# Jay P Kitt, PhD, MS

Adjunct Assistant Professor, Chemistry
Adjunct Assistant Professor, Chemical Engineering

**University of Utah**
315 South 1400 East
Salt Lake City, UT 84112-0850
Office: (801) 581-7938
Cell: (801) 913-9886
Jay.p.kitt@gmail.com | Kitt.J@utah.edu

## Education

PhD University of Utah 2016
Chemistry (Analytical)
Dissertation: *Raman Microscopy Studies of Liquid/Solid Interfaces within Individual Porous Silica Particles*

MS University of Utah 2020
Biomedical Informatics (Translational Informatics, Data Science)
Research: *Investigation of the Impact of Air Pollution Exposures on Pulmonary Disease Outcomes*

BS University of Utah 2011
Chemistry (Biochemistry Track)

## Academic Appointments

Adjunct Assistant Professor June 2025-Present
University of Utah, Department of Chemical Engineering

Research Assistant Professor July 2021-Present
University of Utah, Department of Chemistry

Faculty Member, February 2022-Present
University of Utah, Center of Excellence for Exposure Health Informatics

NIH-NLM Postdoctoral Fellow, Biomedical Informatics January 2019-December 2021
Julio Facelli Research Group
University of Utah, Department of Biomedical Informatics

Postdoctoral Researcher, Analytical and Biophysical Chemistry December 2019-July 2021
Joel M. Harris Research Group
University of Utah, Department of Chemistry

Postdoctoral Researcher, Analytical and Biophysical Chemistry June 2016-December 2019
Shelley D. Minteer Research Group, collaborative with Harris Group
University of Utah, Department of Chemistry

## Honors and Awards

Fellow 2025
*Society for Applied Spectroscopy*

Society for Applied Spectroscopy Early Career Scientist Award 2024
*Recognition for Early Career Accomplishments in Spectroscopy*

Society for Applied Spectroscopy Distinguished Service Award 2024
*Recognition for long-time service to the Society for Applied Spectroscopy*

Delegate – NSF Workshop: Data-Driven Measurements and Instruments for Chemistry 2022
*NSF workshop for anticipating future directions in data-driven chemical analysis*

Society for Applied Spectroscopy Presidential Service Award 2021
*Recognition for recent extraordinary contributions in service to the Society for Applied Spectroscopy*

High-Achieving Trainee – University of Utah NIH NLM Fellowship Program 2020
*Recognition for outstanding achievement in Biomedical Informatics Training through NIH*

Delegate - NIH Big Data to Knowledge Training Coordinating Center 2019
*Innovation Lab: Data Science Challenges in Rural Health and Environmental Exposures*

NIH-NLM Postdoctoral Fellowship for training in biomedical informatics 2019

Cheves T. Walling Graduate Research Award, University of Utah, Dept. of Chemistry 2016
*Best thesis of graduating class*

Barbara Stull Graduate Student Award, Society for Applied Spectroscopy 2015
*National recognition of outstanding graduate research*

Coblentz Student Award 2014
*National recognition of excellence in vibrational spectroscopy research*

NSF-IGERT Research Fellowship 2012
*Interdisciplinary graduate education spanning STEM and social sciences*

WW Epstein Outstanding Educator, University of Utah, Department of Chemistry 2012
*Student-nominated teaching award*

Undergraduate Research Award 2011
*Outstanding spectroscopy research*

## **Peer-Reviewed Publications** – H-Index: 13, i10-index: 17 (*Corresponding Author)

33. Unraveling Hydration- and Temperature-Induced Structural Transformations of Linear Poly(Ethyleneimine) Using Raman Microscopy, Koh, M, Pendegrast A, **Kitt JP**, Harris JM, Minteer, SD, Korzeniewski, C; The Journal of Physical Chemistry C, *Submitted*.
32. Solvent-Dependent Mechanism of Electrochemical Oxalate Oxidation, Beeler J, Mayank T, **Kitt JP***, Harris JM, Neurock M, White HS, ACS Electrochemistry, *Article ASAP, https://doi.org/10.1021/acselectrochem.5c00310*
31. Stoichiometric Control of Bismaleimide Conjugation of DNA to Silica Surfaces through Quantitative Fluorescence Analysis of Thiolated-DNA, Myres G, **Kitt JP**, Harris JM, Applied Spectroscopy, April 2025, *Online Ahead of Print,* https://doi.org/10.1177/0003702825133261. *(Accepted without revision)*.
30. Hybrid Bilayer Interfaces within Reversed-Phase Chromatographic Silica Formed by Self Assembly of Long-Chain Primary Alcohols, Potter A, Zare M, Harris JM, **Kitt JP*,** *Langmuir* 2025, 41, 4, 2851–2862.
29. Confocal Raman Microscopy for Measuring In-Situ Temperature-Dependent Structural Changes in Poly(Ethylene Oxide) Thin Films, Koh M, **Kitt JP**; Pendergast A, Harris JM; Minteer SD, Korzeniewski C, *Applied Spectroscopy,* Jan. 2025, *Online Ahead of Print,* DOI: 10.1177/00037028241310904.
28. Surface-Area Enhanced Raman Spectroscopy of DNA in Porous Silica: A Quantitative and Reproducible Alternative to Plasmonic-Based SERS, Myres G, **Kitt JP**, Harris JM, Analytical Chemistry, 2024, 96, 19, 7679–7686
27. Raman Scattering Reveals Ion-Dependent G-Quadraplex Formation in the 15-mer Thrombin-Binding Aptamer upon Association with Alpha-Thrombin, Myres GJ, **Kitt, JP**, Harris, JM, Analytical Chemistry, 2023, 95, 44, 16160–16168.
26. Inter-Leaflet Phospholipid Exchange Impacts the Ligand Density Available for Protein Binding at Supported Lipid Bilayers, Myres GJ**, Kitt JP**, Harris JM, Langmuir, 38 (22), 6967-6976, May 2022.

