Society, El Paso, TX, November 2009.

Birdwell, D.O.; Davila, S.J.; **Verbeck, G.F.**, “*Ion Optic Designs for Drift Tube Soft-Landing*”, 65th Southwest Regional Meeting of the American Chemical Society, El Paso, TX, November 2009.

Joshi, U.; Golden, T.;**Verbeck, G.F.**, “*Nanomanipulation-Coupled to Nanospray Mass Spectrometry Applied to Document and Ink Analysis*”, Southwestern Association of Forensic Sciences, Orlando, FL, October 2009.

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