Sanjai J. Parikh

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Education

Ph.D., Soil, Water and Environmental Science, University of Arizona, 2006
M.S., Soil Science, The Pennsylvania State University, 2001
B.S., Agronomy, University of Maryland, 1998

Professional Experience

Associate Professor of Soil Chemistry – 2015-present
Department of Land, Air and Water Resources, University of California, Davis, CA
Environmental Consultant – 2017-present
Parikh & Associates, Davis, CA
Assistant Professor of Soil Chemistry – 2009-2015
Department of Land, Air and Water Resources, University of California, Davis, CA
Postdoctoral Research Associate – Environ. Soil Chem. Laboratory, 2006 – Dec. 2008
Department of Plant and Soil Sciences, University of Delaware, Newark, DE

Research Interests

My research is focused on sustaining and improving soil, human, and global health by addressing a wide-range of biogeochemical processes between minerals, organic matter, microbes, and plants in the soil and water environment. My basic and applied research considers both temporal and spatial scales to study contaminant fate, soil and water remediation, nutrient availability, and carbon storage. Examples of my research interests include: (1) impacts of soil amendments on soil remediation of metal (sequestration and removal) and organic pollutants (bioremediation); (2) transport and degradation mechanisms of pharmaceuticals, PAHs, and other organic contaminants in soil and water; (3) plant uptake and accumulation of nanoparticles and metals for phytoremediation and food safety, (4) bacteria-mineral interactions related to contaminant transformations; (5) redox-active Fe and Mn minerals impact on contaminant/nutrient fate, form, and bioavailabilty; (6) recycling of wastewater and waste materials (e.g., biosolids, manure, biochar); and (7) evaluating the biochar soil amendments to impact soil fertility, nutrient retention, greenhouse gas emissions, contaminant transport, and dust generation impacts on human health.

Editorial and Review Activities

- Editorial Board, Senior Editor, Sustainable Environment, 2020-present
- Editorial Board, Technical Editor – Soil Chemistry, *Soil Science Society of America Journal,* 2018-2022
- Editorial Board, Associate Editor, *California Agriculture,* 2015-present
- Editorial Board, Associate Editor, *Soil Science Society of America Journal,* 2013-2017
- Editorial Board, Associate Editor, *Soil Research,* 2015-2017
- Series Editor, *Nature Education Knowledge* for Environmental Science Discipline, 2011-2015.
- Manuscript Referee: > 35 journals; > 400 manuscripts reviewed
- Proposal Reviewer: > 10 funding organizations; > 100 proposals

Awards and Special Recognition

- Sigma Xi - Scientific Research Honor Society, Elected Full Member, 2021
- Distinguished Teaching Award, Department of Land, Air and Water Resources, UC Davis, 2020
- White House Office of Science and Technology Policy Workshop: Gaining Ground -- Soil as Renewable Resource, Invited Participant. Washington, D.C., 2016.
- Best Viticulture Paper, American Society of Enology and Viticulture, 2016
- Invited contributing author to FAO Status of World Soil Resources Report, 2016
- Grants: 37 grant awards [$10.9 million], 25 as PI [$2.6 million]

Publications – Peer Reviewed (100)

Rath, D., N. Bogie, L. Deiss, **S.J. Parikh**, D. Wang, S. Ying, N. Tautges, A.A. Berhe, and K.M. Scow. Synergy between compost and cover crops leads to increased subsurface soil carbon storage. SOIL. Accepted. DOI: 10.5194/soil-2021-19

Gelardi, D.L., I.H. Ainuddin, D.A. Rippner, J.E. Patiño, M.A. Najm, and **S.J. Parikh**. Biochar alters hydraulic conductivity and impacts nutrient leaching in two agricultural soils. SOIL. Accepted. DOI: 10.5194/soil-2021-45.

Zhang, M., K. Lin, X. Li, L. Wu, J. Yu, S. Cao, D. Zhang, L. Xu, **S.J. Parikh**, Y.S. Ok. 2022. Removal of phosphate from water by paper mill sludge biochar. Environ. Poll. 293:118521

Zhang, M., R. Sun, G. Song, L. Wu, H. Ye, **S.J. Parikh**, T. Nguyen, E. Khan, M, Vithanage, Y.S. Ok. 2022. Enhanced removal of ammonium from water using sulfonated reed waste biochar - A lab-scale investigation. Environ. Poll. 292:118412.

Rippner, D.A., A.J. Margenot, S.C. Fakra, L.A. Aguilera, C. Li, J. Sohng, K.A. Dynarski, H. Waterhouse, N. McElroy, J. Wade, S.R. Hind, P.G. Green, D. Peak, A.J. McElrone, N. Chen, R. Feng, K.M. Scow, and **S.J. Parikh**. 2021. Microbial response to copper oxide nanoparticles in soils is controlled by land use rather than copper fate. Environ. Sci: Nano. DOI: 10.1039/D1EN00656H

Finney, T.J., **S.J. Parikh**, A. Berman, D.Y. Sasaki, and T.L. Kuhl. Characterizing and Tuning the Properties of Polydiacetylene Films for Sensing Applications. Langmuir. In Press.

Mukhopadhyay,R., B Sarkar, K.N. Palansooriya, J.Y. Dar, N.S. Bolan, **S.J. Parikh**, C. Sonne, and Y.S. Ok. 2021. Natural and engineered clays and clay minerals for the removal of poly- and perfluoroalkyl substances from water: State-of-the-art and future perspectives. Adv. Colloid Interface Sci. In Press.

Gelardi, D.L., **S.J. Parikh.** 2021. Soil and Beyond: Optimizing Sustainability Opportunities for Biochar. Sustainability. 13:10079.

