VITA

Matthew G. Siebecker, Ph.D.
Assistant Professor of Applied Environmental Soil Chemistry
Department of Plant and Soil Science
Davis College of Agricultural Sciences & Natural Resources
Texas Tech University
2911 15th St., Suite 122
Lubbock, Texas 79409

matthew.siebecker@ttu.edu
Phone +1-806-834-0266
Fax +1-806-742-0775

EDUCATION:

2006	B.S. University of Massachusetts, Environmental Science AND Plant and Soil Science
2014	Ph. D. University of Delaware. Environmental Soil Chemistry

PROFESSIONAL EXPERIENCE:

2014-2016	Postdoctoral Researcher - Chemical Oceanography, University of Delaware
2016-2018	Postdoctoral Researcher - Environmental Soil Chemistry, University of Delaware
2019-present	Assistant Professor, Texas Tech University

INTERNATIONAL EXPERIENCE:

- Collaborator: Virginia Montero Campos, Professor, Technological Institute of Costa Rica. (1) Arsenic speciation in water treatment residuals (WTRs) and soil (2019-2022); (2) Comparison of the toxic exposure scenario for Mesoamerican Nephropathy (CKD) between Costa Rica and Panama and its correlation with the health of the affected population. (2021 - Present); (3) Comparison of markers of exposure to heavy metals and kidney damage in children, for the early diagnosis of Chronic Kidney Disease of unknown origin (CKD) in Guanacaste (2023 - Present)
- Collaborators: Márcio Felipe Pinheiro Neri Nunes and Guilherme Lopes Strategies for agronomic biofortification with selenium and iodine in sweet potato grown in tropical soil. Federal University of Lavras - UFLA, Lavras, Minas Gerais State, Brazil. (2022- present)

SOCIETY MEMBERSHIP:

1. Professional Soil Science Association of Texas (January 2020 - Present).
2. Geochemical Society (December 2012 - Present).

3. American Chemical Society (October 2012 - Present).
4. Soil Science Society of America (January 2009 - Present).

HONORS AND AWARDS:

2022 Texas Tech University Outstanding Faculty Mentor, presented at the Texas Tech Undergraduate Research Conference; Dr. Siebecker was nominated by undergraduate researchers (Katherine Coyle and Thanh Pham) in his lab for this award.

2023 Service Member Patriot Award from the Office of the Secretary of Defense Employer Support of the Guard and Reserve (ESGR). The Patriotic Employer Award "reflects the efforts made to support citizen warriors through a wide-range of measures including flexible schedules, time off prior to and after deployment, caring for families, and granting leaves of absence if needed." https://www.esgr.mil/Employer-Awards/Patriot-Award. PhD student Emma Schmidt actively serves in the Navy Reserves, and she nominated Dr. Siebecker for this award.

AREA OF EXPERTISE:

Soil chemistry, adsorption, surface precipitation, mineral water interface chemistry, redox, metal contamination, X-ray absorption spectroscopy

PUBLICATIONS:

- [*]Siebecker as corresponding author
- [§§§§]postdoctoral researcher in Siebecker soil chemistry lab
- [§§§]PhD student in Siebecker soil chemistry lab
- [†††]PhD student for whom Siebecker served as a committee member
- [§§]MS student in Siebecker soil chemistry lab
- [††]MS student for whom Siebecker served as a committee member
- [§]undergraduate student in Siebecker soil chemistry lab

Textbooks: One total (published after being hired by Texas Tech University)

1. Sparks, D. L., Singh, B., and **Siebecker, M. G. (2023)** "Environmental Soil Chemistry, 3rd Edition," Academic Press, Cambridge, Massachusetts. https://shop.elsevier.com/books/environmental-soil-chemistry/sparks/978-0-443-14034-1
   - Contributions: writing - original draft preparation for chapters 1, 4, 5, 6, 7, and 8; writing - review and editing for chapters 1-10.

Book Chapters: Two total (one published after being hired by Texas Tech University)

1. [*]**Siebecker, M. G.**, Li, W., & Sparks, D. L. **(2018)** The Important Role of Layered Double Hydroxides in Soil Chemical Processes and Remediation: What We Have Learned Over the Past 20 Years. Advances in Agronomy, 147, 1–59. https://doi.org/10.1016/bs.agron.2017.10.001

- Impact Factor 9.75; Agronomy Q1; Contributions: conceptualization, writing - original draft preparation, writing - review and editing.

2. §§Riddle, R. L., **Siebecker, M. G.**, Weindorf, D. C., Shaw, R. K., and Scharenbroch, B. C. **(2022)** Soils in urban and built environments: Pedogenic processes, characteristics, mapping, and classification. Advances in Agronomy, 173, 227-255. https://doi.org/10.1016/bs.agron.2022.02.004
   - Impact Factor 9.75; Agronomy Q1; Contributions: conceptualization, writing - original draft preparation, writing - review and editing, supervision.

Refereed Journals:

40 peer-reviewed articles (31 published after being hired by Texas Tech University)

Published:

1. Centofanti, T., **Siebecker, M.G.**, Chaney, R. L., Davis, A. P., & Sparks, D. L. **(2012)** Hyperaccumulation of nickel by *Alyssum corsicum* is related to solubility of Ni mineral species. Plant and Soil, 359 (1-2), 71–83.
   - https://doi.org/10.1007/s11104-012-1176-9. Impact Factor 5.2; Agronomy Q1; Contributions: conceptualization, methodology, lab work, data analysis, data curation, writing (original draft preparation, reviewing, editing).
2. Li, W., Livi, Kenneth J. T., Xu, W., **Siebecker, M.G.**, Wang, Y., Phillips, B. L., & Sparks, D. L. **(2012)** Formation of Crystalline Zn-Al Layered Double Hydroxide Precipitates on gamma-Alumina: The Role of Mineral Dissolution. Environmental Science & Technology, 46 (21), 11670–11677.
   - https://doi.org/10.1021/es3018094. Impact Factor 12.0; Environmental Engineering Q1; Contributions: writing (original draft preparation, reviewing, editing).
3. *__Siebecker, M.G.__, Li, W., Khalid, S., & Sparks, D. **(2014)** Real-time QEXAFS spectroscopy measures rapid precipitate formation at the mineral-water interface. Nature Communications, 5, 5003.
   - https://doi.org/10.1038/ncomms6003. Impact Factor 17.0; Multidisciplinary Sciences Q1; Contributions: conceptualization, methodology, lab work, data analysis, data curation, writing (original draft preparation, reviewing, editing).
4. *__Siebecker, M.G.__, Madison, A. S., & Luther, George W., III. **(2015)** Reduction Kinetics of Polymeric (Soluble) Manganese (IV) Oxide (MnO2) by Ferrous Iron (Fe2+). Aquatic Geochemistry, 21 (2-4), 143–158.
   - https://doi.org/10.1007/s10498-015-9257-z. Impact Factor 1.6; Geochemistry and Geophysics Q3; Contributions: conceptualization, methodology, lab work, data analysis, data curation, writing (original draft preparation, reviewing, editing).
5. Olson, L., Quinn, K. A., **Siebecker, M.G.**, Luther, George W., III, Hastings, D., & Morford, J. L. **(2017)** Trace metal diagenesis in sulfidic sediments: Insights from Chesapeake Bay. Chemical Geology, 452, 47–59.
   - https://doi.org/10.1016/j.chemgeo.2017.01.018. Impact Factor 4.1; Geochemistry and Geophysics Q1; Contributions: lab work, data analysis, data curation.
6. *__Siebecker, M.G.__, Chaney, R. L., & Sparks, D. L. **(2017)** Nickel speciation in several

serpentine (ultramafic) topsoils via bulk synchrotron-based techniques. Geoderma, 298, 35–45.

- https://doi.org/10.1016/j.geoderma.2017.03.008. Impact Factor 7.0; Soil Science Q1; Contributions: conceptualization, methodology, lab work, data analysis, data curation, writing (original draft preparation, reviewing, editing).

7. *__Siebecker, M.G.__, & Sparks, D. L. **(2017)** Structural Differentiation between Layered Single (Ni) and Double Metal Hydroxides (Ni-Al LDHs) Using Wavelet Transformation. The Journal of Physical Chemistry A, 121 (37), 6992–6999.
   - https://doi.org/10.1021/acs.jpca.7b07940. Impact Factor 2.9; Physical Chemistry Q3; Contributions: conceptualization, methodology, lab work, data analysis, data curation, writing (original draft preparation, reviewing, editing).
8. Gou, W., __Siebecker, M. G.__, Wang, Z., and Li, W. **(2018)** Competitive sorption of Ni and Zn at the aluminum oxide/water interface: an XAFS study. Geochemical Transactions, 19, 9.
   - https://doi.org/10.1186/s12932-018-0054-7. Impact Factor 4.0; Geochemistry and Geophysics Q3; Contributions: data analysis, writing (original draft preparation, reviewing, editing).
9. *__Siebecker, M.G.__, Chaney, R. L., & Sparks, D. L. **(2018)** Natural speciation of nickel at the micrometer scale in serpentine (ultramafic) topsoils using microfocused X-ray fluorescence, diffraction, and absorption. Geochemical Transactions, 19, 14.
   - https://doi.org/10.1186/s12932-018-0059-2. Impact Factor 4.0; Geochemistry and Geophysics Q3; Contributions: conceptualization, methodology, lab work, data analysis, data curation, writing (original draft preparation, reviewing, editing).
10. Giannetta, B., Zaccone, C., Plaza, C., __Siebecker, M.G.__, Rovira, P., Vischetti, C., & Sparks, D. L. **(2019)** The role of Fe(III) in soil organic matter stabilization in two size fractions having opposite features. Science of the Total Environment, 653, 667-674.
    - https://doi.org/10.1016/j.scitotenv.2018.10.361. Impact Factor 9.8; Environmental Sciences Q1; Contributions: lab work, data analysis, writing (original draft preparation, reviewing, editing).
11. Oldham, V. E., __Siebecker, M.G.__, Jones, M. R., Mucci, A., Tebo, B. M., & Luther, George W., III. **(2019)** The Speciation and Mobility of Mn and Fe in Estuarine Sediments. Aquatic Geochemistry, 25 (1-2), 3–26.
    - https://doi.org/10.1007/s10498-019-09351-0. Impact Factor 1.6; Geochemistry and Geophysics Q3; Contributions: lab work, data analysis, data curation, writing (original draft preparation, reviewing, editing).
12. Sun, Q., Liu, C., Cui, P., Fan, T., Zhu, M., Alves, M. E., __Siebecker, M.G.__, Sparks, D. L., Wu, T., Li, W., Zhou, D., & Wang, Y. **(2019)** Formation of Cd precipitates on gamma-Al2O3: Implications for Cd sequestration in the environment. Environment International, 126, 234–241.
    - https://doi.org/10.1016/j.envint.2019.02.036. Impact Factor 12.4; Environmental Sciences Q1; Contributions: data analysis, writing (original draft preparation, reviewing, editing).
13. Giannetta, B., Plaza, C., __Siebecker, M.G.__, Aquilanti, G., Vischetti, C., Plaisier, J., Juanco, M., Sparks, D., & Zaccone, C. **(2020)** Iron speciation in organic matter fractions

isolated from soils amended with biochar and organic fertilizers. Environmental Science & Technology, 54, 8, 5093–5101.

- https://doi.org/10.1021/acs.est.0c00042. Impact Factor 12.0; Environmental Engineering Q1; Contributions: methodology, lab work, data analysis, data curation, writing (original draft preparation, reviewing, editing).