25. Raman Microscopy Investigation of GLP-1 Peptide Association with Supported Phospholipid Bilayers, Bryce DA, **Kitt JP**, Harris JM, Langmuir, 37, 49, 14265–14274, December 2021.
24. Adapting confocal Raman microscopy for in situ studies of redox transformations at electrode-electrolyte interfaces, Korzeniewski C, Peterson E, **Kitt JP**, Minteer SD, Harris JM, Journal of Electroanalytical Chemistry, 896, 115207, October 2021.
23. Interdisciplinary Data Science to Advance Environmental Health Research and Improve Birth Outcomes, Triantafillou S, Larsen A, **Kitt JP**, Shaw GM, Marsillach J, Environmental Research, 197, 111019, 2021.
22. Hybrid-Lipid Bilayers Induce n-Alkyl-Chain Order in Reversed-Phase Chromatographic Surfaces, Impacting their Shape Selectivity for Aromatic Hydrocarbon Partitioning, Zare M, **Kitt JP**, Wen X, Heider E, Harris, JM, Analytical Chemistry, 93, 8, 4118–4125, February 2021.
21. Lacritin proteoforms restore viscoelasticity of the tear lipid layer and epithelial homeostasis in dry eye. Georgi GA, Sharifian GM, Romano J, Teixeira KL, Struble C, Ryan DS, Sia RK, **Kitt JP**, Harris JM, Hsu K, Libby A, Odrich MG, Suarez T, McKown RL, Laurie GW, Journal of Biological Chemistry, 296, 2021.
20. Vibrational spectroscopic monitoring of the gelation transition in Nafion ionomer dispersions. Liang Y, **Kitt JP**, Minteer SD, Harris JM, Korzeniewski C. Applied Spectroscopy. 2021, 75(4), 376-384.
19. Hybrid-supported bilayers formed with mixed-charge surfactants on $C_{18}$ functionalized silica surfaces. Zare M, **Kitt JP**, Harris JM. Langmuir. 2020, 36, 26, 7609–7618.
18. A randomized, controlled, pilot study of CPAP for patients with chronic cough and obstructive sleep apnea. Sundar KM, Willis AM, Smith S, Hu N, **Kitt JP**, Birring S. Lung. 2020, 198 (3), 449-457.
17. Confocal Raman microscopy investigation of phospholipid monolayers deposited on nitrile-modified surfaces in porous silica particles. Bryce DA, **Kitt JP**, Myres GJ, Harris JM. Langmuir. 2020;36(15).
16. Structural elucidation of bisulfite adducts to pseudouridine that result in deletion signatures during reverse transcription of RNA. Fleming AM, Alenko A, **Kitt JP**, Orendt AM, Flynn PF, Harris JM, Burrows CJ. Journal of the American Chemical Society. 2019;141(41):16450-16460.
15. Confocal Raman microscopy investigation of self-assembly of hybrid phospholipid bilayers within individual porous silica chromatographic particles. **Kitt JP**, Bryce DA, Minteer SD, Harris JM. Analytical Chemistry. 2019;91(12):7790-7797.
14. Infrared microscopy as a probe of composition within a model biofuel cell electrode prepared from Trametes versicolor laccase. Liang Y, Cai R, Hickey DP, **Kitt JP**, Harris JM, Minteer SD, Korzeniewski C. ChemElectroChem. 2018;6(3):818-826.
13. Single layer graphene for estimation of axial spatial resolution in confocal Raman microscopy depth profiling. Korzeniewski C, **Kitt JP**, Bukola S, Creager S, Minteer SD, Harris JM. Analytical Chemistry. 2018;91(1):1049-1055.
12. Confocal Raman microscopy for label-free detection of protein-ligand binding at nanopore-supported phospholipid bilayers. **Kitt JP**, Bryce DA, Minteer SD, Harris JM. Analytical Chemistry. 2018;90(19):11509–11516.
11. Confocal Raman microscopy for *in situ* measurement of phospholipid-water partitioning into model phospholipid bilayers within individual chromatographic particles. **Kitt JP**, Bryce DA, Minteer SD, Harris JM. Analytical Chemistry. 2018;90(11):7048-7055.
10. Confocal-Raman Microscopy Characterization of Supported Phospholipid Bilayers Deposited on the Interior Surfaces of Chromatographic Silica, Bryce DA, **Kitt JP**, Harris JM, Journal of the American Chemical Society, 2018, 140 (11), pp 4071–4078.