Yu, M., W. Su, L, Juang, **S.J. Parikh**, C. Tang, R.A. Dahlgren, J. Xu. 2021. Bacterial community structure and putative nitrogen-cycling functional traits along a charosphere gradient under waterlogged conditions. Soil Biol. Biochem. 162:108420.

Hassan, M. A.K. Deb, F Qi Y. Liu, J. Du, A. Fahy, M.A. Ahsan, **S.J. Parikh**, R. Naidu. 2021. Magnetically separable mesoporous alginate polymer beads assist adequate removal of aqueous methylene blue over broad solution pH. J. Cleaner Prod. 319:128694.

Li, C., Z. Wang, S. Bakshi, J.J. Pignatello, and **S.J. Parikh**. 2021. Evaluation of select biochars and clays as supports for phytase to increase the fertilizer potential of animal wastes**.** Sci. Tot. Environ. 787:147720.

Li, C., D.A. Rippner, L.P. Manavalan, and **S.J. Parikh**. 2021. Evaluation of Bacillus Seed Coatings on Soybean Phosphorus Uptake in an Oxisol Fertilized with 32P-labeled Hydroxyapatite. Plant Soil. 464:273-287.

Cheng, J., Q. Ye, Z. Lu, J. Zhang, L. Zeng, **S.J. Parikh**, W. Ma, C. Tang, J. Xu, Y. He. 2021. Quantification of the sorption of organic pollutants to minerals via improved mathematical model accounting for associations between minerals and soil organic matter, Environ. Poll., 280:116991.

Yu, M., W. Su, **S.J. Parikh**, and J. Xu. 2021. Intact and washed biochar caused different patterns of nitrogen transformation and distribution in a flooded paddy soil. J. Cleaner Prod. 293:126259.

Santos-Medellin, C., L. Zinke, A. ter Horst, D.L. Gelardi, **S.J. Parikh**, and J. Emerson. 2021. Viromes outperform total metagenomes in revealing the spatiotemporal patterns of agricultural soil viral communities. ISME Journal. 15:1956-1970.

Durrer, A., A.J. Margenot, L.C.R. Silva, B.J.M. Bohannan, K. Nusslein, J. van Haren, F.D. Andreote, **S.J. Parikh**, and J.L.M. Rodrigues. 2021. Beyond total carbon: conversion of Amazon forest to pasture alters indicators of soil C cycling. Biogeochemistry. 152:179-194.

Alves, B.S.Q., K.P.S. Zelaya, F. Colen, L.A. Frazao, A. Napoli, **S.J. Parikh**, and L.A. Fernandes. 2021. Effects of sewage sludge and sugarcane bagasse biochars on soil properties and in sugar beet production. Pedosphere. 31:572-582.

Wan, X., C. Li., **S.J. Parikh.** 2021. Chemical composition of soil-associated ash from the Southern California Thomas Fire and its potential inhalation risks to farmworkers. J. Environ. Management. 278(2):111570.

Zhang, M., G. Song, D.L. Gelardi, L. Huang, E. Khan, O. Mašek, **S.J. Parikh**, Y.S. Ok. 2020. Evaluating biochar and its modifications for the removal of ammonium, nitrate, and phosphate in water. Water Research. 186:116303.

Bair, D.A., C.A. Anderson, Y. Chung, K.M. Scow, R.B. Franco, **S.J. Parikh**. 2020. Impact of biochar on plant growth and uptake of ciprofloxacin, triclocarban and triclosan from biosolids. J. Environ. Sci. Health, Part B. 55:11, 990-1001.

Hassan, M., Y. Liu, R. Naidu, **S.J. Parikh**, J. Du, F. Qi, I.R. Willett. 2020. Influences of feedstock sources and pyrolysis temperature on the properties of biochar and functionality as adsorbents: A meta-analysis. Sci. Tot. Environ. 744:140714.

Wang, Z., S. Bakshi. C. Li, **S.J. Parikh**, H-S. Hsieh, and J.J Pignatello. 2020. Modification of pyrogenic carbons for phosphate sorption through binding of a cationic polymer. J. Colloid Interface Sci. 579:258-268.

Mukome, F.N.D., M.C. Buelow, J.S. Shang, J. Peng, M. Rodriguez, D. M. Mackay, J.J. Pignatello, N. Sihota, T. Hoelen, **S.J. Parikh.** 2020. Biochar amendment as a remediation strategy for surface soils impacted by crude oil. Environ. Poll. 265:115006.

Hafner, S.C. and **S.J. Parikh**. 2020. Sorption and abiotic transformation of monensin by iron and manganese oxides. Chemosphere. 253, 126623.

Rippner, D.A., J. Lien, H. Balla, T. Guo, P.G. Green, T.M. Young, and **S.J. Parikh**. 2020. Surface modification induced cuprous oxide nanoparticle toxicity to duckweed at sub-toxic metal concentrations. Sci. Tot. Environ. 722, 137607.

Wan, X., C. Li, K. Leach, **S.J. Parikh**. 2020. Simultaneous removal of arsenic and cadmium from soil by iron-modified magnetic biochar. Environ. Poll., 2617, 114157.

Wu. J., Z. Li, **S.J. Parikh**, D. Huang, X. Liu, J. Xu. 2020. A novel calcium-based magnetic biochar is effective in stabilization of arsenic and cadmium co-contamination in aerobic soils. Journal of Hazardous Materials. 387, 122010.

Amoakwah E., E. Arthur, K. Frimpong, **S.J. Parikh**, and R. Islam. 2020. Soil organic carbon storage and quality is impacted by corn cob biochar application on a tropical sandy loam. Journal of Soils and Sediments. 20:1960-1969.