14. Giannetta, G., **Siebecker, M.G.**, Zaccone, C., Plaza, C., Rovira, P., Vischetti, C., Sparks, D. L. **(2020)** Iron(III) fate after complexation with soil organic matter in fine silt and clay fractions: An EXAFS spectroscopic approach. Soil and Tillage Research, 200, 104617.
    - https://doi.org/10.1016/j.still.2020.104617. Impact Factor 7.3; Soil Science Q1; Contributions: lab work, data analysis, writing (original draft preparation, reviewing, editing).
15. Li, J., Wang, Y., Xue, X., Xie, X., **Siebecker, M.G.,** Sparks, D. L., & Wang, Y. **(2020)** Mechanistic insights into iodine enrichment in groundwater during the transformation of iron minerals in aquifer sediments. Science of the Total Environment, 745, 140922.
    - https://doi.org/10.1016/j.scitotenv.2020.140922. Impact Factor 9.8; Environmental Sciences Q1; Contributions: lab work, data analysis, writing (original draft preparation, reviewing, editing).
16. Yan, J., Fischel, M., Chen, H., **Siebecker, M.G.**, Wang, P., Zhao, F., & Sparks, D. L. **(2021)** Cadmium speciation and release kinetics in a paddy soil as affected by soil amendments and flooding-draining cycle. Environmental Pollution, 268, 115944.
    - https://doi.org/10.1016/j.envpol.2020.115944. Impact Factor 9.5; Environmental Sciences Q1; Contributions: data analysis, writing (original draft preparation, reviewing, editing).
17. Mo, X., **Siebecker, M.G.**, Gou, W., Li, L., & Li, W **(2021)** A review of cadmium sorption mechanisms on soil mineral surfaces revealed from synchrotron-based X-ray absorption fine structure spectroscopy: Implications for soil remediation. Pedosphere, 31(1), 11–27.
    - https://doi.org/10.1016/S1002-0160(20)60017-0. Impact Factor 5.7; Soil Science Q1; Contributions: writing (original draft preparation, reviewing, editing).
18. Lopes, G., Li, W., **Siebecker, M.G**., Sparks, D. L., & Guimaraes Guilherme, L. R. **(2021)** Combining zinc desorption with EXAFS speciation analysis to understand Zn mobility in mining and smelting affected soils in Minas Gerais, Brazil. Science of the Total Environment, 754, 142450.
    - https://doi.org/10.1016/j.scitotenv.2020.142450. Impact Factor 9.8; Environmental Sciences Q1; Contributions: data analysis, writing (original draft preparation, reviewing, editing).
19. [§§§]Zimmerman, A. J., [§]Gutierrez, D. G., Campos, V. M., Weindorf, D., Deb, S., [§]Chacón, S. U., Landrot, G., Flores, N. G. G., and [*]**Siebecker, M.G. (2021)** Arsenic speciation in titanium dioxide (TiO2) waste produced via drinking water filtration: Potential environmental implications for soils, sediments, and human health. Environmental Advances, 3, 100036.
    - https://doi.org/10.1016/j.envadv.2021.100036. CiteScore 3.6; Quartile ranking not available; Contributions: conceptualization, methodology, lab work, data analysis, writing (original draft preparation, reviewing, editing), supervision, project

administration, funding acquisition.

20. Wang, H., Hu, W., Wu, Q., Huang, B., Li Zong, Wang, A., & **Siebecker, M.G. (2021)** Effectiveness evaluation of environmentally friendly stabilizers on remediation of Cd and Pb in agricultural soils by multi-scale experiments. J of Cleaner Production, 311, 127673.
    - https://doi.org/10.1016/j.jclepro.2021.127673. Impact Factor 11.1; Environmental Engineering Q1; Contributions: writing (reviewing, editing).
21. Mo, X., **Siebecker, M.G.**, Gou, W., & Li, W. **(2021)** EXAFS investigation of Ni(II) sorption at the palygorskite-solution interface: New insights into surface-induced precipitation phenomena. Geochimica Et Cosmochimica Acta, 314, 85–107.
    - https://doi.org/10.1016/j.gca.2021.09.012. Impact Factor 5.3; Geochemistry and Geophysics Q1; Contributions: data analysis, writing (original draft preparation, reviewing, editing).
22. [§]Pham, Thanh Quang; [§§§§]Sharma, Aakriti; [§]Coyle, Katherine; Lewis, Katie; [*]**Siebecker, Matthew G. (2022)** Metal (hydr)oxide surface precipitates and their effects on potassium sorption. Environmental Science: Processes & Impacts.
    - http://dx.doi.org/10.1039/D2EM00092J. Impact Factor 5.5; Analytical Chemistry Q1; Contributions: conceptualization, methodology design, lab work, data analysis, data curation, writing (original draft preparation, reviewing, editing), supervision, project administration, funding acquisition.
23. [†††]Izaditame, F., **Siebecker, M.G.**, & Sparks, D. L. (2022). Sea-level-rise-induced flooding drives arsenic release from coastal sediments. Journal of Hazardous Materials, 423, 127161.
    - https://doi.org/10.1016/j.jhazmat.2021.127161. Impact Factor 12.7; Environmental Engineering Q1; Contributions: field work, methodology design, data analysis, writing (original draft preparation, reviewing, editing).
24. Szerlag, Kathryn Daria; Elavarthi, Monica; **Siebecker, Matthew G.**; Gu, Chunhao; McCrone, Conner; Sparks, Donald Lewis **(2022)** Systematic Study of Legacy Phosphorus (P) Desorption Mechanisms in High-P Agricultural Soils. Minerals 12, 458.
    - https://doi.org/10.3390/min12040458. Impact Factor 2.7; Geochemistry & Geophysics Q2; Contributions: data analysis, writing (original draft preparation, reviewing, editing).
25. Yan, Jiali; Tang, Zhong; Fischel, Matthew; Wang, Peng; **Siebecker, Matthew G.**; Aarts, M. G. M.; Sparks, Donald L.; Zhao, Fang-Jie **(2022)** Variation in cadmium accumulation and speciation within the same population of the hyperaccumulator Noccaea caerulescens grown in a moderately contaminated soil. Plant and Soil 475, 379-394.
    - https://doi.org/10.1007/s11104-022-05373-w. Impact Factor 5.2; Agronomy Q1; Contributions: data analysis, writing (reviewing, editing).
26. Davis, Emily M.; Liang, Yu; Wallace, Kayla P.; [§§§]Zimmerman, Amanda J.; **Siebecker, Matthew G**.; Broadway, Paul Rand; Carroll, Jeffrey A.; Ballou, Michael A. **(2022)** A porous ceramic particle with or without a preservative blend did not impair apparent digestibility of macro- and micro-nutrients of postweaned pigs. Translational Animal Science 6, txac078.
    - https://doi.org/10.1093/tas/txac078. Impact Factor 1.5; Agriculture, Dairy & Animal Science Q3; Contributions: instrumentation resources, writing (original draft

preparation, reviewing, editing).

27. [§§]Schmidt, Emma J.; Zanoni, Giovanni; Bumguardner, Amee; Šegvić, Branimir; Lewis, Katie; Abdala, Dalton; [*]**Siebecker, Matthew G. (2022)** Soil chemical extractions can alter potassium coordination in agricultural soils: A combined wet chemical and X-ray absorption spectroscopic approach. Geoderma 422, 115914.
    - https://doi.org/10.1016/j.geoderma.2022.115914. Impact Factor 7.0; Soil Science Q1; Contributions: conceptualization, methodology design, lab work, data analysis, data curation, writing (original draft preparation, reviewing, editing), supervision, project administration, funding acquisition.
28. Gou, W., Li, W., **Siebecker, M. G.**, Zhu, M., Li, L., and Sparks, D. L. **(2022)** Coupling Molecular-Scale Spectroscopy with Stable Isotope Analyses to Investigate the Effect of Si on the Mechanisms of Zn–Al LDH Formation on Al Oxide. Environmental Science & Technology, 56, 19, 13829–13836.
    - https://doi.org/10.1021/acs.est.2c05140. Impact Factor 12; Environmental Engineering Q1; Contributions: writing (reviewing, editing).
29. Lago, B. C., Favarin, J. L., de Almeida, R. E. M., Pierozan Junior, C., de Oliveira, S. M., Tezotto, T., de Borja Reis, A. F., and **Siebecker, M. G. (2023)** Potassium application timing to improve corn K-fertilizer use in the oat-corn sequence: a tracer study for high yielding corn. Journal of Plant Nutrition, 46:4, 618-629.
    - https://doi.org/10.1080/01904167.2022.2067054. Impact Factor 2.4; Plant Sciences Q2; Contributions: writing (original draft preparation, reviewing, editing).
30. [§]Coyle, K., [§§§§]Sharma, A., [§]Pham, T. Q., Lewis, K., and [*]**Siebecker, M. G. (2023)** Potassium Sorption to Aluminum and Silicon Oxides Is Affected by Co-Ions (Magnesium, Zinc, and Nickel), Dissolved Silicate, and Surface Precipitation. ACS Earth and Space Chemistry, 7, 4, 685–698.
    - https://doi.org/10.1021/acsearthspacechem.2c00227. Impact Factor 3.6; Multidisciplinary Chemistry Q2; Contributions: conceptualization, methodology, lab work, data analysis, writing (original draft preparation, reviewing, editing), supervision, project administration, funding acquisition.
31. [†††]Pham, Vung; [§§]Jordan, Cynthia M.; **Siebecker, Matthew G.**; Weindorf, David C.; Dang, Tommy (**2023**) iDVS: interactive 2D and 3D visualizations of proximal sensor data for rapid characterization of soil profiles. Precision Agriculture 24, 627-646. https://doi.org/10.1007/s11119-022-09962-8.
    - Impact Factor 6.2; Multidisciplinary Agriculture Q1; Contributions: data curation, writing (original draft preparation, reviewing, editing).
32. Mo, X., Takahashi, Y., **Siebecker, M. G.**, Gou, W., Wang, Z., Lu, X., and Li, W. **(2023)** In situ/operando XAFS investigation of the sorption/precipitation of Zn(II) on palygorskite surface at the molecular scale: Implications for Zn stable isotope fractionation. Geochimica et Cosmochimica Acta, 349, 64-80.
    - https://doi.org/10.1016/j.gca.2023.03.029. Impact Factor 5.3; Geochemistry and Geophysics Q1; Contributions: writing (reviewing, editing).
33. [§]Pham, T. Q., Longing, S., [*]**Siebecker, M. G. (2023)** Consumption and degradation of different consumer plastics by mealworms (*Tenebrio molitor*): Effects of plastic type, time, and mealworm origin. Journal of Cleaner Production, 403,136842.

- https://doi.org/10.1016/j.jclepro.2023.136842. Impact Factor 11.1; Environmental Engineering Q1; Contributions: methodology, lab work, data analysis, writing (original draft preparation, reviewing, editing), supervision, project administration, funding acquisition.