9. Confocal Raman Microscopy for the Determination of Protein and Quaternary Ammonium Ion Loadings in Biocatalytic Membranes for Electrochemical Energy Conversion and Storage, Cai R, Abdellaoui, S., **Kitt JP**, Cullen, I., Harris JM, Korzeniewski C, Analytical Chemistry, 2017, 89 (24).
8. Vibrational Spectroscopy for the Determination of Ionizable Group Content in Fluorinated Ionomer, Korzeniewski C, Liang Y, Zhang, P., Sharif, I., **Kitt JP**, Harris JM, Hamrock, S.J., Creager SE., DesMarteau, D.D., Applied Spectroscopy, 72(1):141-150.
7. Raman Spectroscopy Reveals Selective Interactions of Cytochrome c with Cardiolipin that Correlate with Membrane Permeability, **Kitt JP**, Bryce DA, Minteer SD, Harris JM, Journal of the American Chemical Society, 2017, 139(10), pp 3851-3860.
6. Confocal Raman Microscopy Investigation of Molecular Transport into Individual Chromatographic Silica Particles, Bryce DA, **Kitt JP**, Harris JM, Analytical Chemistry, 2017, 895(5), pp 2755-2763.
5. Confocal Raman Microscopy Characterization of Hybrid Supported Phospholipid Bilayers in Single $C_{18}$-Functionalized Chromatographic Particles, **Kitt JP**, Harris JM, Langmuir, 2016, 32(35).
4. Calorimetry-Derived Composition Vectors to Resolve Component Raman Spectra in Phospholipid Phase Transitions, **Kitt JP**, Bryce DA, Harris JM, Applied Spectroscopy, 2015, 70(7), pp 1165-1175. *(Accepted without revision)*.
3. Confocal Raman Microscopy for *in Situ* Measurement of Octanol-Water Partitioning within the Pores of Individual $C_{18}$-Functionalized Chromatographic Particles, **Kitt JP**, Harris JM, Analytical Chemistry, 2015, 87 (10), pp 5340–5347.
2. Spatial Filtering of a Diode Laser Beam for Confocal Raman Microscopy, **Kitt JP**, Bryce DA, Harris JM, Applied Spectroscopy, 2015, 69(4), pp 513-517.
1. Confocal Raman Microscopy for *in Situ* Detection of Solid-Phase Extraction of Pyrene into Single $C_{18}$-Silica Particles, **Kitt JP**, Harris JM, Analytical Chemistry, 2014, 86(3), pp 1719-1725. *(Accepted without revision)*.

## Invited Talks and Seminars

14. Self-Modeling Curve Resolution of Raman Spectra from Mixed Deuterated and Protiated Phospholipid Membranes Reveals Isotopically-Segregated Lipid Domains, **Kitt JP**, SciX, October 22, 2024.
13. Impacts of Air Pollution on Obstructive Sleep Apnea Outcomes: The Importance of Outliers in Informatics and Data Analysis, **Kitt JP**, Central Utah ACS, National Chemistry Week Seminar, "The Healing Power of Chemistry", October 27, 2023
12. Air Pollution and Sleep-Disordered Breathing: Using Big Data to Unravel Interactions. **Kitt JP**, Sundar KM, Sleep Medicine Grand Rounds, University of Utah School of Medicine, February, 15, 2023.
11. Quantitative Raman Spectroscopy of Protein-Phospholipid and Protein Protein Interactions**, Kitt JP**, Carterra Biosciences, January 27, 2020.
10. Modification and Spectroscopic Characterization of Interfacial Chemistry in Porous-Silica Separation Materials, **Kitt JP**, Graduate Student Seminar Series, Department of Chemical Engineering, University of Utah, October 12, 2020.
9. Quantitative Confocal Raman Microscopy Detection of a Hybrid Supported Phospholipid Bilayer-Based Sandwich Immunoassay within Individual Chromatographic Silica Particles, **Kitt JP**, Bryce DA, Harris JM, Spectroscopy's Emerging Leader in Molecular Spectroscopy Award Session, SciX, October 14, 2019.
8. Raman Microscopy Investigations of Model Phospholipid Membranes: Characterization, Small-Molecule, Peptide, and Protein Interactions, **Kitt JP**, Harris JM, 10th International Conference on Advanced Vibrational Spectroscopy, July 12, 2019.

7. Confocal Raman Microscopy for Detection of Lacritin Peptide in Human Meibum Thin Films, **Kitt JP** and Harris JM, Lacritin Consortium Meeting, University of Virginia, September, 2018.
6. Raman Microscopy Investigations of Model Phospholipid Membranes: Characterization, Small-Molecule Partitioning, Peptide, and Protein Interactions, **Kitt JP**, Bryce D.A., and Harris JM, Department of Pharmaceutics and Pharmaceutical Chemistry Seminar Series, University of Utah, September, 2018.
5. Confocal Raman Microscopy for Investigating the Internal Surface Chemistry of Porous Materials, **Kitt JP** and Harris JM, Bryce DA, Gasser-Ramirez JL., Procter and Gamble Vibrational Spectroscopy Users Group, April 2018.
4. Raman Microscopy Investigation of Cytochrome c-Induced Permeabilization of Mixed-Phospholipid Vesicle Membranes, **Kitt JP**, Bryce DA, Harris JM, San Diego State University, December, 2017.
3. Vibrational Spectroscopy Studies of the Interaction of Cytochrome c with Cardiolipin in Phospholipid Membranes, **Kitt JP**, Bryce DA, Harris JM, SciX, October, 2017.
2. Confocal Raman Microscopy Measurement of Cytochrome c-Induced Leakage from Individual Optically-Trapped Phospholipid Vesicles, **Kitt JP**, Bryce DA, Harris JM, National Institutes of Health, June, 2016.
1. Confocal Raman Microscopy for in Situ Measurement of Small-Molecule Lipophilicity within Single Chromatographic Silica Particles, **Kitt JP**, Harris JM, National Institutes of Health, April, 2016.