Schaefer, M., N. Bogie, D. Rath, A. Marklein, A. Garniwan, T. Haensel, Y. Lin, C. Avila, P. Nico, K.M. Scow, E. Brodie, W. Riley, M. Fogel, A. Berhe, T. Ghezzehei, **S.J. Parikh**, M. Keiluweit, S. Ying. 2020. Effect of cover crop on carbon distribution in size and density separated soil aggregates. Soil Systems. 4(1), 6.

Redman, Z.C, K.H. Tran, **S.J. Parikh**, and R. Tjeerdema. 2019. Influence of pH and Divalent Metals Relevant to California Rice Fields on the Hydroxide Mediated Hydrolysis of the Insecticide Chlorantraniliprole. J. Agric. Food Chem. 67:12402-12407.

Redman, Z.C, **S.J. Parikh**, M. Hengel, and R. Tjeerdema. 2019. Influence of flooding

and salinization on degradation of chlorantraniliprole in California rice field soils. J. Agric. Food Chem. 67:8130-8137.

Gelardi, D.L., C. Li, and **S.J. Parikh**. 2019. An emerging environmental concern: Biochar-induced dust emissions and their potentially toxic properties. Sci. Total Environ. 678:813-820.

Almasari, F. H.A. Ajwa. **S.J. Parikh**, and K. Al-Khatib. 2019. Soil mobility of allyl isothiocyanate and chloropicrin as influenced by surfactants and soil texture. HortScience. 54:706-714.

Wang, D. C. Li, **S.J. Parikh**, and K.M. Scow. 2019. Impact of biochar on water retention of two agricultural soils – a multi-scale analysis. Geoderma. 340:185-191.

Li, C. D.R. Carrijo, Y. Nakayama, B.A. Linquist, P.G. Green, and **S.J. Parikh**. 2019. Impact of alternate wetting and drying irrigation on arsenic uptake and speciation in flooded rice systems. Agric. Ecosyt. Environ. 272:188-198.

Carrijo, D., C. Li. **S.J. Parikh**. and B. Linquist. 2019. Irrigation management for arsenic mitigation in rice grain: timing and severity of a single soil drying. Sci. Total Environ. 649:300-307

Margenot, A.J., **S.J. Parikh**, and F.J. Calderon. 2019. Improving infrared spectroscopy characterization of soil organic matter with spectral subtractions. J. Vis. Exp. (143), e57464.

Popova, I.E., M.J. Morra, and S.J. Parikh. 2018. Pressurized liquid extraction of six tetracyclines from agricultural soils. J. Environ. Sci. Health, Part B. 54:35-40.

Margenot, A.J., D.A. Rippner, M.R. Dumlao, S. Nezami, P.G. Green, **S.J. Parikh**, and A.J. McElrone. 2018. Copper oxide nanoparticle effects on root growth and hydraulic conductivity of two vegetable crops. Plant and Soil. 431:333-345.

Aleta P., **S.J. Parikh**, A.P. Silchuck, K.M. Scow, M. Park, and S. Kim. 2018. The effect of organic matter on the removal of phosphorus through precipitation as struvite and calcium phosphate in synthetic dairy wastewater. Membrane Wat. Treat. 9:163-172.

Carrijo, D. N. Akbar, A. Reis, **S.J. Parikh**, P.G. Green, A. Gaudin, C. Li, and B. Linquist. 2018. Impacts of variable soil drying in alternate wetting and drying rice systems on yields, grain arsenic concentration and soil moisture dynamics. Field Crops Res. 222:101-110.

Margenot, A.J., R. Sommer, and **S.J. Parikh**. 2018. Changes in soil phosphatase activities across a liming gradient under diverse long-term managements in subhumid Kenya. Soil Sci. Soc. Amer. J. 82:850-861.

Brevik, E.C., K.L. Vaughan, **S.J. Parikh**, H. Dolliver, D. Lindbo, J.J. Steffans. D.C. Weindorf, P. McDaniel, M. Mbila, and S. Edinger-Marshall. 2018. Trends in undergraduate soil science education at selected universities in the USA from 2009-2013. Soil Sci. Soc. Amer. J. 82:295-306.

Igalavithana, A.D., S. Mandal, N.K. Niazi, M. Vithanage, **S.J. Parikh**, F.N.D. Mukome, M. Rizwan, P. Oleszczuk, M. Al-Wabel, N. Bolan, D.C.W. Tsang, K.H. Kim, and Y.S. Ok. 2018. Advances and future directions of biochar characterization methods and applications. Critical Reviews in Environmental Science and Technology. 47:2275-2230.

Li. C., D.A. Bair, and **S.J. Parikh**. 2018. Estimating potential dust emissions from biochar amended soils under simulated tillage. Sci. Total Environ. 625:1093-1101.

Rippner, D.A., P.G. Green, T.M. Young, and **S.J. Parikh**. 2018. Dissolved organic matter reduces CuO nanoparticle toxicity to duckweed in simulated natural systems. Environ. Poll. 234:692-698.

Margenot, A.J. Nakayama, Y., and **S.J. Parikh**. 2018. Methodological recommendations for optimizing assays of enzyme activities in soil samples. Soil Biology and Biochemistry. 125: 350-360.

Margenot, A.J., D.E. Griffin, B.S. Alves, D.A. Rippner, C.F. Li, and **S.J. Parikh**. 2018. Softwood biochar can be a substitute for peat moss in soil-free substrates without negative impacts on marigold growth. Industrial Crops and Products. 112:160-169.

Davis, R.A., D.A. Rippner, S.H. Hausner, **S.J. Parikh**, A.J. McElrone, J.L. Sutcliffe. 2017. In vivo tracking of copper-64 radiolabeled nanoparticles in lactuca sativa. Environ. Sci. Technol. 51:12537–12546.