34. §§§Zimmerman, A. J., §Garcia Gutierrez, D., Shaghaghi, N., Sharma, A., Deonarine, A., Landrot, G., Weindorf, D. C., and *__Siebecker, M. G. (2023)__ Mobility and bioaccessibility of arsenic (As) bound to titanium dioxide (TiO2) water treatment residuals (WTRs). Environmental Pollution, 326, 121468.
    - https://doi.org/10.1016/j.envpol.2023.121468. Impact Factor 9.5; Environmental Sciences Q1; Contributions: conceptualization, methodology, lab work, data analysis, writing (original draft preparation, reviewing, editing), supervision, project administration, funding acquisition.
35. Betts, A. R., **Siebecker, M. G.**, Elzinga, E. J., Luxton, T. P., Scheckel, K. G., and Sparks, D. L. **(2023)** Influence of clay mineral weathering on green rust formation at iron-reducing conditions. Geochimica et Cosmochimica Acta, 350, 46-56.
    - https://doi.org/10.1016/j.gca.2023.04.001. Impact Factor 5.3; Geochemistry and Geophysics Q1; Contributions: data analysis, writing (reviewing, editing).
36. Venkataramani, Sujatha; Kafle, Arjun; Singh, Manpreet; Singh, Sukhbir; Simpson, Catherine; **Siebecker, Matthew G. (2023)** Greenhouse Cultivation of Cucumber (*Cucumis sativus L.*) in Standard Soilless Media Amended with Biochar and Compost. HortScience, 58, 1035-1044.
    - https://doi.org/10.21273/HORTSCI17257-23. Impact Factor 1.9; Horticulture Q2; Contributions: instrumentation provision, writing (reviewing, editing).
37. †††Shaik, Azeezahmed; Singh, Sukhbir; Montague, Thayne; **Siebecker, Matthew G**.; Ritchie, Glen; Wallace, Russell W.; Stevens, Richard **(2023)** Comparison of organic eggplant yields under open-field and high tunnel production systems in Texas. Farming System, 1, 100049.
    - https://doi.org/10.1016/j.farsys.2023.100049. Impact Factor not available; Quartile ranking not available; Contributions: writing (reviewing, editing).
38. †††Valdés-Rodríguez, Benedicto; Montero-Campos, Virginia; **Siebecker, Matthew G. (2023)** Causes of Chronic Kidney Disease of Non-Traditional Origin in Central America: An Approach Based on Medical Geology. Geosciences, 13, 360.
    - https://doi.org/10.3390/geosciences13120360. Impact Factor 3.8; Multidisciplinary Geosciences Q3; Contributions: data curation, supervision, writing (original draft preparation, reviewing, editing).
39. †††Gonzalez, Jake; **Siebecker, Matthew**; Pham, Vung; §§Jordan, Cynthia; Weindorf, David C.; Dang, Tommy **(2023)** Comparative analysis and visualization of soil profiles at the meter spatial scale utilizing novel matrix and volume rendering techniques. Computers and Electronics in Agriculture, 215, 108377.
    - https://doi.org/10.1016/j.compag.2023.108377. Impact Factor 8.3; Multidisciplinary Agriculture Q1; Contributions: data curation, writing (original draft preparation, reviewing, editing).
40. Sricharoenvech, Piyapas; **Siebecker, Matthew G**.; Tappero, Ryan; Landrot, Gautier; Fischel, Matthew H. H.; Sparks, Donald L. **(2024)** Chromium Speciation and Mobility in

Contaminated Coastal Urban Soils Affected by Water Salinity and Redox Conditions. Journal of Hazardous Materials, 462, 132661.

- https://doi.org/10.1016/j.jhazmat.2023.132661. Impact Factor 13.6; Environmental Sciences Q1; Contributions: data analysis, writing (original draft preparation, reviewing, editing).

Proceedings (Refereed and Invited): total of one

1. *__Siebecker, M.G.__, Chaney, R.L., Sparks, D.L. **(2010)** Nickel speciation in serpentine soils using synchrotron radiation techniques. In: Gilkes R, Prakongkep N (eds) Proceedings of the 19th World Congress of Soil Science: Soil Solutions for a Changing World; Symposium 2.2.1 Biogeochemical interfaces in soils #2, Brisbane, Australia, August 1-6. pp 160-162. http://www.iuss.org/19th%20WCSS/Symposium/pdf/0517.pdf

PRESENTATIONS AND LECTURES:

Total of 121 (including volunteered and invited)

Volunteered:

1. Siebecker, M. G., Gonzalez, N., Norman, D., Institute for Central American Development Studies, "An assessment for combined production of rice and tilapia fish," Institute for Central American Development Studies (ICADS), San Jose, Costa Rica. (2004).
2. Siebecker, M. G., Paulose, B., Lanza, G., Parkash, O., 12th Annual Massachusetts Statewide Undergraduate Research Conference, "Phytoremediation potential for Crambe plant (*Crambe abyssinica*) of heavy metal contaminated soil," University of Massachusetts, Boston, Massachusetts, USA. (2006).
3. Siebecker, M. G., Centofanti, T., Chaney, R. L., Sparks, D. L., Soil Science Society of America International Annual Meeting, "Geogenic nickel speciation in serpentine soils and its relationship to nickel uptake in hyperaccumulator plants," American Society of Agronomy, Crop Science Society of America, Soil Science Society of America, Pittsburgh, Pennsylvania, USA. (November 2009).
4. Centofanti, T., Siebecker, M., Chaney, R. L., Sparks, D. L., International Phytotechnology Conference, "Phytoavailability of Ni compounds to Alyssum species," International Phytotechnology Society, St. Louis, Missouri, USA. (December 2009).
5. Siebecker, M., Chaney, R. L., Sparks, D. L., Plant and Soil Sciences Graduate Research Symposium, "Elucidating nickel distribution in serpentine soils using µ-SXRF and µ-SXRD," University of Delaware, Newark, Delaware, USA. (April 2010).
6. Siebecker, M., Li, W., Khalid, S., Sparks, D. L., Soil Science Society of America International Annual Meeting, "An in situ real-time quick X-ray absorption spectroscopic (Q-XAS) investigation of Ni precipitation on Al-rich soil minerals," American Society of Agronomy, Crop Science Society of America, Soil Science Society of America, San Antonio, Texas, USA. (October 2011).
7. Siebecker, M., Li, W., Khalid, S., Sparks, D. L., American Chemical Society National Meeting, "Real-time sorption and precipitation of nickel on clay minerals: An in situ quick-EXAFS investigation," New Orleans, Louisiana, USA. (April 2013).

8. Siebecker, M., Li, W., Khalid, S., Sparks, D. L., University of Delaware Annual Graduate Student Forum, "Real time transition metal precipitation on clay minerals," University of Delaware, Newark, Delaware. (May 2013).
9. Siebecker, M. G., Li, W., Khalid, S., Sparks, D. L., 5th Department of Plant and Soil Sciences Symposium, "Rapid formation of nickel rich precipitates on clay minerals revealed by Q-EXAFS spectroscopy," University of Delaware and Longwood Gardens, Longwood Gardens, Kennett Square, Pennsylvania. (May 2013).
10. Li, W., Siebecker, M. G., Sparks, D. L., Soil Science Society of America International Annual Meeting, "Kinetics of Ni-Al layer double hydroxide precipitate formation on aluminum oxide: A time-resolved XRD and quick-scanning EXAFS study," American Society of Agronomy, Crop Science Society of America, Soil Science Society of America, Tampa, Florida, USA. (November 2013).
11. Oldham, V., Jones, M. R., Siebecker, M. G., Tebo, B. M., Mucci, A., Luther, G. W., American Chemical Society National Meeting, "The source of Mn3+L in the surface waters of the Saguenay Fjord, Québec, Canada," American Chemical Society, Denver, Colorado, USA. (March 2015).
12. Li, W., Siebecker, M. G., Sparks, D. L., American Chemical Society National Meeting, "Tackling rapid reaction kinetics at the mineral- water interface using quick-scanning X-ray absorption spectroscopy," American Chemical Society, Denver, Colorado, USA. (March 2015).
13. Siebecker, M. G., Madison, A. S., Luther, G. W., American Chemical Society National Meeting, "Reduction kinetics of polymeric (soluble) manganese(IV) oxide (MnO2) by ferrous iron (Fe2+)," American Chemical Society, Denver, Colorado, USA. (March 2015).
14. Oldham, V., Jones, M. R., Siebecker, M. G., Tebo, B. M., Mucci, A., Luther, G. W., Gordon Research Conference in Chemical Oceanography, "The cycling of Mn(III)-L in the suboxic porewaters and overlying oxic waters of the St. Lawrence Estuary, Québec, Canada," Holderness, New Hampshire, USA. (July 2015).
15. Li, W., Siebecker, M., Sparks, D., Goldschmidt, "Probing the Rapid Formation Kinetics of Ni-Al LDH Precipitates on γ-Alumina Using QEXAFS," Yokohama, Japan. (June 2016).
16. Chan, C., McAllister, S., Field, E., Chiu, B., Hoppes, K., Siebecker, M. G., Luther, G., Goldschmidt, "How do Fe-Oxidizing Microbes Influence Biogeochemical Cycles? Perspectives from Kinetics and Metagenomics/Transcriptomics," Yokohama, Japan. (June 2016).
17. Siebecker, M. G., Sparks, D. L., American Chemical Society National Meeting, "Structural insights on Ni-Al LDHs using wavelet analysis," American Chemical Society, San Francisco, California, USA. (April 2017).
18. Giannetta, B., Zaccone, C., Plaza, C., Siebecker, M. G., Vischetti, C., Sparks, D. L., XXXV Convegno Nazionale Società Italiana di Chimica Agraria (SICA), "Fe(III) fate after complexation with SOM pools under different land uses," Udine, Italy. (September 2017).
19. Giannetta, B., Plaza, C., Zaccone, C., Siebecker, M. G., Rovira, P., Vischetti, C., Sparks,

D. L., American Geophysical Union, "Impact of Fe(III)-OM complexes and Fe(III) polymerization on SOM pools reactivity under different land uses," American Geophysical Union, New Orleans, Louisiana, USA. (December 14, 2017).

20. Betts, A., Starcher, A., Siebecker, M., Elzinga, E., Sparks, D. L., Delaware Environmental Institute Annual Conference, "Precipitation of a Fe(II)-Al(III) layered double hydroxide (LDH) in an anaerobic soil clay fraction," Delaware Environmental Institute and University of Delaware, Newark, Delaware, USA. (2017).
21. Szerlag, K., Siebecker, M. G., Jaisi, D., Northrup, P., Sparks, D. L., University of Delaware College of Agriculture and Natural Resources Research Symposium, "The chemistry of legacy phosphorus in US Mid-Atlantic agricultural soils," Newark, Delaware, USA. (April 2018).
22. Giannetta, B., Zaccone, C., Plaza, C., Siebecker, M. G., Rovira, P., Vischetti, C., Sparks, D. L., European Geosciences Union General Assembly, "Soil organic matter-mineral interactions across different land uses: the importance of Fe-mediated stabilization," Vienna, Austria. (April 2018).
23. Giannetta, B., Siebecker, M. G., Plaza, C., Zaccone, C., Rovira, P., Vischetti, C., Sparks, D. L., European Geosciences Union General Assembly, "Impact and reactivity of Fe(III)-OM complexes and Fe(III) polymerization in SOM fractions under different land uses," Vienna, Austria. (April 2018).
24. Giannetta, B., Plaza, C., Zaccone, C., Siebecker, M. G., Rovira, P., Vischetti, C., Sparks, D. L., European Geosciences Union General Assembly, "Fe(III) fate after complexation with different soil organic matter fractions: retention capacity and mechanisms," Vienna, Austria. (April 2018).
25. Szerlag, K. D., Northrup, P., Siebecker, M. G., Jaisi, D., Sparks, D. L., The National Synchrotron Light Source II (NSLS-ll) and Center for Functional Nanomaterials (CFN) Users' Meeting, "Legacy phosphorus speciation in US Mid-Atlantic agricultural soils using tender energy X-ray absorption spectroscopy (TES)," Brookhaven National Laboratory, New York, USA. (May 2018).
26. Betts, A., Siebecker, M., Sparks, D. L., 55th Annual Meeting of the Clay Minerals Society, "Oxidation status of subsoil clay during Fe(II) sorption alters the composition of precipitated Fe(II)-bearing layered double hydroxides," University of Illinois at Urbana-Champaign, Champaign, Illinois, USA. (June 2018).
27. Szerlag, K., Siebecker, M., Jaisi, D., Northrup, P., Sparks, D. L., 21st World Congress of Soil Science, "The chemistry of legacy phosphorus in US Mid-Atlantic agricultural soils," International Union of Soil Science, Rio de Janeiro, Brazil. (August 2018).
28. Giannetta, B., Zaccone, C., Plaza, C., Siebecker, M., Aquilanti, G., Czyzychi, M., Vischetti, C., Sparks, D. L., XXXVI Convegno Nazionale Società Italiana di Chimica Agraria (SICA), "A spectroscopic approach to Fe speciation in SOM pools under agricultural soils subjected to biochar and organic fertilizers," Dipartimento di Agraria, Università Mediterranea, Italy. (September 2018).
29. Giannetta, B., Siebecker, M., Zaccone, C., Plaza, C., Aquilanti, G., Vischetti, C., Sparks, D. L., American Geophysical Union, "Soil Organic Matter-Mineral interactions across pools in different land uses: the importance of Fe mineral dynamics in natural

environments," American Geophysical Union, Washington, D.C., USA. (December 13, 2018).