## Contributed Papers Presented at Scientific Meetings

24. Confocal Raman Microscopy for In-Situ Monitoring of Enzyme Activity of Agarose-Immobilized Horseradish Peroxidase, **Kitt JP**, Pittcon, March 22, 2023.
23. Dipolar coupling and phase segregation in mixed deuterated and protiated phospholipid vesicle membranes, **Kitt JP**, Harris JM, Spring 2022 ACS National Meeting, March 23, 2022.
22. Raman Microscopy Investigation of C-H Dipolar Coupling Reveals Segregation of Deuterated and Protonated Phospholipids in Mixed Bilayers, **Kitt JP**, Harris JM, SciX 2021, September 27, 2021.
21. Investigation of the Link between Air Pollution, Sleep Apnea, and Underlying Pulmonary Disorders, **Kitt, JP**, Focus Talk, National Library of Medicine Training Meeting, June, 21, 2021.
20. Lipid-modified silica nanoparticles for investigating antibody-ligand interactions at bilayers with optical-trapping confocal Raman microscopy, **Kitt JP**, 261st ACS National Meeting, April 5, 2021.
19. Informatics-Based Investigation of the Link between Air Pollution, Sleep Apnea, and Underlying Pulmonary Disorders, **Kitt JP**, 2021 USA-European Exposome Symposium, Icahn School of Medicine, January 27, 2021.
18. Raman Microscopy Investigation of Antibody-Antigen Interactions at Hybrid Supported Phospholipid Bilayers in Porous Silica Supports, **Kitt JP**, Harris JM, SciX, October 12, 2020.
17. Epidemiological Investigation of the Impact of Air Quality on Obstructive Sleep Apnea: What can we learn from CPAP Devices?, **Kitt JP**, Sundar K, Gouripeddi R, Pirozzi C, Facelli JC, 32$^{nd}$ Annual Conference of the International Society for Environmental Epidemiology, August 24, 2020.
16. Investigating the Link Between Obstructive Sleep Apnea and Air Quality: What Can We Learn from CPAP Device Data?, **Kitt JP**, Focus Talk, National Library of Medicine Training Meeting, June 24, 2020.
15. Headspace SPME-GC-MS for Metabolomic Analysis of the Impact of Atmospheric Exposures on Pulmonary Diseases, **Kitt JP**, Zare M, Gouripeddi R, Pirozzi C, Harris JM, Facelli JC, Pittsburgh Conference on Analytical Chemistry, March 2, 2020.

14. Informatics and Chemistry: Examining the Impact of Particulate Matter Chemical Composition on Pulmonary Disease Outcomes, **Kitt JP**, Martin R, Sundar K, Pirozzi C, Gouripeddi R, Harris JM, Facelli, JC, The Air We Breathe: A Multidisciplinary Perspective on Air Quality, October 3, 2019.
13. Raman microscopy investigation of cytochrome c-cardiolipin interactions to understand the mechanism of cytochrome c-induced membrane permeabilization proposed to occur during apoptosis, **Kitt JP**, Bryce DA, Minteer SD, Harris JM, Poster Presentation, 256th ACS National Meeting, August 22, 2018.
12. Confocal Raman microscopy investigation of cytochrome c-phospholipid interactions which induce permeability in mixed phospholipid vesicle membranes, **Kitt JP**, Bryce DA, Minteer SD, Harris JM, Poster Presentation, 255th ACS National Meeting, March, 2018.
11. Vibrational spectroscopy studies of the interaction of cytochrome c with cardiolipin in phospholipid membranes, **Kitt JP**, Bryce DA, Minteer SD, Harris JM, SciX, October 10, 2017.
10. Confocal Raman microscopy for probing the interior of individual porous particles to understand stationary phase structure and function, **Kitt JP**, Bryce DA, Harris JM, 254th ACS National Meeting, August 20, 2017.
9. Cytochrome c-induced permeabilization of cardiolipin-containing phospholipid membranes is induced through the selective interaction of cytochrome c with cardiolipin, **Kitt JP**, Bryce DA, Minteer SD, Harris JM, Poster Presentation, 253rd ACS National Meeting, April 4, 2017.
8. Confocal Raman microscopy for characterizing interactions of cytochrome c with cardiolipin-containing membranes of individual, optically-trapped phospholipid vesicles, **Kitt JP**, Bryce DA, Harris JM, SciX, September 20, 2016.
7. Confocal Raman microscopy for in situ characterization of hybrid supported phospholipid bilayers within individual $C_{18}$-functionalized chromatographic particles, **Kitt JP**, Harris JM, 251st ACS National Meeting, March 13, 2016.
6. Calorimetry-derived vectors to resolve pure Raman spectral components of phospholipid vesicle phase transitions, **Kitt JP**, Bryce DA, Harris JM, SciX, September 29, 2014.
5. Confocal Raman microscopy of hybrid supported phospholipid bilayers in individual C18-functionalized chromatographic particles, **Kitt JP**, Harris JM, SciX, October 2, 2014.
4. Confocal Raman microscopy characterization of hybrid supported phospholipid bilayer phase-transition behavior in in single C18-functionalized chromatographic particles, **Kitt JP**, Harris JM, 248th ACS National Meeting, August 10, 2014.
3. Confocal Raman microscopy for in situ measurement of octanol-water partition coefficients in single femtoliter-volume particles, **Kitt JP**, Harris JM, SciX, October 3, 2013.
2. Confocal Raman microscopy for in situ detection of polyaromatic hydrocarbon accumulation within single C18 silica particles, **Kitt JP**, Harris JM, Porter, M.D., SciX, October 4, 2012.
1. Confocal Raman microscopy for in situ detection of polyaromatic hydrocarbons in single femtoliter particles, **Kitt JP**, Harris JM, FACSS, October 5, 2011.