Margenot, A.J. M.M. Pullefman, R. Somner, B.K. Paul, **S.J. Parikh**., L.E. Jackson, and S.J. Fonte. 2017. Biochemical proxies indicate differences in soil C cycling induced by long-term tillage and residue management in a tropical agroecosystem. Plant and Soil. 420: 315–329

Menicucci, A.J., H.J. Spero. J. Matthews, **S.J. Parikh.** 2017. Influence of exchangeable oxygen on biogenic silica oxygen isotope data. Chem. Geo. 466:710-721.

Margenot, A.J., R. Sommer, J. Mukalama, **S.J. Parikh**. 2017. Biological P cycling is influenced by the form of P fertilizer in a Kenyan Oxisol. Biol. Fert. Soils. 53: 899–909.

Bair, D.A., I.E. Popova, K.W. Tate, **S.J. Parikh**. 2017. Transport of oxytetracycline, chlortetracycline and ivermectin in surface runoff from irrigated pasture. J. Environ. Sci. Health, Part B. 52:631-640.

Wang, D., A.J. Fonte, **S.J. Parikh**, J. Six, K.M. Scow. 2017. Biochar additions can enhance soil structure and the physical stabilization of C in aggregates. Geoderma. 303:110-117.

Anderson, C.G., G. Joshi, D.A. Bair, C. Oriol, G. He, **S.J. Parikh**, M.S. Denison, K.M. Scow. 2017. Use of nuclear receptor luciferase-based bioassays to detect endocrine active chemicals in a biosolids-biochar amended soil. Chemosphere. 181:160-167.

Hafner, S.C., N. Watanabe, T. Harter, B.A. Bergamaschi, **S.J. Parikh**. 2017. Effects of solid-liquid separation and storage on monensin attenuation in dairy waste management systems. J. Environ. Management. 190:28-34.

Griffin, D.E., D. Wang, **S.J. Parikh,** K.M. Scow. 2017. Short-lived effects of walnut shell biochar on soils and crop yields in a long-term field experiment. Agric. Ecosyst. Environ. 236:21-29.

Hirzel, D, K. Steenwerth, **S.J. Parikh**, A. Oberholster. 2017 Impact of winery wastewater irrigation on soil, grape and wine composition. Agr. Water Manage. 180:178-189.

Margenot, A.J., B.K. Paul, R. Sommer, M.M. Pulleman, **S.J. Parikh**, L.E. Jackson, S. Fonte. 2017. Can conservation agriculture improve P availability in weathered soils? Effects of tillage and residue management on soil P status after 9 years in a Kenyan Oxisol. Soil Tillage Research. 166:157-166.

Bair, D.A., F.N.D. Mukome, I.E. Popova, T.A. Ogunyoku, A. Jefferson, D. Wang, S.C. Hafner, T.M. Young, **S.J. Parikh**. 2016. Sorption of pharmaceuticals, heavy metals, and herbicides to biochar in the presence of biosolids. J. Environ. Qual. 45:1998-2006.

Wang, D., D.E. Griffin, **S.J. Parikh**, and K.M. Scow. 2016. Impact of biochar amendment on soil water soluble carbon in the context of extreme hydrological events. Chemosphere. 160:287-292.

Ye, R. T.A. Doane, M.B. Espe, B. Linquist, **S.J. Parikh**, and W.R. Horwath. 2016. A soil carbon proxy to predict CH4 and N2O emissions from rewetted agricultural peatlands. Agric. Ecosyst. Environ. 220: 64-75.

Hafner, S.C., T. Harter, and **S.J. Parikh**. 2016. Evaluation of monensin transport to shallow groundwater after irrigation with dairy lagoon water. J. Environ. Qual. 45:480–487.

Margenot, A.J., F.J. Calderón, and **S.J. Parikh**. 2015. Limitations and potential of spectral subtractions in Fourier-transform infrared (FTIR) spectroscopy of soil samples. Soil Sci. Soc. Am. J. 80:10-26.

Buelow, M.C., L.C.R. Silva, K. Steenwerth, and **S.J. Parikh**. 2015. Characterization of winery wastewater for reuse in California. Amer. J. Enol. Viticult. 66:302-310.

O'Dell, P.J., A.R. Madinoor, **S.J. Parikh**, and T. Jeoh. 2015. The effect of fibril length and architecture on the accessibility of reducing ends of cellulose Iα to Trichoderma reesei Cel7A. Cellulose. 22:1697-1713.

Pereira, E.I.P, E. Suddick, I. Mansour, F.N.D. Mukome, **S.J. Pari**kh, K.M. Scow, J.W. Six. 2015. Biochar alters nitrogen transformations but has minimal effects on nitrous oxide emissions in an organically managed lettuce mesocosm. Biol. Fert. Soils. 51:573-582.

Margenot, A.J., F.J. Calderón, T. M. Bowles, **S.J. Parikh**, and L.E. Jackson. 2015. Soil organic matter functional group composition in relation to organic C, N and P fractions in organically managed tomato fields characterized by mid-infrared spectroscopy. Soil Sci. Soc. Amer. J. 79:772-782.

Wang, D., F.N.D. Mukome, D. Yan, H, Wang, K.M. Scow, and **S.J. Parikh**. Phenylurea herbicide sorption to biochars and agricultural soil. 2015. J. Environ. Sci. Health, Part B. 50:544-551.

Suarez, M.D., R.J. Southard, and **S.J. Parikh**. 2015 Understanding variations of soil mapping units and associated data for forensic science. J. Forensic Sci. 60:894-905.

Buelow, M.C., K. Steenwerth, and **S.J. Parikh**. 2015. The Effect of Mineral-Ion Interactions on Soil Hydraulic Conductivity. Agricultural Water Management. 152:277-285.

Mulligan, R.A., **S.J. Parikh**, R.S. Tjeerdema. 2015. Abiotic partitioning of clothianidin under simulated rice field conditions. Pest Manag. Sci.71:1419-1424.