30. Szerlag, K., Northrup, P., Tappero, R., Siebecker, M. G., Jaisi, D., Sparks, D. L., Soil Science Society of America International Annual Meeting, "The Solid Phase Speciation of Legacy Phosphorus in US Mid-Atlantic Agricultural Soils Using Micro-XRF Mapping and Micro-XANES," American Society of Agronomy, Crop Science Society of America, Soil Science Society of America, San Diego, California, USA. (January 2019).
31. Giannetta, B., Siebecker, M. G., Zaccone, C., Plaza, C., Aquilanti, G., Vischetti, C., Sparks, D. L., Soil Science Society of America International Annual Meeting, "The Role of Fe Species in SOM Stabilization in Agricultural Soils Subjected to Biochar and Organic Fertilizer Amendments," American Society of Agronomy, Crop Science Society of America, Soil Science Society of America, San Diego, California, USA. (January 2019).
32. Siebecker, M. G., Chaney, R. L., Sparks, D. L., Soil Science Society of America International Annual Meeting, "Natural Speciation of Trace Metal Rich Soil Minerals at the Micrometer Scale Using Microfocused X-Ray Fluorescence, Diffraction, and Absorption," American Society of Agronomy, Crop Science Society of America, Soil Science Society of America, San Diego, California, USA. (January 2019).
33. Betts, A., Siebecker, M. G., Scheckel, K., Sparks, D. L., Soil Science Society of America International Annual Meeting, "Electron Transfer and Clay Dissolution Affect Precipitation of Fe Mixed-Valence Hydroxides during Fe(II) Sorption to Natural Clay," American Society of Agronomy, Crop Science Society of America, Soil Science Society of America, San Diego, California, USA. (January 2019).
34. Mo, X., Siebecker, M. G., Guo, W., Li, W., 15th International Conference on the Biogeochemistry of Trace Elements (ICOBTE), "Mechanisms of Ni(II) sorption at the palygorskite-solution interface revealed from EXAFS, HRTEM and DRS investigation," Nanjing, China. (May 6, 2019).
35. Li, J., Xie, X.J., Siebecker, M. G., Sparks, D. L., 15th International Conference on the Biogeochemistry of Trace Elements (ICOBTE), "Iodine release associated with the transformation of iron minerals in natural sediments," Nanjing, China. (May 6, 2019).
36. Mo, X., Siebecker, M. G., Gou, W., Li, W., Goldschmidt, "Surface Induced Ni(II) Precipitation at the Palygorskite-Solution Interface Revealed by EXAFS, HRTEM, and DRS," Barcelona, Spain. (August 21, 2019).
37. Szerlag, K., Northrup, P., Tappero, R., Siebecker, M. G., Jaisi, D., Sparks, D., Goldschmidt, "Direct Detection of Solid-Phase Phosphorus Speciation in Agricultural Soils Using Paired µ-XRF Mapping and µ-XANES," Barcelona, Spain. (August 21, 2019).
38. Siebecker, M., Project Revolution at the HUB, "Environmental Soil Chemistry at TTU," Lubbock, Texas. (October 15, 2019).
39. Siebecker, M., TTU PSS Departmental Seminar Series, "Abiotic and biotic responses to a changing climate," Lubbock, Texas. (October 24, 2019).
40. Siebecker, M., Zimmerman, A.J., Weindorf, D., Campos, V.M., Deb, S., Chacon, S.U., Landrot, G., Soil Science Society of America International Meetings, "Quantification and

mobility of arsenic from sediments and soils enriched with titanium dioxide (TiO2) drinking water filter waste," San Antonio, TX. (November 11, 2019).

41. Siebecker, M., Zimmerman, A.J., Weindorf, D., Campos, V.M., Deb, S., Chacon, S.U., Landrot, G., The 2019 American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America Annual Meeting, "Quantification and mobility of arsenic from sediments and soils enriched with titanium dioxide (TiO2) drinking water filter waste," San Antonio, TX. (November 2019).
42. Izaditame, F., Siebecker, M., Sparks, D. L., Soil Science Society of America International Meetings, "Sea-Level-Rise-Induced Release of Heavy Metals from Flood-Prone Contaminated Coastal Sediments," San Antonio, TX. (November 2019).
43. Sricharoenvech, P., Sparks, D. L., Tappero, R., Landrot, G., Siebecker, M., Soil Science Society of America International Meetings, "Desorption of Chromium from Contaminated Urban Soils," San Antonio, TX. (November 2019).
44. Izaditame, F., Siebecker, M. G., Tappero, R., Sricharoenvech, P., Sparks, D. L., American Geophysical Union, "How Does Sea-Level-Rise Affect the Release of Pollutants from Flood-Prone Contaminated Coastal Sediments?," San Francisco, California, USA. (December 11, 2019).
45. Sanchez, J., Stuckey, J., Tappero, R., Siebecker, M. G., Sparks, D. L., American Chemical Society, "Sea level rise impacts on arsenic mobility in natural systems," Philadelphia, PA. (March 23, 2020).
46. Izaditame, F., Siebecker, M. G., Tappero, R., Sricharoenvech, P., Sparks, D. L., American Chemical Society, "Arsenic fate under the shadow of sea-level rise," Philadelphia, PA. (March 23, 2020).
47. Zimmerman, A. J., Siebecker, M. G., Weindorf, D. C., Montero Campos, V., Deb, S. K., Ulate Chacón, S., Landrot, G., American Chemical Society, "Speciation, quantification, and release of arsenic bound to titanium dioxide (TiO2, anatase) drinking water filter waste: a case study from the field to molecular scale," Philadelphia, PA. (March 24, 2020).
48. Szerlag, K. D., Izaditame, F., Northrup, P., Siebecker, M. G., Tappero, R., Jaisi, D., Sparks, D. L., American Chemical Society, "Speciation of legacy P in soils using multi-modal μ-XRF mapping and μ-XANES," Philadelphia, PA. (March 25, 2020).
49. Garcia-Gutierrez, D., Zimmerman, A. J., Siebecker, M., Texas Tech University - Undergraduate Research Conference, "Determining Arsenic Mobility And Speciation: An Analysis Of Soil Contaminated By Water Filtration Techniques In Costa Rica," Texas Tech University. (March 31, 2020).
50. Brijalba, K., Siebecker, M., Texas Tech University - Undergraduate Research Conference, "An Investigation Into The Reduction Kinetics Of Nanoparticulate Manganese Oxides Via Dissolved Organic Carbon Sources," Texas Tech University. (March 31, 2020).
51. Schmidt, E., Zanoni, G., Lewis, K., Segvic, B., Siebecker, M., Soil Science Society of America International Meetings, "Pairing Sequential Extractions and x-Ray Absorption Spectroscopy to Analyze Potassium Fixation in Agricultural Soils," Virtual. (November 2020).

52. Mo, X., Siebecker, M. G., Li, W., Soil Science Society of America International Meetings, "New Insights into the Mechanism on Surface Induced Ni Precipitation at the Clay-Solution Interface: A Structure-Reactivity Perspective," Virtual. (November 2020).
53. Zimmerman, A. J., Garcia-Gutierrez, D., Weindorf, D. C., Montero-Campos, V., Deb, S. K., Ulate-Chacón, S., Landrot, G., Siebecker, M. G., Soil Science Society of America International Meetings, "Arsenic Geochemistry in Titanium Dioxide (TiO2) Drinking Water Filter Waste and Impacted Soils: Implications for Urban Environmental and Human Health," Virtual. (November 2020).
54. Garcia Gutierrez, D., Siebecker, M., Texas Tech University Undergraduate Research Conference, "Understanding the mobility, speciation, and effects of arsenic in filtrate waste in rural soils." (March 2021).
55. Brijalba, K., Siebecker, M. G., Texas Tech University Undergraduate Research Conference, "Redox Kinetics of Nanoparticulate Manganese Oxide (MnO2) and Dissolved Organic Carbon: A UV-Vis Study." (March 2021).
56. Lauren E. Hicks, Joseph M. Barcus, Kaitlyn M. Goree, Noah R. Harrell, Alivia R. Mayfield, Christylee Deblieck, Jeffrey Martin, Britt Canada, Jessica Colvin, Emma Schmidt, Cynthia Jordan, Matthew G. Siebecker, Texas Tech University Department of Plant and Soil Science Research Symposium, "Impacts of swine waste application and subsequent inundations on nutrient and trace metal concentration and mobility in agricultural field soils." (April 2021).
57. Brijalba*, K., Siebecker, M. G., American Chemical Society, "Experimental redox kinetics of nanoparticulate manganese oxide (MnO2) and dissolved organic carbon: UV-Vis study." (April 2021).
58. Izaditame, F., Siebecker, M. G., Sparks, D., American Chemical Society, "Elemental cycling from contaminated coastal sediments subjected to varying sea-level rise induced flooding intensities." (April 2021).
59. Ulate Chacón, S., Montero Campos, V., Ardon-Dryer, K., Siebecker, M., Zimmerman, A. J., Technologico de Costa Rica, "Quantification of heavy metals in PM 10 PM 2 5 and PM 1 atmospheric particles and their relationship with the prevalence of Mesoamerican Nephropathy in the canton of Cañas Guanacaste, Costa Rica," Technologico de Costa Rica, Cartago Costa Rica. (June 16, 2021).
60. Shaik, A. (Presenter & Author), Singh, S. (Chair), Siebecker, M. (Author Only), Wallace, R. (Author Only), ASHS Annual Conference, "Yield and nutrient content of eggplant as influenced by arbuscular mycorrhizal fungi in organic soilless production system," American Society for Horticultural Science, Denver, Colorado. (August 2021).
61. Thanh Pham, Katherine Coyle, Aakriti Sharma, Matthew G. Siebecker, Soil Science Society of America, "Potassium Binding Ability to Newly Formed Mineral Precipitates," Salt Lake City, UT. (November 2021).
62. Katherine Coyle, Thanh Pham, Aakriti Sharma, Matthew G. Siebecker, Soil Science Society of America, "Potassium Adsorption to Si and Al Oxides in the Presence of Ni, Zn, and Mg," Salt Lake City, UT. (November 2021).
63. Cynthia Marie Jordan, Vung Pham, Tommy Dang, David C. Weindorf, Matthew G. Siebecker, Soil Science Society of America, "Novel Soil Core Data Visualization of

Diagnostic Soil Feature Pedogenesis," Salt Lake City, UT. (November 2021).