## Co-Authored Presentations at Scientific Meetings

58 "Immobilization of Dimethylferrocene-Modified Linear Poly(ethylenimine) on Epoxy-Terminated Supports for in-Situ Confocal Raman Microscopy," Koh N, Baiarashov E, **Kitt JP**, Korzeniewski C, Harris JM, and Minteer SD, PriME Pacific Rim Meeting on Electrochemical and Solid-State Science, Honolulu, October 9, 2024.
57. Confocal Raman Microscopy Investigations of the Functionalization of Porous Chromatographic Silica, Sardoni M, Harris JM, and **Kitt JP**, 2024 Spring National ACS Meeting, New Orleans, March 19, 2024.

56. Monitoring pH- and Hydration-induced Structural Changes of Linear Poly(ethylenimine) using Confocal Raman Microscopy," Koh M, **Kitt JP**, Korzeniewski C, Harris JM, and Minteer SD, 2024 Pittsburgh Conference, San Diego, February 25, 2024.
55. Surface-Area Enhanced Raman Spectroscopy of DNA: A Quantitative and Reproducible Alternative to Plasmonic-Based SERS, Myres GJ, **Kitt JP**, and **Harris JM**, 2024 FACSS/SciX Conference, Raleigh, October 23, 2024.
54. Surface-Area Enhanced Raman Spectroscopy of DNA in Porous Silica: A Quantitative and Reproducible Alternative to Plasmonic-Based SERS, Myres GJ, **Kitt JP**, and Harris JM, 2024 Pittsburgh Conference, San Diego, February 27, 2024.
53. Confocal Raman Microscopy for Probing the Interior of Individual Chromatographic Silica Particles to Interrogate Interfacial Structure and Function, **Kitt JP**, Myres G, Harris JM, Symposium on Exploring Separations: Spectroscopy, Imaging and Theory, 2023 Pittsburgh Conference, Philadelphia, March 20, 2023.
52. Interfacial Chemistry within Porous Chromatographic Silica - the Inside Story Revealed by Confocal Raman Microscopy, **Kitt JP**, Myres G, Bryce DA, Harris JM, EAS Separations Award Session Honoring Mary J. Wirth, Eastern Analytical Symposium, November 14, 2023.
51. Surface-Area Enhanced Raman Spectroscopy of DNA in Porous Silica: A Quantitative and Reproducible Alternative to Plasmonic-Based SERS, **Myres G**, Kitt JP, Harris JM, 2024 Pittsburgh Conference, San Diego, February 27, 2024.
50. Confocal-Raman Spectroscopy Investigation of the Interactions between Porous-Silica immobilized DNA Aptamers and their Protein Targets, Potter A, Myres G, **Kitt JP**, Galecki C, Harris J, Eastern Analytical Symposium, Princeton NJ, November 14, 2023.
49. Monitoring pH- and Hydration-induced Structural Changes of Linear Poly(ethylenimine) using Confocal Raman Microscopy, Koh M, **Kitt JP**, Korzeniewski C, Harris JM, and Minteer SD, 2024 Pittsburgh Conference, San Diego, February 25, 2024
48. Confocal Raman Microscopy Investigations of the Two-Step Functionalization of Porous Chromatographic Silica, Sardoni M, Harris JM, **Kitt JP**, SciX 2023, October 10, 2023.
47. Time-Resolved Confocal Raman Microscopy of Post-Melting Crystallization in Linear Polyethylenimine, Koh M, **Kitt JP**, Korzeniewski C, Harris JM, Minteer SD, SciX 2023, October 10, 2023.
46. Raman Spectroscopy Characterization of Antibody-ligand Association at Supported Phospholipid Bilayers, Galecki JC, Myres GM, **Kitt JP**, Harris, JM, SciX 2023, October 10, 2023.
45. Characterization of interfacial solvent composition and structure of hydrophilic interaction liquid chromatography particle interiors by confocal Raman microscopy, Baxter, D, Perry, N, **Kitt, JP**, ACS National Meeting, March 26, 2023.
44. Raman spectroscopy characterization of antibody-ligand association at supported phospholipid bilayers, Galecki, C, Myres, GJ, **Kitt, JP**, Harris, JM, ACS National Meeting, March 26, 2023.
43. Confocal Raman microscopy investigation of the structure of long-chain alcohol monolayers on n-alkyl-chain functionalized silica surfaces of varying pore sizes, Potter, A, Zare, M, **Kitt, JP**, Harris, JM, ACS National Meeting, March 26, 2023.
42. Confocal Raman microscopy investigation of the structure of long-chain alcohol monolayers on n-alkyl-chain functionalized silica surfaces, Potter A, Zare M, **Kitt JP**, Harris JM, ACS National Meeting March 23, 2022.