Brevik, E.C., S. Abit, D. Brown, H. Dolliver, D. Hopkins, D. Lindbo, A. Manu, M. Mbila, **S.J. Parikh**, D. Schulze, J. Shaw, R. Weil, and D. Weindorf. 2014. Soil science education in the United States: history and current enrollment trends. J. Indian Soc. Soil Sci. 62:299-306.

Shaw, B.D., J. B. Wei, A. Tuli, J. Campbell, **S.J. Parikh**, S. Dabach, M. Buelow, and J.W. Hopmans. 2014. Analysis of ion and DOC interference on soil solution nitrate concentration measurements using UV absorption spectroscopy. Vadose Zone J. 13:9. DOI: 10.2136/vzj2014.06.0071.

Nguyen, K.T., K.B. Ita, **S.J. Parikh**, I.E. Popova, D.A. Bair. 2014. Transdermal delivery of captropril and metoprolol tartate with microneedles. Drug. Deliv. Lett. 4:236-343.

Mukome, F.N.D., A.L.D. Kilcoyne, and **S.J. Parikh**. 2014. Alteration of biochar carbon chemistry during soil incubations: SR-FTIR and NEXAFS investigation. Soil Sci. Soc. Amer. J. 78:1632-1640.

Parikh, S.J., F.N.D. Mukome, and X. Zhang. 2014. ATR-FTIR Spectroscopic Evidence for biomolecular phosphorus and carboxyl groups facilitating bacterial adhesion to iron oxides. Colloids Surf. B, Biointerf. 119:38-46.

Parikh, S.J., A.J. Margenot, F.N.D. Mukome, F. Calderón, and K.W. Goyne. 2014. Soil chemical insights provided through vibrational spectroscopy. Adv. Agron. 129:1-148.

Kaur, M., K. Ita, I. Popova, **S.J. Pari**kh, and D.A. Bair. 2014. Microneedle-assisted delivery of verapamil hydrochloride and amlodipine besylate. Eur. J. Pharm Biopharm. 86:284-291.

Mukome, F.N.D., T.A. Doane, L.C. Silva, **S.J. Parikh**, and W.R. Horwath. 2013. Testing protocol ensures the authenticity of organic fertilizers. California Agriculture. 67: 210-216.

Popova, I.E., D.A. Bair, K.W. Tate, and **S.J. Parikh**. 2013. Sorption, leaching, and surface runoff of beef cattle veterinary pharmaceuticals under simulated irrigated pasture conditions. J. Environ. Qual. 42: 1167-1175.

Mosse, K.P.M., J. Lee, B.T. Leachman, **S.J. Parikh**, T.R. Cavagnaro, A.F. Patti, and K.L. Steenwerth. 2013. Irrigation of an established vineyard with winery cleaning agent solution (simulated winery wastewater): vine growth, berry quality, and soil chemistry. Agr. Water Manag. 31:93-102.

Mukome, F.N.D., J. Six, and **S.J. Parikh**. 2013. The effects of walnut shell and wood feedstock biochar amendments on greenhouse gas emissions from a fertile soil. Geoderma. 200-201: 90-98.

Mukome, F.N.D., X. Zhang, L.C.R. Silva, J. Six, and **S.J. Parikh**. 2013. Use of chemical and physical characteristics to investigate trends in biochar feedstocks. J. Agric. Food Chem. 61:2196-2204.

Winter, S.E., M.G. Winter, M.N. Xavier, P. Thiennimitr, V. Poon, A.M., Keestra, R. Laughlin, G. Gomez, J. Wu, S.D. Lawhon, I. Popova, **S.J. Parikh**, L.G. Adams, R.M. Tsolis, V.J. Stewart, A.J. Bäumler. 2013. Host-derived nitrate boosts growth of E. coli in the inflamed gut. Science. 339:708-711.

Parikh, S.J. and B.R. James. 2012. Soil: The foundation of agriculture. Nature Education Knowledge. 3(9):2.

Parikh, S.J., J.D. Kubicki, C.M. Jonsson, C.L. Jonsson, R.M. Hazen, D.A. Sverjensky, and D.L. Sparks. 2011. Evaluating glutamate and aspartate binding mechanisms to rutile (α-tio_2) via ATR-FTIR spectroscopy and quantum chemical calculations. Langmuir. 27:1778-1787.

O'Geen, A.T., R. Budd, J. Gan, J.J. Maynard, **S.J. Parikh**, and R.A. Dahlgren. 2010. Mitigating non-point source pollution in agriculture with constructed and restored wetlands. Adv. Agron. 108:1-76.

Zhu, M., M. Ginder-Vogel, **S.J. Parikh**, X.H. Feng, B. Ravel, and D.L. Sparks. 2010. Cation effects on layer-structure of biogenic Mn-oxides. Environ. Sci. Technol. 44:4465-4471.

Parikh, S.J., B.J. Lafferty, T.G. Meade, and D.L. Sparks. 2010. Evaluating environmental influences on As^{III} oxidation kinetics by a poorly crystalline Mn-oxide. Environ. Sci. Technol. 44:3772-3778.

Feng, X.H., M. Zhu, M. Ginder-Vogel, C. Ni, **S.J. Parikh**, and D.L. Sparks. 2010. Formation of Nano-crystalline todorokite-like phase from biogenic Mn oxides. Geochim. Cosmochim. Acta. 74:3232-3245.

Shimizu, M., M. Ginder-Vogel, **S.J. Parikh**, and D.L. Sparks. 2010. Molecular scale assessment of methylarsenic sorption on aluminum oxide. Environ. Sci. Technol. 44:612-617.

Parikh, S.J., B.J. Lafferty, and D.L. Sparks. 2008. An ATR-FTIR spectroscopic approach for measuring rapid kinetics at the mineral/water interface. J. Colloid Interface Sci. 320:177-185.