64. Li, Wei, Matthew G. Siebecker, Donald L. Sparks, Soil Science Society of America, "In-Situ Qexafs Sheds Light on the Mechanisms of Surface Induced LDH Precipitates at Mineral/Water Interface," Salt Lake City, UT. (November 2021).
65. Izaditame, F, Matthew G. Siebecker, Donald L. Sparks, Soil Science Society of America, "How Does Sea-Level Rise Impact Pollution Release in Contaminated Coasts?," Salt Lake City, UT. (November 2021).
66. Zimmerman AJ, Danira Garcia-Gutierrez, Sanjit K Deb, Gautier Landrot, Matthew G. Siebecker, Soil Science Society of America, "Extraction and Bioavailability of Arsenic from Titanium Dioxide Filter Waste," Salt Lake City, UT. (November 2021).
67. Kathryn Daria Szerlag, Paul Northrup, Ryan Tappero, Matthew G. Siebecker, Donald L. Sparks, Soil Science Society of America, "Advances in the Use of Synchrotron-Based Spatially Resolved Imaging and Spectroscopy to Speciate Phosphorus in Soils," Salt Lake City, UT. (November 2021).
68. Siebecker, M.G., Texas State Support Committee Meeting, "A Kinetics clay Mineralogical Approach to Understand Excessive Potassium Sorption and Fixation to Soil Clay and Metal Oxide Minerals in Agricultural Soils," Lubbock, TX. (2021).
69. Schmidt, Emma, Siebecker, M. G., Soil Survey And Land Resource Workshop, "Revisiting Potassium Chemistry in Soils via Combined Extractions and Synchrotron Techniques," Texas; Texas A&M University. (2021).
70. Zimmerman, A. (Presenter & Author), Garcia-Gutierrez, D. (Author Only), Deb, S. (Author Only), Landrot, G. (Author Only), Siebecker, M. (Chair), ASA-CSSA-SSSA international annual meetings, "Extraction and bioavailability of arsenic from titanium dioxide filter waste," ASA-CSSA-SSSA, Salt Lake City, UT. (2021).
71. Singh, M., Singh, S., Deb, S., Parkash, V., Petermann, B. J., Siebecker, M., ASA-CSSA-SSSA international annual meetings, "Effect of biochar application on soil properties and sweet corn performance under deficit irrigation," ASA-CSSA-SSSA, Salt Lake City, UT. (2021).
72. Brijalba, K. E., Siebecker, M. G., ASA, CSSA, SSSA International Annual Meeting, "Reduction Kinetics of Nanoparticulate Manganese Oxides Via Dissolved Organic Carbon Sources," Salt Lake City, UT. (2021).
73. Siebecker, M., ASA, CSSA, SSSA International Annual Meeting, "Potassium, Revisited: New Insights Based on XAS into the Effects of Soil Extractions on K Speciation and the Adsorption of K Onto Al and Si Oxides," Salt Lake City, UT. (2021).
74. Singh, M., Singh, S., Deb, S. K., Parkash, V., Petermann, B., Siebecker, M. G, ASA, CSSA, SSSA International Annual Meeting, "Effect of Biochar Application on Soil Properties and Sweet Corn Performance Under Deficit Irrigation," Salt Lake City, UT. (2021).
75. Siebecker, Matthew G.; A kinetics and clay mineralogical approach to understand excessive potassium sorption and fixation to soil clay and metal oxide minerals in agricultural soils; Texas State Support Committee - Review Meeting; Texas A&M AgriLife Research Center, Lubbock, TX; December 2021

76. Zimmerman, A. J., Garcia-Gutierrez, D., Sharma, A., Shaghaghi, N., Deonarine, A., Landrot, G., & Siebecker, M. G. (2022) Competitive Desorption and Potential Bioaccessibility of Arsenic (As) Released from Nanoparticulate Titanium Dioxide (TiO2) . ASA, CSSA, SSSA International Annual Meeting, Baltimore, MD. https://scisoc.confex.com/scisoc/2022am/meetingapp.cgi/Paper/145268
77. Nunes, M. F. P. N., Lopes, G., Martins, G. S., Assis, M. B. D., Santos, L. C. D., Silva, G. A. M. D., & Siebecker, M. G. (2022) Sweet Potato Biofortification with Selenium-Enriched Urea and MAP Granules. ASA, CSSA, SSSA International Annual Meeting, Baltimore, MD. https://scisoc.confex.com/scisoc/2022am/meetingapp.cgi/Paper/146141
78. Siebecker, M. G., Schmidt, E., Zanoni, G., Bumguardner, A., Segvic, B., Lewis, K. L., Abdala, D. B. (2022) Alteration of Potassium Coordination in Agricultural Soils Due to Wet Chemical Extractions. ASA, CSSA, SSSA International Annual Meeting, Baltimore, MD. https://scisoc.confex.com/scisoc/2022am/meetingapp.cgi/Paper/145603
79. Szerlag, K., Elavarthi, M., Siebecker, M. G., Gu, C., McCrone, C., & Sparks, D. L. (2022) Systematic Study of Legacy Phosphorus (P) Desorption Mechanisms in High-P Agricultural Soils. ASA, CSSA, SSSA International Annual Meeting, Baltimore, MD. https://scisoc.confex.com/scisoc/2022am/meetingapp.cgi/Paper/142255
80. Sharma, A., Coyle, K., Pham, T., Lewis, K. L., & Siebecker, M. G. (2022) Role of Co-Ions, Dissolved Silicate, and Surface Precipitation in Potassium Sorption to Soil Clay Minerals. ASA, CSSA, SSSA International Annual Meeting, Baltimore, MD. https://scisoc.confex.com/scisoc/2022am/meetingapp.cgi/Paper/144823
81. Coyle, Katherine ; Sharma, Aakriti ; Pham, Thanh; Lewis, Katie; Siebecker, Matthew G. (2022) Potassium Adsorption to Al(OH)3 and SiO2 in the Presence of Co-ions. Texas Tech University Undergraduate Research Conference (TTU URC); Lubbock, Texas, March 28 - April 1, 2022; https://www.depts.ttu.edu/true/urc/2022/directory/abstract.php?id=A59S68; Accessed August 2023.
82. Pham, Thanh ; Sharma, Aakriti ; Coyle, Katherine ; Lewis, Katie; Siebecker, Matthew G. (2022) Potassium binding ability to newly formed mineral precipitates. Texas Tech University Undergraduate Research Conference (TTU URC); Lubbock, Texas, March 28 - April 1, 2022; https://www.depts.ttu.edu/true/urc/2022/directory/abstract.php?id=A17S19.
83. Sharma, Aakriti; Coyle, Katherine; Pham, Thanh; Lewis, Katie ; Siebecker, Matthew G. (2022) Elucidating Novel Pathways for Potassium fixation in Soil Clay and Metal Oxide Minerals. In "World Congress of Soil Science, WCSS", Glasgow, UK, August 2022.
84. Siebecker, Matthew G.; Rapid formation of surface precipitates as a novel explanation for excessive potassium fixation in agricultural soils; Texas State Support Committee - Review Meeting; Texas A&M AgriLife Research Center, Lubbock, TX; December 2022
85. Szerlag, K., Siebecker, M. G., Izaditame, F., Northrup, P., Tappero, R., & Sparks, D. L. (2023) Multi-Modal, Micro-Spectroscopic Speciation of Legacy Phosphorus in Two U.S. Mid-Atlantic Agricultural Soils. ASA, CSSA, SSSA International Annual Meeting, St. Louis, MO. https://scisoc.confex.com/scisoc/2023am/meetingapp.cgi/Paper/150830
86. Mo, Xinxin; Yoshio Takahashi, Matthew G. Siebecker, Wenxian Gou, Zhao Wang and

Wei Li. Understanding Zn(II) Sorption on Palygorskite at the molecular scale: A coupling XAFS and Zn stable isotope approach. Goldschmidt Conference. Hawaii July 2022

87. Schmidt, E., Stanley, C., Colvin, J., & Siebecker, M. G. (2023) Climatic Impacts on Nutrient Release in Agricultural Soils Treated with Swine Waste. ASA, CSSA, SSSA International Annual Meeting, St. Louis, MO. https://scisoc.confex.com/scisoc/2023am/meetingapp.cgi/Paper/151103
88. Saldana Haworth, I., Sharma, A., Lewis, K. L., & Siebecker, M. G. (2023) Effects of Dissolved Silicate and Co-Ions on Potassium Sorption. ASA, CSSA, SSSA International Annual Meeting, St. Louis, MO. https://scisoc.confex.com/scisoc/2023am/meetingapp.cgi/Paper/149921
89. Sharma, A., Coyle, K., Pham, T., Lewis, K. L., & Siebecker, M. G. (2023) Rapid Mineral Surface Precipitation and Dissolved Silicate in Enhancement of Potassium (K) Adsorption: Implications for K Fixation in Soil. ASA, CSSA, SSSA International Annual Meeting, St. Louis, MO. https://scisoc.confex.com/scisoc/2023am/meetingapp.cgi/Paper/153702
90. Siebecker, M. G., Izaditame, F., Sricharoenvech, P., & Sparks, D. L. (2023) Climate Change and Arsenic Behavior in Soils. ASA, CSSA, SSSA International Annual Meeting, St. Louis, MO. https://scisoc.confex.com/scisoc/2023am/meetingapp.cgi/Paper/148360
91. Coyle, K., Slaughter, L. C., Alvarez-Pugliese, C., Gecgel, O., Botte, G. G., Mbuya, O., & Siebecker, M. G. (2023) Investigating Adsorption Capacities of Treated Sewage Byproducts for Their Potential Use As Fertilizer. ASA, CSSA, SSSA International Annual Meeting, St. Louis, MO. https://scisoc.confex.com/scisoc/2023am/meetingapp.cgi/Paper/151138
92. Cardenas, Aliah; Stanley, Cari; Stanley, Koy; Winkler, Victoria; Colvin, Jessica; Schmidt, Emma; Siebecker, Matthew G. (2023) Effects of Environmental Conditions on Nutrient Availability in Soils Amended with Swine Waste. Department of Plant and Soil Science Student Research Symposium, Texas Tech University, Lubbock, Texas, April 19th. Poster Presentation.
93. Cardenas, Aliah; Stanley, Cari; Stanley, Koy; Winkler, Victoria; Colvin, Jessica; Schmidt, Emma; Siebecker, Matthew G. (2023) Effects of Environmental Conditions on Nutrient Availability in Soils Amended with Swine Waste. National Science Foundation (NSF) site visit for the Center for Advancing Sustainable and Distributed Fertilizer Production (CASFER) Engineering Research Center (ERC). Texas Tech University, Lubbock, Texas, April 18th. Poster Presentation.
94. Coyle, Katherine; Slaughter, Lindsey; Alvarez-Pugliese, Christian; Gecgel, Ozhan; Gerardine, Botte; Siebecker, Matthew G. (2023) Investigating Sorption Properties of WWTP Products to Agricultural Soils for their Potential Use as Fertilizer. Department of Plant and Soil Science Student Research Symposium, Texas Tech University, Lubbock, Texas, April 19, 2023. Oral Presentation.
95. Coyle, Katherine; Slaughter, Lindsey; Alvarez-Pugliese, Christian; Gecgel, Ozhan; Gerardine, Botte; Siebecker, Matthew G. (2023) Investigating Sorption Properties of WWTP Products to Agricultural Soils for their Potential Use as Fertilizer. National

Science Foundation (NSF) Engineering Research Center (ERC) for Advancing Sustainable and Distributed Fertilizer Production (CASFER) Symposium. Texas Tech University, Lubbock, Texas, June 7, 2023. Poster Presentation.