41. Confocal Raman Microscopy Investigations of Metal-ion Complexation to Ligands Immobilized on Porous Silica Surfaces, Cao I, **Kitt JP**, Myres GM, Harris, JM, ACS National Meeting Spring 2022, March 23, 2022.
40. Raman Microscopy Methods for Investigating Separation Processes within Porous Particles, Harris JM, **Kitt JP**, Bryce DM, and Zare M, DOE Separation Science Research Meeting, Gaithersburg, MD (virtual); August 10, 2021. (Invited)
39. Confocal-Raman Microscopy Investigation of His-tagged Protein Capture by Nickel-Ligands on Hybrid Supported Lipid Bilayers, Engstrom AE, Myres G, **Kitt JP**, Harris JM, SciX, October 12, 2020.
38. Confocal Raman Microscopy Studies of the Shape Selectivity in Aromatic-Hydrocarbon Partitioning on Modified Reversed-Phase Chromatographic Surfaces, Zare M, **Kitt JP**, Wen X, Heider E, Harris JM, SciX, October 12, 2020.
37. Raman Microscopy Investigation of the Influence of Inter-Leaflet Lipid Translocation on Multivalent Protein Capture at Supported-Lipid Bilayers, Myres GJ, **Kitt JP**, Peterson EM, and Harris JM, EAS Virtual Student Symposium, September 14, 2020.
36. Exposure Health Informatics Methods for Environment Epidemiological Research, Gouripeddi R, Riches N, **Kitt JP**, Sward K, Facelli JC, August 25, 2020.
35. Confocal Raman Microscopy Investigation of His-tagged Protein-Nickel Ligand Interactions in Hybrid Supported Lipid Bilayers, Engstrom, A., **Kitt JP**, Myres, G., Harris JM, Pittsburgh Conference n, March, 1, 2020.
34. Confocal Raman Microscopy Study of the Shape Selectivity of Partitioning into Lipid-Modified C18 Chromatographic Surfaces, Zare M, **Kitt JP**, Heider E, Wen X, Harris JM, Pittsburgh Conference , March 1, 2020.
33. Confocal Raman Microscopy of Supported Lipid Bilayers in Nanoporous Silica Particles: A Platform for Label-Free, Heterogeneous Bioassays, Myres GJ, **Kitt JP**, Peterson EM, Harris JM, SciX, October 19, 2019.
32. Confocal Raman Microscopy Investigation of Small-Molecule Partitioning in Hybrid Supported Bilayers, Zare M, **Kitt JP**, and Harris, J.M, 257th National ACS Meeting, April 2, 2019.
31. Bisulfite Reacts with Pseudouridine to Yield Constitutional Isomer Sugar Adducts, Flemming A, Alenko A, **Kitt JP**, Orendt A, Flynn P, Harris JM, Burrows C, 2019, Gordon Research Conference, June, 26, 2019.
30. Confocal Raman Microscopy in the Study of Membrane Materials for Energy Conversion, Korzeniewski C, Cai R, **Kitt JP**, Liang Y, Minteer SD, Harris JM, Invited: Physical and Analytical Electrochemistry Division David C. Grahame Award Address, Electrochemical Society Meeting, May, 28, 2019.
29. Confocal Raman microscopy investigation of small-molecule partitioning in hybrid supported bilayers Zare M, **Kitt JP**, Harris JM, 257th ACS National Meeting, April 2, 2019.
28. Confocal Raman microscopy of phospholipid bilayers in small volume, high surface area supports: an informative tool for investigating bilayer-analyte interactions, Bryce DA, **Kitt JP**, Harris JM, 256th ACS National Meeting, August 22, 2018.
27. Confocal Raman microscopy investigation of mixed-surfactant monolayers at n-alkyl-chain functionalized surfaces in chromatographic particles, Zare M, **Kitt JP**, Bryce DA, Harris JM, 255th ACS National Meeting, March 22, 2018.
26. Preparation and characterization of nanopore-supported phospholipid bilayers for Raman microscopy detection and quantification of membrane-associated signaling peptides. Bryce DA, **Kitt JP**, Harris JM, 255th ACS National Meeting, March 18, 2018.

25. Confocal Raman microscopy determination of temperature-dependent partitioning of PAHs in C18-modified silica particles and interdigitated hybrid-bilayer particles, Wen X, Bryce DA, **Kitt JP**, Harris JM, 255th ACS National Meeting, March 18, 2018.
24. Confocal Raman microscopy for investigating the internal surface chemistry of porous particles, Harris JM, **Kitt JP**, Bryce DA, SciX, October 12, 2017.
23. Confocal Raman microscopy for investigation of bilayer-analyte interactions at nanopore-supported phospholipid bilayers, Bryce DA, **Kitt JP**, Harris JM, SciX, October 10, 2017 (Selected for SAS student poster session award).
22. Confocal Raman microscopy to monitor temperature-dependent pyrene partitioning and hybrid-bilayer structure within C18-modified silica particles, Wen X, Bryce DA, **Kitt JP**, Harris JM, SciX, October 10, 2017.
21. Confocal Raman microscopy of silica- and cyano-supported phospholipid bilayers within porous chromatographic supports, Bryce DA, **Kitt JP**, Harris JM, SciX, October 10, 2017.
20. Preparation, characterization, and application of nanopore-supported phospholipid bilayers, Bryce DA, **Kitt JP**, Harris JM, 253rd ACS National Meeting, April 5, 2017.
19. Confocal Raman microscopy detection of specific lectin protein binding to carbohydrate at supported phospholipid bilayers, Bryce DA, **Kitt JP**, Harris JM, Pittsburgh Conference, March 2017.
18. Characterization of Protein-Ligand Interactions at Nanopore-Supported Phospholipid Bilayers, Bryce DA, **Kitt JP**, and Harris JM, Utah Bioengineering Conference, December 8, 2017.
17. Confocal Raman microscopy of lectin protein binding to mannose-functionalized supported lipid bilayers Bryce DA, **Kitt JP**, Harris JM, SciX, September 20, 2016.
16. Confocal Raman microscopy for in situ measurement of hybrid bilayers within individual C18-functionalized chromatographic particles: structure and applications, Harris JM, **Kitt JP**, 252nd ACS National Meeting, August 21, 2016.
15. Investigation of partitioning kinetics into individual chromatographic particles by confocal Raman microscopy, Bryce DA, **Kitt JP**, Harris JM, 251st ACS National Meeting, March 13, 2016.
14. Spectroscopic studies of the formation, structure, and applications of hybrid supported phospholipid bilayers, Harris JM, **Kitt JP**, Pittsburgh Conference, March 9, 2016.
13. Confocal Raman microscopy investigation of the kinetic barrier to PAH partitioning into individual C18–silica particles, Bryce DA, **Kitt JP**, Harris JM, Pittsburgh Conference, March 6, 2016.
12. Spectroscopic methods for examining retention mechanisms within individual chromatographic particles, Harris JM, **Kitt JP**, Cooper J, Isranalytica, January 19, 2016.
11. Confocal Raman microscopy investigation of solute accumulation into individual C18 particles, Bryce DA, **Kitt JP**, Harris JM, SciX, September 29, 2015.
10. Imaging of retention kinetics within individual reversed-phase chromatographic particles, Harris JM, Bryce DA, Cooper J, **Kitt JP**, Pittsburgh Conference, March 2015.
9. Probing liquid/solid interface chemistry within porous particles by confocal Raman microscopy, Harris JM, **Kitt JP**, Pittsburgh Conference, March 11, 2015.
8. Confocal Raman microscopy for monitoring the rate of accumulation into individual C18 chromatographic silica particles, Bryce DA, **Kitt JP**, Harris JM, SciX, September 29, 2014
7. Solid-phase extraction and confocal-Raman microscopy detection in femtoliter particle collectors, Harris JM, **Kitt JP**, Schaefer JJ, SciX, September 30, 2014.
6. Imaging of interfacial chemistry within porous particles, Harris JM, **Kitt JP**, Hardcastle CD, Schaefer, JJ, Department of Energy Research Meeting on Analysis, Imaging, and Separations, April 26, 2014.