Parikh, S.J., and J. Chorover. 2008. ATR-FTIR study of lipopolysaccharides at mineral surfaces. Colloids Surf. B, Biointerf. 62:188-198.

Parikh, S.J., and J. Chorover. 2007. Infrared spectroscopy studies of cation effects on lipopolysaccharides in aqueous solution. Colloids Surf. B, Biointerf. 55:241-250.

Parikh, S.J., and J. Chorover. 2006. ATR-FTIR spectroscopy reveals bond formation during bacterial adhesion to iron oxide. Langmuir. 22:8492-8500.

Post, D.F., **S.J. Parikh**, R.A. Papp, and L. Ferriera. 2006. Evaluation of student skills to determine soil morphological properties. J. Nat. Resour. Life Sci. Educ. 35:217-224.

Parikh, S.J., and J. Chorover. 2005. FTIR spectroscopic study of biogenic Mn-oxide formation by Pseudomonas putida GB-1. Geomicrobiol. J. 22:207-218.

Parikh, S.J., J. Chorover, and W.D. Burgos. 2004. Interaction of phenanthrene and its primary metabolite 1-hydroxy-2-naphthoic acid with estuarine sediment and humic fractions. J. Contam. Hydrol. 72:1-22.

Rabenhorst, M.C., and **S. Parikh**. 2000. Propensity of soils to develop redoximorphic color changes. Soil Sci. Soc. Am. J. 64:1904-1910.

Other Publications (12)

Winfield, E. and S.J. Parikh. 2020. Climate-Smart Agriculture: Biochar Amendments. California Climate Hub, U.S. Department of Agriculture. Climate-Smart Agriculture Fact Sheet Series: 4.

Margenot A.J., F.N.D. Mukome, K.W. Goyne, F.J. Calderón, and S.J. Parikh (Invited). 2017. Soil analysis, applications of FTIR spectroscopy, In J.C. Lindon, G.E. Tranter, and D.W. Koppenaal (Eds), Encyclopedia of Spectroscopy and Spectrometry, 3rd ed. Elsevier., Vol. 2, Elsevier, Oxford. pp. 448-454.

Parikh, S.J. (Invited Contributor). 2016. chapter 14: regional assessment of soil changes in North America, *In* Status of the World's Soil Resources, 2015, FAO, *Job Number: I5199.* http://www.fao.org/documents/card/en/c/c6814873-efc3-41db-b7d3-2081a10ede50/

Mukome, F.N.D. and S.J. Parikh (Invited). 2015. Chemical, physical, and surface characterization of biochar. *In* Y.S. Ok, S.M. Uchimiya, S.X. Chang, and N. Bolan (Eds), Biochar: Production Characterization, and Applications. CRC Pres, Boca Raton, FL.

Parikh, S.J. (Invited), 2015. Book review of *Soil and Water Chemistry: An Integrative Approach*, Second Edition by Michael Essington. Soil Science, 181:44.

Parikh, S.J. (Invited), 2014. Book review of *Introduction to Soil Chemistry: Analysis and Instrumentation*. Second Edition by Alfred R. Conklin, Jr. Soil Sci. Soc. Amer. J. 78:1828.

Mukome, F.N.D., L. Emberson, L., S.J. Parikh. 2013. UC Davis Biochar Database: open access source of biochar characterization data (http://biochar.ucdavis.edu/).

Post, D.F., S.J. Parikh, R.A. Papp, and L. Ferriera. 2007. Improving soil morphology skills through self-evaluation. CSA NEWS 52:30-31.

Parikh, S.J., 2006. A spectroscopic study of bacterial polymers mediating cell adhesion and mineral transformations. Ph.D. Dissertation, The University of Arizona, Tucson, AZ.

Parikh, S.J., 2001. Interactions of phenanthrene and degradation products with estuarine sediment and extracted humic substances. M.S. Thesis, The Pennsylvania State University, University Park, PA.

Parikh, S.J., and J. Chorover. 1999. Humic substances and water soluble materials in turfgrass growth media. Dave Smith, FERTL Soil, Kennett Square, PA.

Thomas, E., Parikh, S.J., and E. Young. 1997. Soil testing methods for site specific farming. Miner Institute Farm Journal. Oct. 1997.

Published Abstracts – First Author (35 first author, 12 invited, 118 including co-author)

Parikh, S.J., D. Gelardi, D. Rippner, and M. Abou Najm. The Influence of Biochar on Nutrient Leaching and Hydraulic Conductivity in Agricultural Soils. ASA-CSSA-SSSA Annual Meetings, November 9-13, 2020.

Parikh, S.J. D. Gelardi, and C. Li. Evaluating potential for human exposure to dust emissions from biochar amended soils. Soil Security and Planetary Health Conference. Sydney, Australia. December 4-6, 2018.

Parikh, S.J. D. Gelardi, D. Geisseler, W.R. Horwath, M. McGiffen, M. Leinfelder-Miles, A.T. O'Geen, K. M. Scow. Evaluation of biochar for on-farm soil management in California. FREP/WPHA Conference. Seaside, CA. October 23-24, 2018. (*Invited*).

Parikh, S.J. and D. Gelardi. Deciphering biochars for agronomic and environmental applications. Agronomy Society of America Annual Meeting. Baltimore, MD. November 4-7, 2018. (*Invited*).

Parikh, S.J., C. Li, S. Bakshi, and J.J. Pignatello. Development of novel applications of animal wastes and biochar for nutrient capture and subsequent fertilizer value. USDA-NIFA Project Director's Meeting, Newark, DE. Oct. 1-3, 2018.