96. Coyle, Katherine; Slaughter, Lindsey; Alvarez-Pugliese, Christian; Gecgel, Ozhan; Gerardine, Botte; Siebecker, Matthew G. (2023) Investigating Sorption Properties of WWTP Products to Agricultural Soils for their Potential Use as Fertilizer. National Science Foundation Engineering Research Center site visit. Texas Tech University, Lubbock, Texas, April 18, 2023. Poster Presentation.
97. Coyle, Katherine; Slaughter, Lindsey; Alvarez-Pugliese, Christian; Gecgel, Ozhan; Gerardine, Botte; Siebecker, Matthew G. (2023) Investigating Sorption Properties of WWTP Products to Agricultural Soils for their Potential Use as Fertilizer. National Science Foundation Engineering Research Center Student Leadership Council Triconvergence meeting. Rice University, Houston, TX, August 7, 2023. Poster Presentation.
98. Stanley, Cari; Schmidt, Emma; Colvin, Jessica; Siebecker, Matthew G. (2023) Effects of soil type, temperature, and flooding on phosphorus retention in soils amended with swine and cattle manure. Research Experience for Undergraduates (REU) poster and oral presentation. Center Advancing Sustainable and Distributed Fertilizer Production (CASFER), July 26 & 27, Lubbock, Texas.

Invited:

1. Siebecker, M., Chaney, R. L., Sparks, D. L., 19th World Congress of Soil Science, "Nickel speciation in serpentine soils using synchrotron radiation techniques," International Union of Soil Science, Brisbane, Australia. (August 2010)
2. Siebecker, M. G., Sparks, D. L., Luther, G. W., American Chemical Society National Meeting, "Precipitation and kinetics of mixed-metal solids in soils, sediments, and mineral systems: Implications for equilibrium speciation calculations," American Chemical Society, San Diego, California, USA. (March 2016)
3. Siebecker, M., Seminar at Technological Institute of Costa Rica, Cartago, Costa Rica, "Quantification, speciation, and mobility of arsenic in soils and sediments: Examples, methods, and a case study of arsenic enriched sediments in Guanacaste, Costa Rica," Dr. Virginia Montero Campos, Environmental Engineering and Chemistry, Instituto Tecnológico de Costa Rica. (April 9, 2019)
4. Siebecker, M., Seminar at Nanjing University, "Applied environmental soil chemical research at Texas Tech University: From agricultural nutrient cycling (potassium) to environmental contaminants (arsenic)," Dr. Wei Li, Nanjing University, School of Earth Sciences and Engineering, Nanjing, China. (May 5, 2019)
5. Siebecker, M., Li, W., Sparks, D. L., 15th International Conference on the Biogeochemistry of Trace Elements (ICOBTE), "Quick-Scanning EXAFS for in situ studies on trace metal precipitation," Nanjing, China. (May 6, 2019)
6. Siebecker, M., Seminar at China University of Geosciences, "Applied environmental soil chemical research at Texas Tech University: From agricultural nutrient cycling (potassium) to environmental contaminants (arsenic)," Dr. Junxia Li, China University of

Geosciences, Wuhan, China. (May 9, 2019)

7. Siebecker, M., Seminar at Huazhong Agricultural University, "Applied environmental soil chemical research at Texas Tech University: From agricultural nutrient cycling (potassium) to environmental contaminants (arsenic)," Dr. Xionghan Feng, College of Resources and Environment, Huazhong Agricultural University, Wuhan, China. (May 10, 2019)
8. Siebecker, M., Seminar at the Institute for Soil Science, Chinese Academy of Science, "Applied environmental soil chemical research at Texas Tech University: Cycling and speciation of environmental contaminants (nickel and arsenic) and agricultural nutrients (potassium)," Dr. Yujun Wany, ISS-CAS, Nanjing, China. (May 13, 2019)
9. Siebecker, M., TTUHSC/TTU Research Collaboration Event, "Environmental Soil Chemistry Research at TTU," Lubbock, TX. (May 15, 2019)
10. Siebecker, M., TTU-China Global Bridge Program at Lanzhou University, "Tackling modern challenges in environmental soil chemistry: a research overview at TTU," Lanzhou, China. (June 27, 2019)
11. Siebecker, M. G., Li, W., Sparks, D. L., Wang, Y., Chaney, R., American Chemical Society National Meeting, "Modeling EXAFS and XANES spectra of neoformed LDH and metal-enriched phyllosilicate minerals," American Chemical Society, San Diego, California, USA. (August 25, 2019)
12. Siebecker, M., 12th International Congress of Agronomy (presentation 2 of 2), "Tackling modern challenges in environmental soil chemistry: From environmental contaminants (nickel and arsenic) to agricultural nutrient cycling (potassium)," Universidad Dinamica UDC, Foz do Iguaçu, Brazil. (September 25, 2019)
13. Siebecker, M., 12th International Congress of Agronomy (presentation 1 of 2), "Tackling modern challenges in environmental soil chemistry: From environmental contaminants (nickel and arsenic) to agricultural nutrient cycling (potassium)," Universidad Dinamica UDC, Foz do Iguaçu, Brazil. (September 25, 2019)
14. Siebecker, M. G., TTU Department of Geosciences Seminar Series, "Rapid formation of heavy metal enriched LDH minerals measured in situ and the speciation of geogenic nickel in serpentine soils," Lubbock, Texas. (November 1, 2019)
15. Siebecker, M., "La Importancia de los Suelos (1 of 2)," Hand Coaching, Virtual presentation, Santiago, Chile. (June 11, 2020)
16. Siebecker, M., "La Importancia de los Suelos (2 of 2)," Hand Coaching, Virtual presentation, Santiago, Chile. (August 13, 2020)
17. Siebecker, M., Society For Advancement Of Chicanos/Hispanics And Native Americans In Science (SACNAS), "The importance of soils: Soil science and research in environmental soil chemistry." (September 2021)
18. Siebecker, M.G., Guest Lecture in Sustainable Agriculture course (S. Singh), "Environmental Soil Chemistry and Sustainable Agriculture." (2021)
19. Siebecker, M. G., Soil and environmental health implications of arsenic in contaminated water filtration waste; Biology and Environmental Science Seminar Series (BESSS); Westfield State University, Massachusetts (February 2022)

20. Siebecker, M. G., Impacts of swine waste application with subsequent inundations on nutrient and trace metal mobility in agricultural soils; CASFER Convergence Research Seminar Series; Texas Tech University, Lubbock, Texas (October 2022)
21. Siebecker, M. G., Arsenic mobility, bioavailability, and speciation in contaminated titanium dioxide (TiO2) waste produced via drinking water filtration; Environmental Engineering Seminar Series; Texas Tech University, Lubbock, Texas (October 2022)
22. Siebecker, M. G., Arsenic mobility and bioaccessibility in contaminated soils and water treatment residuals; The International Center for Arid and Semiarid Land Studies; Frontiers in International Research Seminar Series, Texas Tech University, Lubbock, Texas (March 2023)
23. Siebecker, M. G., An introduction to the nitrogen cycle; CASFER REU RET Seminar Series; Texas Tech University, Lubbock, Texas (July 2023)

GRADUATE STUDENT COMMITTEES:

Completed:

Chaired (total of five)

M.S.

1. Taylor Hyde, Distance non-thesis (August 2019 - 2021)
2. Randy Riddle, Distance non-thesis (May 2020 - December 2020)
3. Emma Schmidt, "Potassium Fixation in Soils and Mineral Systems" (August 2019 - May 2022)
4. Cynthia Jordan, “Novel Soil Core Visualization of Diagnostic Pedogenic Features” (August 2020 - August 2022)

Ph.D.

1. Amanda Jo Zimmerman, “Speciation and Bioavailability of Arsenic in Drinking Water Filtration Waste: Environmental Implications for Soils and Human Health” (July 2019 - December 2022)

Committee member of (total of six)

1. Autumn Acree (Texas Tech University, awarded in PhD 2020)
2. Vung Pham (Texas Tech University, PhD awarded in 2021)
3. Leili Izaditame (University of Delaware, PhD awarded in 2022)
4. Azeez Shaik (Texas Tech University, PhD awarded in 2022)
5. Savannah Cognasi (Texas Tech University, MS awarded in 2022)
6. Márcio Felipe Pinheiro Neri Nunes (Co-chair of PhD committee, Federal University of Lavras - UFLA, Lavras, Minas Gerais State, Brazil, PhD awarded in 2023)

In progress:

Chair: total of three

M.S.

1. Katherine Coyle (Co-chair) (2023-2024). Nitrogen chemistry in novel fertilizers.

2. Sharon Ulate (2024-2025). Phosphorus chemistry in animal manure and playas.

Ph.D.

1. Sandesh Bhatta (Co-chair) (2023-2026). Novel fertilizer amendment behavior in soil.

Committee member of: total of four

1. Benedicto Valdés, "Nephrotoxic environmental factors and their relationship with the high population prevalence of Chronic Kidney Disease in Coclé, Panama" Doctorate in Natural Sciences for Development (DOCINADE) is an Interuniversity Doctoral Program in the Mesoamerican region (https://docinade.ac.cr/docinade/). (January 2021-present)
2. Ben Newcomb (Texas Tech University, Plant and Soil Science)
3. Rupak Karn (Texas Tech University, Plant and Soil Science)
4. George Gyan (Texas Tech University, Natural Resource Management)

POSTDOCTORAL RESEARCHER MENTOR:

1. Dr. Aakriti Sharma (July 2021 - December 2023); Current position January 2024: Assistant Professor/Director - Agriculture (Soil, Plant and Water Analysis Laboratory); Stephen F. Austin State University (SFA) in Nacogdoches, Texas.