5. Particles designed for $10^5$-fold preconcentration and confocal Raman microscopy detection in femtoliter volumes, Harris JM, **Kitt JP**, Hardcastle CD, Schaefer, JJ, Pittcon, March 4, 2014.
4. Confocal Raman microscopy to investigate the chemistry of silane ligands immobilized on porous silica particles, Knowlton N, **Kitt JP**, Harris JM, SciX, September 30, 2013.
3. Raman spectroscopy methods to detect monomolecular layers on oxide surfaces, Knowlton N, **Kitt JP**, Peterson, E., Harris JM, National Conference on Undergraduate Research, April 12, 2013..
2. Raman spectroscopy methods to detect monomolecular layers on oxide surfaces, Knowlton N, **Kitt JP**, Peterson, E., Harris JM, 245th ACS National Meeting, April 8, 2013.
1. Probing chemical interactions and transport kinetics within single chromatographic silica particles, Harris JM, Cooper J, **Kitt JP**, Ramirez J, SciX, October 3, 2012.

## Patents

1. Kitt, D.Q. and **Kitt JP**, Stable Compositions of Dehydroascorbic Acid, US Patent No. 9018252B2, Issued: April 2015

## Professional Service

- ACS Analytical Delegate, Federation for Analytical Chemistry and Spectroscopy Societies Governing Board 2024-Present
- Guest Editor, *Applied Spectroscopy* 2024-Present
- Governing Documents Committee, Society for Applied Spectroscopy 2020-Present
- Parliamentarian, Executive Committee, SAS 2019-Present
- Publications Committee, SAS 2022-2025
- Member, National Covid Cohort Consortium (N3C) 2021-2024
- Department of Biomedical Informatics, Student Advisory Committee 2021
- Presider, Biomaterials and Biointerfaces Session, Spring ACS National Meeting 2021
- Judge, Inaugural Graduate Research Symposium in Chemistry, University of Utah 2021
- Reviewer 2017-Present
  - Journal of the American Chemical Society
  - Chemistry – A European Journal
  - Electrochemistry Letters
  - Journal of Chemometrics
  - Biophysical Journal
  - Analytica Chimica Acta
  - Journal of Chemometrics
  - Langmuir
  - Applied Spectroscopy
  - International Journal of Molecular Informatics
  - Am. Journal of Undergraduate Research
  - Cells
  - Diagnostics
- Teller Committee, SAS 2019
- Early Career Working Group, SAS 2019-2020
- At-large Delegate, SAS Governing Board 2017-2019
- Regional, Student, and Technical Affairs Committee, SAS 2017-2019
- Judge, SAS Student Poster Session Award 2017 & 2019
- Chair, Society for Applied Spectroscopy, University of Utah Student Chapter 2014-2016
- Student Volunteer, ACS Analytical Division 2014
- Student Volunteer, SciX 2011, 2015, & 2016

## Service in the Community

- Science and Scouting, Pack 3877 Annual Kickoff Event, Organizer and Demo-Leader 2021
- Judge, Elementary and Senior Divisions, University of Utah Science and Engineering Fair 2021
- Judge, Holbrook Elementary Science Fair 2014 & 2015

## Intradepartmental Seminars

**University of Utah Chemistry Faculty Brown Bag Seminars**

- Measuring Antibody-Antigen Interactions by Optical-Trapping Confocal Raman microscopy, 2023