Parikh, S.J., A.J. Margenot, M. Dumlao, D. Rippner, R.A. Davis, P.G. Green, J.L. Sutcliffe, A. McElrone. Examining the impact of copper oxide nanoparticles on carrot and lettuce growth and root hydraulic conductivity. American Chemical Society National Meeting, April 2-7, 2017, San Francisco, CA (*Invited*).

Parikh, S.J. C. Li, P.G. Green, B. Linquist, and D. Carrijo. Effect of alternate wetting and drying irrigation on arsenic speciation and uptake in a rice paddy system. Soil Science Society of America International Meetings. October 22-25, 2017. Tampa, FL.

Parikh, S.J., A.J. Margenot. D.A. Rippner, M.R. Dumlao, P.G. Green, and A.J. McElrone. Copper oxide nanoparticle effects on crop growth and root hydraulic conductivity. Soil Science Society of America International Meetings. October 22-25, 2017. Tampa, FL.

Parikh, S.J., A.J. Margenot, D. Rippner, M. Dumlao, R.A. Davis, P.G. Green, J.L. Sutcliffe, and A. McElrone. Nanoparticle impacts on lettuce and carrot development and root hydraulic conductivity. USDA NIFA Food Safety Project Directors' Meeting. Tampa, FL. July 8, 2017.

Parikh, S.J. Evaluating biochar's potential in California agriculture. FREP/WPHA Conference. Modesto, CA. October 2016. (*Invited*).

Parikh, S.J., C. Li, P.G. Green, B. Linquist, and D. Carrijo. Effect of alternate wetting and drying irrigation on arsenic speciation and uptake in a rice paddy system. ASA-CSSA-SSSA Annual Meetings, Phoenix, AZ, Nov 6-9, 2016.

Parikh, S.J., F.N.D. Mukome, M.C. Buelow, F Xiao, X Gao, N. Sihota, T. Hoelen, D.H. McNear Jr., C. Masiello, J.J. Pignatello, and D. Mackay. Remediation of heavy hydrocarbon contaminated soils with biochar amendment. Soil Science Society of America Annual Meeting, Minneapolis, MN. November 15-18, 2015.

Parikh, S.J., M.C. Buelow, F.N.D. Mukome, M. Rodriquez, R.A. Dahlgren, A.T. O'Geen, M.D. Busse, B.M. Jenkins, and W.R. Horwath. Biochar impacts on forest soil carbon stocks. USDA Bioenergy PD Meeting. Arlington, VA. Oct. 29-31, 2014.

Parikh, S.J., L.Z. Aguiliera, F.N.D. Mukome, and A.J. Margenot. Evaluating bacteria binding mechanisms to soil minerals with FTIR spectroscopy. Soil Science Society of America International Meetings, Long Beach, CA, November 2-5, 2014. (*Invited)*

Parikh, S.J., M.C. Buelow, F.N.D. Mukome, G. Robertson, R.A. Dahlgren, A.T. O'Geen, M.D. Busse, B.M. Jenkins, W.R. Horwath. Biochar impacts on forest soil carbon stocks. The Association for the Advancement of Industrial Crops 25th Anniversary Meeting. Washington, D.C. Oct.12-16, 2013.

Parikh, S.J. F.N.D. Mukome. X. Zhang, L.C.R. Silva, J. Six. Use of chemical and physical characteristics to investigate trends in biochar feedstocks. Soil Science Society of America Annual Meetings, Nov. 3-6, Tampa, FL.

Parikh, S.J., I.E. Popova, D.A. Bair, and K.W. Tate. Transport of veterinary antibiotics in surface runoff from irrigated pastures. Soil Science Society of America National Meetings. October 21-24, Cincinnati, OH.

Parikh, S.J. Examining bacteria-mineral interfaces with FTIR spectroscopy. American Chemical Society National Meetings, August 19-23, Philadelphia, PA (Invited).

Parikh, S.J., F.N.D. Mukome, E. Suddick, E.I.P. Pereira, E. Verhoeven, and J.W. Six. Investigating *Potential Benefits of Soil Biochar Amend*ments. Plant and Soil Conference. California Plant and Soil Conference, America Society of Agronomy, CA Chapter. Feb. 7-8, Visalia, CA (*Invited*).

Parikh, S.J. Understanding the fate of antibiotics in concentrated animal feeding operations. Plant and Soil Conference, American Society of Agronomy, CA Chapter. Feb. 1-2, Fresno, CA (*Invited*).

Parikh, S.J., A. Jefferson, N. Ghazal, X.E., Zhang, D.A. Bair, and F.N.D. Mukome. Sorption of metals and organic contaminants to biochar. Soil Science Society of America Annual Meeting. Oct. 16-19, San Antonio, TX.

Parikh, S.J. and D. L. Sparks. The Benefits of Competition: Rapid-scan FTIR reveals that goethite enhances initial As oxidation via Mn-Oxides. American Geophysical Union National Meeting. Dec 13-17, 2010. San Francisco, CA (*Invited*).

Parikh, S.J., B.J. Lafferty, and D.L. Sparks. Environmental influences on Mn- oxide catalyzed arsenic oxidation. Soil Science Society of America Annual Meetings, Nov. 1-5, 2009. Pittsburgh, PA.

Parikh, S.J., C.M. Johnson, C.L. Jonsson, M. Zhu, R.M. Hazen, D.A. Sverjensky, and D.L. Sparks. FTIR spectroscopy in biogeochemistry: molecular mechanisms of glutamic and aspartic acid sorption to oxyhydroxide minerals. Soil Science Society of America Annual Meetings, Oct. 5-9, 2008. Houston, TX.

Parikh, S.J., B.J. Lafferty, D.L. Sparks. In situ analysis of biogeochemical arsenic transformations. American Chemical Society National Meeting, August 17-21, 2008. Philadelphia, PA.

Parikh, S.J., D.L. Sparks. The influence of phosphate and sulfate on arsenic oxidation via hydrous Mn-oxides. Soil Science Society of America Annual Meetings, Nov. 4-8, 2007. New Orleans, LA.