TEACHING RESPONSIBILITIES:

PSS	2330	Urban Soils	001
PSS	2330	Urban Soils	D01
PSS	4330	Environmental Soil Chemistry	001
PSS	4330	Environmental Soil Chemistry	D01
PSS	5330	Advanced Environmental Soil Chemistry	001
PSS	5330	Advanced Environmental Soil Chemistry	D01

GRANTS AND AWARDS:

Total funded **$37,151,938**

- TTU: $37,151,938
- Non-TTU: $0
- PI role: $771,073
- CO-PI role: $36,380,865

Funded:

Duration	Title of Current Research or Grant	Granting Agency	Amount	Chief Investigators & Faculty Members in order	Percent Contribution
2023-2025	Impacts of nitrogen and phosphorus obtained from municipal waste via ion exchange on soil properties and plant growth: Closing the nitrogen	CASFER-ERC	$200,502	Siebecker, Matthew Slaughter, Lindsey Mbuya, Odemari Rao, Balaji	95%

	and phosphorus circular economies			Millerick, Kay Alvarez Pugliese, C Botte, Gerri	
2023-2025	Application of Electrochemically-Treated Sewage Sludge (EWAS) to Soils: Effects of Soil Type on Plant Growth, Nutrient Cycling, and Potential Trace Contamination	CASFER-ERC	$235,313	Slaughter, Lindsey Siebecker, Matthew Mbuya, Odemari Rao, Balaji Millerick, Kay Alvarez Pugliese, C Botte, Gerri	5%
2024-2028	Establishing climate smart commodities with reduced greenhouse gas footprints to enhance environmental and economic sustainability in the Texas High Plains	USDA-NRCS	$4,945,552	Jagadish SV, K Ritz, R Slaughter, L Laza, H E McCallister, D Guo, W Alpizar, A B Somayanda, I Siebecker, M	5%
2024	The role of dissolved silicon (Si) and mineral surface precipitation in enhancement of potassium (K) adsorption: Implications for K fixation in soil	Texas State Support Committee	$11,000	Siebecker, Matthew Lewis, Katie	100%
2023-2027	NSF Engineering Research Center for Advancing Sustainable and Distributed Fertilizer Production (CASFER)	National Science Foundation	$31,200,000	Botte, Gerri McClaran, Tracie Alvarez Pugliese, C Gecgel, Ozhan Gracia, Zaida Stone, Cele Hardberger, Amy McCallister, Donna Jones, Stephanie Smith, Cameron Rao, Balaji Anandha Lu, Jay Gauthier, Joe Spott, Jessica Millerick, Kayleigh Siebecker, Matthew Slaughter, Lindsey Kuhr, Werner Shin, Sungwon	1%
2023-2024	Impacts of swine and cattle waste application with subsequent inundations on nutrient and trace metal mobility in agricultural soils	CH Foundation	$66,940	Siebecker, Matthew	100%
2023	The role of dissolved silicon (Si) and mineral surface precipitation in enhancement of potassium (K) adsorption: Implications for K fixation in soil	Texas State Support Committee	$12,000	Siebecker, Matthew Lewis, Katie	100%
2021-2024	A Molecular and Kinetics Based Approach To Understand Potassium Sorption and Fixation To Soil Clay And Oxide Minerals In Agricultural Fields	USDA-NIFA	$335,489	Siebecker, Matthew Lewis, Katie	100%
2022	A kinetics and clay mineralogical	Texas State	$14,000	Siebecker, Matthew	100%

	approach to understand excessive potassium sorption and fixation to soil clay and metal oxide minerals in agricultural soils	Support Committee		Lewis, Katie	
2021	A kinetics and clay mineralogical approach to understand excessive potassium sorption and fixation to soil clay and metal oxide minerals in agricultural soils	Texas State Support Committee	$11,550	Siebecker, Matthew Lewis, Katie	100%
2019	Acquisition of ICP-OES for Siebecker soil chemistry lab	HEAF	$116,792	Siebecker, Matthew	100%
2019	Mineralogical differences in treated soils for soil stabilization	M.T. Design LLC. (Dba) Stablesoil	$800	Siebecker, Matthew	100%
2019	Arsenic concentration, speciation, and mobility from soils, sediments, potable water filter waste residues in Bagaces/Bagatzi, Guanacaste province, Costa Rica	TTU OIA	$2,000	Siebecker, Matthew	100%

Pending:

Year applied (Duration)	Title of Current Research or Grant	Granting Agency	Amount	Chief Investigators & Faculty Members in order	Percent Contribution
2024 (2024-2027)	The Impact of Bioretention Planting and Maintenance on The Fate, Transport and Accumulation of Common and Emerging First Flush Pollutants	National Science Foundation	$420,000	Phillips, Daniel Deonarine, Amrika Siebecker, Matthew	30%
2024 (2024-2025)	CASFER START Supplement for Skills Training in Sustainable Fertilizers	National Science Foundation	$347,198	Botte, Gerri Gracia, Zaida Siebecker, Matthew Alvarez, Christian Gecgel, Ozhan	20%
2023 (2025-2027)	Immobilization of excessive nitrogen, phosphorus, and trace metals from soils and animal manure via chemically-stable soil amendments	CH Foundation	$71,000	Siebecker, Matthew	100%
2023 (2024-2028)	Understanding PFAS bioaccumulation in the Osage Nation food-web in support of food sovereignty	Environmental Protection Agency	$1,599,759	Kelly, Brendan Rajan, Kalavathy Siebecker, Matthew	33%
2023 (2024-2027)	Rapid Mineral Surface Precipitation and Dissolved Silicate As Novel Mechanisms for Excessive Potassium Sorption in Agricultural Soils	USDA-NIFA	$749,897	Siebecker, Matthew Sharma, Aakriti Lewis, Katie	90%
2023 (2024-2027)	Elucidating Geochemical Drivers of Vanadium and Arsenic Mobilization from Water Treatment Residuals	National Science Foundation	$419,662	Siebecker, Matthew Deonarine, Amrika Sharma, Aakriti	60%
2023 (2024-2029)	CAREER: Kinetics and mechanisms of nutrient transformation in soils amended with animal manure: The nexus between soil chemistry, animal agriculture, and climate change	National Science Foundation	$626,019	Siebecker, Matthew	100%

Rejected:

Year applied (Duration)	Title of Current Research or Grant	Granting Agency	Amount	Chief Investigators & Faculty Members in order	Percent Contribution
2023 (2024-2025)	Agricultural amendment synergism: Increasing soil organic carbon and nutrient retention in soils through combined livestock waste and biochar application	Texas Tech (TTU) and (USDA-ARS)	$99,997	Siebecker, Matthew Fischel, Matthew	90%
2022 (2023-2027)	Building an innovation and demonstration program of AI-enabled climate-smart precision agriculture systems	USDA-NIFA	$4,000,000	Guo, Wenxuan Gestel, Natasja Van Wang, Chenggang Sheng, Victor Deb, Sanjit Siebecker, Matthew Shim, Rosalyn Zhang, Hong	6%
2022 (2023-2026)	Rapid Mineral Surface Precipitation and Dissolved Silicate as Novel Mechanisms for Excessive Potassium Sorption in Agricultural Soils	USDA-NIFA	$603,058	Siebecker, Matthew Lewis, Katie	95%
2021 (2022-2026)	CAREER: Impacts of climate variability and change on rural inland and coastal soil chemical cycling: Integrating rural and urban communities with research and education	National Science Foundation	$830,287	Siebecker, Matthew	100%
2021 (2022-2023)	Analysis of Lunar Samples via proximal sensors	NASA		Siebecker, Matthew Weindorf, David Chakraborty, S Li, Bin Rampe, Liz	5%
2021 (2022-2025)	Foundation for Food and Agriculture Research; Impact of climate change on rural inland and coastal soil health: a molecular-scale understanding of field-scale processes	FFAR	$420,267	Siebecker, Matthew	100%
2021 (2022-2026)	Rapid Characterization of Soil-based Threats to Army Personnel in Urban Environments	Congressional Add	$64,000,000	Siebecker, Matthew Galbraith, John Weindorf, David Chappell, Mark	25%
2021 (2022-2023)	Remediating soil salinity through water treatment products to benefit soil health	USGA	$18,338	Young, Joey Slaughter, Lindsey Siebecker, Matthew	20%
2021 (2022-2026)	Tradeoffs of Irrigation Water Quality on Soil Health Parameters	USDA-NIFA	$749,996	Young, Joey Slaughter, Lindsey Siebecker, Matthew	30%
2020 (2021)	Limited Submission: MRI acquisition of a hard X-ray benchtop spectrometer for environmental geochemical systems and material science research	National Science Foundation	$400,000	Siebecker, Matthew Deonarine, Amrika Segvic, Branimir Khatib, Sheima Pantoya, Michelle	25%
2020 (2021-2023)	Impacts of swine and cattle waste	CH	$77,980	Siebecker, Matthew	100%

	application with subsequent inundations on nutrient and trace metal mobility in agricultural soils	Foundation			
2020 (2021-2025)	CAREER: Impacts of climate variability and change on rural inland and coastal soil chemical cycling: Integrating rural and urban communities with research and education	National Science Foundation	$633,332	Siebecker, Matthew	100%
2020 (2021-2024)	SitS: A sensor network and big data system for monitoring an agroecosystem transitioning from irrigated to dryland farming	National Science Foundation	$1,199,999	Guo, Wenxuan Deb, Sanjit Siebecker, Matthew Slaughter, Lindsey Cao, Guofeng Chen, Yong Salazar-Bravo, J.	15%
2020 (2021-2024)	Tradeoffs of irrigation water quality on soil health parameters	USDA-NIFA	$428,378	Young, Joey Slaughter, Lindsey Siebecker, Matthew	30%
2020 (2020)	Sustainable Development Collaborative Workshop, Pre-conference Workshop, May 13, 2020; Green Building Conference Costa Rica Annual Conference, May 14-15.	Texas Tech University	$2,000	Siebecker, Matthew	100%
2020 (2020)	Acquisition of hard x-ray benchtop spectrometer (benchtop XAS) for environmental geochemical and materials science research at Texas Tech University	NSF	$353,700	Siebecker, Matthew Deonarine, Amrika Segvic, Branimir Khatib, Sheima Pantoya, Michelle	25%
2019 (2020-2023)	SitS: A sensor network and big data system for monitoring an agroecosystem transitioning from irrigated to dryland farming	NSF	$1,199,999	Guo, Wenxuan Deb, Sanjit Siebecker, Matthew Slaughter, Lindsey Cao, Guofeng Chen, Yong Salazar-Bravo, J.	15%
2019 (2020-2023)	OIA:SitS NSF UKRI: Building a soil health monitoring and assessment system integrating sensor networks and big data	National Science Foundation	$800,000	Guo, W. (Lead Principal Investigator), Weindorf, D., Slaughter, L., Siebecker, M., Deb, S., Chen, Y., Dang, T., Cao, G., Acosta-Martinez, V.	10%
2019 (2020-2021)	Speciation and sorption kinetics of potassium in agricultural soils from Texas and Sao Paulo State, Brazil: A molecular scale approach to resolving problems at the field scale	TTU & FAPESP	$10,000	Siebecker, M. (Lead Principal Investigator), Bachiega Zambrosi, F. C., Abdala, D. B., Lewis, K. Zabini, A. V.	75%

SERVICE TO PROFESSIONAL ORGANIZATIONS:

1. 2023 - Soil Science Society of America (SSSA): International Annual Meeting, St. Louis, Missouri, Judge for student presentation content, approximately 1 hour
2. 2022 - Soil Science Society of America (SSSA): International Annual Meeting Baltimore, MD. Served as session moderator, approximately 4 hours.
3. 2022 - Soil Science Society of America (SSSA): International Annual Meeting Baltimore, MD. Judge for student presentation content, approximately 1 hour
4. 2021 - American Chemical Society (ACS) organized symposium at Spring annual meeting; "Biogeochemical Transformation in the Underground Environment – Natural Processes and Engineered Implementations for Contaminant Abatement". American Chemical Society Spring Meeting 2021. Apr 5-May 1, 2021., Program Organizer, approximately 30 hours.
5. 2021 - Soil Science Society of America (SSSA): Organized Cross Divisional Symposium at annual meeting; “Impacts of Minerals and Micronutrients in the Biogeochemical Cycling of Soil Organic Carbon”, Program Organizer, approximately 20 hours.
6. 2021 - Soil Science Society of America (SSSA): Organized Judging for Student Oral and Poster presentation at annual meeting (about 40 volunteered, 31 final judges, 46 poster presentation scores, 80 oral presentation scores , 16 total posters, 24 total oral presentations), Program Organizer, approximately 50 hours.
7. 2021 - Soil Science Society of America (SSSA): Organized Topical Session at annual meeting; “Impacts of Minerals and Micronutrients in the Biogeochemical Cycling of Soil Organic Carbon”, Program Organizer, approximately 20 hours.
8. 2020-2021 - American Chemical Society (ACS) - Environmental Chemistry Division, Session Chair, approximately 2 hours (Monthly), I organized a session entitled "Biogeochemical Transformation in Underground Environments: Natural Processes & Engineered Implementations for Contaminant Abatement" for the 2020 Spring American Chemical Society. This session was hosted in 2020 and 2021. (March 2020 - April 2021).
9. 2019 - Soil Science Society of America Soil Chemistry Mentoring program, I met with a graduate student from the University of Vermont to discuss her research and provide advice.
10. 2019 - Soil Science Society of America (SSSA): Session Chair, San Antonio, Texas, approximately 10 hours (One Time), I organized a session entitled "Soil Chemistry in the Face of Climate Change: Trace Element and Nutrient Dynamics in Soils and Sediments" at the November 2019 SSSA meeting. I invited speakers and moderated the session.