**University of Utah Interfacial and Bioanalytical Chemistry (IBAC) Seminars**

- Development of Naphthoquinone-Modified Porous Silica for Spectroelectrochemistry, 2024
- Optical-Trapping Confocal Raman Microscopy Measurement of Antibody Antigen Interactions, 2024
- Raman Spectroscopy for *in-situ* Monitoring of Enzymatic Catalysis in Porous Materials, 2023
- Why you should pay attention to outliers, 2019
- Confocal Raman microscopy investigation of hybrid, supported phospholipid bilayer self-assembly within porous chromatographic silica particles, 2018
- Raman Spectroscopy Investigation of the Interaction of Cytochrome c with Cardiolipin, 2017
- Calorimetry-Derived Vectors for Spectroscopic Analysis of Phospholipid Phase Transitions, 2015
- Confocal Raman Microscopy for in Situ Characterization of Hybrid Supported Lipid Bilayers in Single 10µm $C_{18}$ Chromatographic Particles, 2013
- Confocal Raman microscopy for in situ measurement of partition coefficients in single micron-sized silica particles, 2012
- Confocal Raman Microscopy for in situ Detection of Solid-Phase Extraction in Single Chromatographic Particles, 2011

**Seminars presented to the NLM Research Seminar Series at the University of Utah, Department of Biomedical Informatics**

- Sleep Apnea and Air Quality: New Insights, 2020
- Sleep Apnea and Air Quality: A Story of Outliers, 2020
- Measuring the impacts of air quality on sleep apnea: CPAP devices and their differences, 2020

## Mentoring, Teaching, and Collaboration

**Courses Taught**

Quantitative Chemical Analysis Summer 2022

**Teaching Assistantships**

Course, Instructor, Year

- Information Processing (Graduate course), Professor Joel M. Harris 2014
- Analytical Chemistry, Prof. Joel M. Harris 2011
- Analytical Chemistry, Prof. Emily Heider 2011
- Analytical Chemistry, Prof. John C. Conboy 2010
- Analytical Chemistry, Prof. Joel M. Harris 2009

**Mentoring as a Senior Graduate Student, Postdoc, and Research Assistant Professor**

Current mentees – *Department of Chemistry* (Research Focus):

- Ms. Miharu Koh, PhD Student (Spectroelectrochemical Analysis of Ionomer Membrane Films)
- Mr. Aric Potter, BS Student (Raman Microscopy of Hybrid Alcohol Bilayers at $C_{18}$ Interfaces)
- Past mentees – *Department of Chemistry* (Current Position):

- Ms. Clista Galecki, BS Student (Stanford University Graduate Program)
- Mr. Dawson Baxter, BS Student (QA/QC Analyst, DiscGenics)
- Mr. Derrick Peterson (Intel)
- Ms. Maran Sardoni (UC Irvine Chemistry Graduate Program)
- Mr. Nicholas Perry, BS Student (Stockroom Assistant, University of Utah)
- Mr. Isaac Cao, BS Student (Analyst, Aliri Labs)
- Dr. Grant Myres, PhD Student (Applications Scientist, Renishaw)
- Dr. Maryam Zare, Postdoctoral Researcher (Analytical Formulation Scientist STC Biologics)
- Dr. David A. Bryce, PhD Student (Microscopy Field Service Engineer, Olympus Corporation)
- Mr. Chris Hardcastle, MS Student (Bioanalytical Method Development, Aliri)
- Ms. Xin Wen, BS Student (Graduate Student, Emory University)
- Ms. Natascha Knowlton, BS Student (Chemistry Teacher, Rowland Hall St. Marks)
- Mr. Alex Engstrom, BS Student (Chemist, Electronic BioSciences)

Past mentees – *Department of Biomedical Informatics* (Research Focus/Current Position):

- Mr. Apoorv Bhambri, BS Student (Clustering of Sleep Apnea Patient Data Correlation with Pre-existing Conditions)
- Ms. Yi-Jin Chen (Technology Solutions Analyst, Cotviti)
- Ms. Rachel Kon, BS Student, Summer Undergraduate Researcher (Mass Spectrometry of Exhaled Breath – Correlation with Environmental Pollutant Data)
- Ms. Patricia Girardi, MS Student (Data Analyst, FOXO Technologies)

**Collaborations**

Collaborator(s), Institution(s), Topic, Year

- Prof. Marc Porter, University of Utah, Raman Detection – PFAS, Metal Ions, Biomarker Discovery 2024-Present
- Prof. Carol Korzeniewski, Texas Tech University, Spectroelectrochemical data analysis 2015-Present
- Prof. Kimberly Hageman, Utah State University, Pesticide Leaf Penetration 2023
- Prof. Judit Marisillach, University of Washington, Prof. Jeanette Stingone, Columbia University, Prof. Sofia Triantafillou, University of Crete, Prof. Gary M Shaw, Stanford University Impact of prenatal exposome on adverse birth outcomes 2019-2024
- Dr. Jim Smith, Carterra Biosciences, Raman Microscopy of Proteins 2023-2024
- Dr. Krishna Sundar, Sleep-Wake Center, Sleep Apnea - Pollution Impacts 2019-2022
- Prof. Gordon Laurie, University of Virginia, Lacritin Proteoforms Tear Surface Quality 2020
- Prof. Cindy Burrows, University of Utah, Raman Spectroscopy - DNA Adducts 2019
- Dr. James Hotaling, Andrology – University of Utah, Raman Spectroscopy - Instrument Design 2015

## Professional Affiliations

- American Chemical Society
- Society for Applied Spectroscopy
- Coblentz Society
- Optica (formerly OSA)
- American Institute of Chemical Engineers