OTHER PROFESSIONAL SERVICE:

1. 2022 - 2025 – Serving on the National Synchrotron Light Source II (NSLS-II) X-ray Spectroscopy Proposal Review Panel. https://www.bnl.gov/nsls2/docs/pdf/prp-members.pdf. Approximately 80 hours per year. The panel meets 3 times per year.
2. 2022 - 2024 - Serving as the Community Scientist for indigenous and local communities

in Corpus Christi, Texas. https://thrivingearthexchange.org/project/corpus-christi-tx. Community Science Spotlight: Corpus Christi – Reclaiming Soil, Reclaiming Community, https://youtu.be/H3aBlpW7-4A?si=dPjRBJ64FzPWrjZh . Approximately 150 hours total.

3. Served on a National Science Foundation (NSF) Proposal Review Panel (2022). Approximately 65 hours.
4. Stanford Synchrotron Radiation Laboratory, Reviewer, Ad Hoc Reviewer, approximately 12 hours (One Time). (January 2022).
5. Lab Training & use: Anna Novotny, Briana Smith; Department of Anthropology; human dental calculus (plaque) for microfossils – phytoliths, approximately 20 hours. (2021).
6. Lab Training ICP-OES, Microwave digestion, PXRF: Azeez Shaik, Manpreet Singh, Kafle, Arjun, Venkataramani, Sujatha (S. Singh Lab, PSS), approximately 20 hours. (2021).
7. Lab Training ICP-OES, Microwave digestion, PXRF: Benedicto Valdez (PhD student, Panama/Costa Rica, V. Montero Lab), approximately 20 hours. (2021).
8. Lab Training ICP-OES, Microwave digestion, PXRF: Emanuele (Noel) Joy; Sifat Hossain; (S. Khatib Lab, Chem Engineering), approximately 20 hours. (2021).
9. Lab Training ICP-OES, Microwave digestion: Andy Bennett, Wenjing Peng (Y. Mechref Lab, Chemistry and Biochemistry), approximately 20 hours. (2021).
10. Lab Training ICP-OES, Microwave digestion: Savannah Cognasi, Shivani Reddy Kathi (C. Simpson Lab, PSS), approximately 20 hours. (2021).
11. Lab Training ICP-OES, PXRF: Christian Alvarez (G Botte Lab, Chem Engineering), approximately 30 hours. (2021).
12. Lab Training ICP-OES: I-Min Hsieh (Malmali Lab, Chem Engineering), approximately 10 hours. (2021).
13. Lab Training: Yongli Wang, Shubhra Bhattacharjee, (A. Deonarine, Env. Engineering) Freeze dryer, approximately 20 hours. (2021).
14. Soil Survey and Land Resource workshop Feb 2021 Virtual Student Judging, approximately 4 hours. (2021).
15. SSSA - Student presentation judge at annual meeting, Reviewer, Ad Hoc Reviewer, approximately 10 hours. (2021).
16. SSSA: Organized Judging for Student Oral and Poster presentation at annual meeting (about 40 volunteered, 31 final judges, 46 poster presentation scores, 80 oral presentation scores , 16 total posters, 24 total oral presentations), Program Organizer, approximately 50 hours. (2021).
17. Agrosystems, Geosciences & Environment, Reviewer, Journal Article, approximately 4 hours. (November 2021).
18. Chemosphere, Reviewer, Journal Article, approximately 4 hours. (October 2021).
19. Geoderma, Reviewer, Journal Article, approximately 4 hours. (October 2021).
20. Geoderma, Reviewer, Journal Article, approximately 4 hours. (August 2021).

21. Stanford Synchrotron Radiation Laboratory, Reviewer, Ad Hoc Reviewer, approximately 4 hours (One Time). (June 2021).
22. Journal of Hazardous Materials, Reviewer, Journal Article, approximately 4 hours. (May 2021).
23. Soil Science Society of America Journal, Reviewer, Journal Article, approximately 4 hours. (May 2021).
24. Environmental Science and Technology, Reviewer, Journal Article, approximately 4 hours. (April 2021).
25. Journal of Hazardous Materials, Reviewer, Journal Article, approximately 4 hours. (February 2021).
26. Stanford Synchrotron Radiation Laboratory (SSRL), Reviewer, Ad Hoc Reviewer, Palo Alto, California, approximately 4 hours (One Time). (December 7, 2020).
27. Soil Science Society of America Virtual Conference, Reviewer, Ad Hoc Reviewer, Virtual, approximately 3 hours (One Time). (November 2020).
28. Environmental Science and Technology (Journal), Reviewer, Journal Article, approximately 4 hours. (November 2, 2020).
29. Soil Science Society of America Journal, Reviewer, Journal Article, approximately 4 hours. (September 24, 2020).
30. Stanford Synchrotron Radiation Laboratory (SSRL), Reviewer, Ad Hoc Reviewer, Palo Alto, California, approximately 3 hours (One Time). (September 12, 2020).
31. Stanford Synchrotron Radiation Laboratory (SSRL), Reviewer, Ad Hoc Reviewer, Palo Alto, California, approximately 3 hours (One Time). (August 16, 2020).
32. Journal of Hazardous Materials, Reviewer, Journal Article, approximately 6 hours. (July 24, 2020).
33. Geochimica et Cosmochimica Acta, Reviewer, Journal Article, approximately 4 hours. (April 15, 2020).
34. Soil Science Society of America Soil Chemistry Mentoring program, I met with a graduate student from the University of Vermont to discuss her research and provide advice. (2019).
35. Environmental Science & Technology, Reviewer, Journal Article, approximately 3 hours (One Time), Reviewed a journal article for a high profile journal (impact factor about 8). (December 16, 2019).
36. Soil Science Society of America, Reviewer, Ad Hoc Reviewer, San Antonio, Texas, approximately 3 hours (One Time). (November 2019).
37. Stanford Synchrotron Radiation Laboratory (SSRL) (3 of 3), Reviewer, Ad Hoc Reviewer, approximately 2 hours (One Time). (June 6, 2019).
38. Stanford Synchrotron Radiation Laboratory (SSRL) (1 of 3), Reviewer, Ad Hoc Reviewer, approximately 2 hours (One Time). (June 5, 2019).
39. Stanford Synchrotron Radiation Laboratory (SSRL) (2 of 3), Reviewer, Ad Hoc Reviewer, approximately 2 hours (One Time). (June 5, 2019).

40. National Science Foundation, Reviewer, Grant Proposal, approximately 16 hours (One Time). (March 29, 2019).
41. Soil Science Society of America, Reviewer, Ad Hoc Reviewer, San Diego, California, approximately 3 hours (One Time). (January 2019).
42. University of Wisconsin Water Resources Institute (WRI), Reviewer, Grant Proposal, approximately 8 hours (One Time). (January 3, 2019).
43. Letters of Recommendation for students, Letters of Recommendation for students, approximately 30 hours (Yearly), 2019 - 2022

SERVICE and/or ENGAGEMENT TO:

For the following, list boards of directors, committees served on (chaired), officer, editor, advisor, or other positions held, field days or workshops organized, and other relevant activities that illustrate service activities. Follow the numbered list format.

UNIVERSITY:

1. TTU Global Bridge Program Delegation, Attendee, Meeting, approximately 1.5 hours (One Time). (January 7, 2020).
2. TTU Global Bridge Program Delegation Trip to China, Attendee, Meeting, approximately 88 hours (One Time), Nanjing Agricultural University, Chinese Academy of Sciences, Institute of Soil Science, Lanzhou University, State Key Laboratory of Grassland Agro-ecosystems, Gansu University, Lanzhou Jiaoda, Sichuan University, Xihua University, Southwest Minzu University. (June 22, 2019 - July 2, 2019).
3. TTU Global Bridge Program Delegation, Attendee, Meeting, approximately 1 hour (One Time). (June 11, 2019).

COLLEGE:

1. Search Committee for Lead Writer in CASNR, approximately 10 hours. (2021).
2. Student Grade Appeal Committee - June, approximately 3 hours. (2021).
3. CASNR Faculty Fellows, Attendee, Meeting, approximately 3 hours (One Time). (November 20, 2020).
4. Project Revolution at the HUB, Attendee, Meeting, approximately 5 hours (One Time). (October 15, 2019).

DEPARTMENT:

1. Judge of student posters and organizer of Spring symposium 2023
2. Pedology position, Committee Member, approximately 10 hours. (2021 - 2022).
3. PSS Distance Learning Committee, Committee Member. (2020 - 2022).
4. PSS Graduate Research Committee, Committee Member. (2020 - 2022).
5. PSS Awards Committee, Committee Member. (2019 - 2022).
6. PSS Undergraduate Research Committee, Committee Member. (2019 - 2022).

7. PSS departmental symposium organizer and student judging organizer (2021).
8. Evaluator of student poster presentations for PSS 5100, Special Project or Assignment, approximately 2 hours (One Time). (November 20, 2019).
9. Institute of Soil Science, Chinese Academy of Science delegation, Event Organizer, approximately 15 hours (One Time). (October 21, 2019 - November 4, 2019).
10. Presentation (brief) to PSS donors, Special Project or Assignment, approximately 1 hour (One Time). (October 11, 2019).
11. Ag Media Day, Special Project or Assignment, approximately 3 hours (One Time). (September 4, 2019).
12. Texas Tech Department of Agricultural Education and Communications, Special Project or Assignment, approximately 2 hours (One Time). (March 20, 2019).
13. PSS radio spots, Special Project or Assignment, approximately 2 hours (One Time). (February 12, 2019).

COMMUNITY:

1. 2021-2024 - USA swimming and University Interscholastic League (UIL) swimming official. Officiated approximately 20 swim meets. Total time approximately 80 hours.
2. Volunteered to two 6th grade science classes to demonstrate PXRF technique for analysis of Lunar samples. Gave two presentations of 20 minutes each about Lunar simulant samples and soils on the moon., Participant - Outreach and Engagement Activity, approximately 3 hours. (2021).
3. M.T. Design LLC. (Dba) Stablesoil, Consultant (not paid), Waco, Texas, approximately 30 hours (Yearly), Pro Bono, Samples were used to train undergraduate and graduate students in several laboratory techniques. Currently exploring the possibility of the company funding a master's level graduate student. (March 2019 - April 2020).
4. City of Lubbock, Workshop Organizer, Lubbock, Texas, approximately 30 hours (One Time). (January 2019 - July 13, 2019).