Parikh, S.J., B.J. Lafferty, Z., Shi, D.L. Sparks. Use of In-situ ATR-FTIR spectroscopy to determine rapid reaction kinetics at the mineral/water interface. 9th International Conference on the Biogeochemistry of Trace Elements, Jul. 15-19, 2007. Beijing, China.

Parikh, S.J., M. Borda, B.J. Lafferty, D.L. Sparks. Microbe-mineral interactions and the influence on As transformations in the soil environment. Soil Science Society of America Annual Meetings, Nov. 12-16, 2006. Indianapolis, IN.

Parikh, S.J. and J. Chorover. ATR-FTIR Spectroscopic investigation of bacterial cell interactions at nanohematite, corundum, and ZnSe surfaces. American Chemical Society National Meeting, March 26-30, 2006. Atlanta, GA.

Parikh, S.J. and J. Chorover.A spectroscopic study of Pseudomonas aeruginosa (ser 10) Lipopolysaccharides. Soil Science Society of America Annual Meetings, Oct. 31-Nov. 4, 2004. Seattle, WA.

Parikh, S.J. and J. Chorover. An FTIR investigation into biogenic Mn-oxide formation by Pseudomonas putida GB-1. Soil Science Society of America Annual Meetings, Oct. 31-Nov. 4, 2004. Seattle, WA.

Parikh, S.J. and J. Chorover. Effects of solution chemistry on the conformation and aggregation of lipopolysaccharides. American Chemical Society, 78th Annual Colloid and Surface Science Symposium, June 20-23, 2004. New Haven, CT.

Parikh, S.J. and H.L. Gilbert, M.H. Conklin, and J. Chorover. FTIR spectroscopic study of Mn(II) oxidizing Pseudomonas putida GB-1 biofilms on ZnSe, Ge, and CdTe crystal surfaces. American Geophysical Union Annual Meetings, Dec. 8-12, 2003. San Francisco, CA.

Parikh, S.J. and J. Chorover. Sorption behavior of phenanthrene and its carboxylated metabolites to sediment and humic fractions. Soil Science Society of America Annual Meetings, Oct. 21-25, 2001. Charlotte, NC.

Parikh, S.J. and J. Chorover. Variation in sorption affinities of phenanthrene and 1-hydroxy-2-naphthoic acid to esturarine sediment and extracted humic fractions. The 2nd Annual Symposium on Natural Organic Matter in Soils and Water, Mar. 19-20, 2001. Columbus, OH.

Parikh, S.J. and J. Chorover. Sorption of PAHs and degradation products to estuarine sediments and organic matter fractions. Soil Science of American Annual Meetings, Nov. 5-9, 2000. Minneapolis, MN.

Other First Author Presentations (34 first author, 26 invited, 44 including co-author)

Parikh, S.J. Applications for Fourier transform Infrared (FTIR) Spectroscopy in Soil Science, China Agricultural University. November 13, 2020 (*Invited*).

Parikh, S.J. Evaluating Biochar use in Agriculture. El Dorado County Master Gardeners. July 23, 2020. (Invited).

Parikh, S.J. Evaluating biochar for agriculture and environmental applications. China Agricultural University. September 9, 2019 (*Invited*).

Parikh, S.J. How does nanoparticle size impact metal availability to plants and soil microbial communities? 2019 ZJU-UCD Joint International Symposium on Soil-Plant-Microbe Interactions. September 12-14, 2019. Zhejiang University, Hangzhou, China (*Invited*).

Parikh, S.J. Adventures in biochar! Departmental Seminar, UC Merced. April 4, 2019 (*Invited*).

Parikh, S.J., D. Gelardi, and C. Li. Evaluating potential for human exposure to dust emissions from biochar amended soils. ELEMENTS Workshop, Sacramento, CA. March 7, 2019 (*Invited*).

Parikh, S.J. explorations into the biochar frontier. Environmental Studies Departmental Seminar. University of Santa Cruz, Santa Cruz, CA. April 2, 2018 (*Invited*).

Parikh, S.J. Evaluating the potential for soil biochar amendments. Almond Board of California, Leadership Class on Utilization of Biomass. Davis, CA. March 2, 2018 (Invited).

Parikh, S.J. Soil remediation challenges and the potential for biochar. 2018 Sino-US Soil Remediation High Level Symposium. Weifang Sino-US Food and Agricultural Innovation Center. May 25-26, 2018. Weifang, China (*Invited*).

Parikh, S.J. C. Li. D. Carrijo, B, Linquist, and P.G. Green. 2018. Evaluation of alternate wetting and drying to reduce arsenic uptake in rice. 2018 ZJU-UCD Joint International Symposium on Soil-Plant-Microbe Interactions. May 21-22, 2018. Zhejiang University, Hangzhou, China (*Invited*).

Parikh, S.J. Biochar Overview: What is biochar? UC Davis-CDFA Biochar Field Day. June 6, 2018 (*Invited*).

Parikh, S.J., A.J. Margenot, M. Dumlao, D. Rippner, R.A. Davis, P.G. Green, J.L. Sutcliffe, and A. McElrone. Can nanoparticles pose a threat to crop safety? Agriculture and Environmental Chemistry Graduate Group Seminar. UC Davis. Davis, CA. November 6, 2017 (*Invited*).

Parikh, S.J. Demystifying the "magic" of biochar, California Farm Bureau. Sacramento, CA. March 18. 2017. (*Invited*).

Parikh, S.J. Biochar basics and current research. California Climate and Agriculture Network (CalCAN). Davis, CA. February 28, 2017. (*Invited*).

Parikh, S.J. Quality considerations for biochar. Almond Board of California, Biomass Task Force Meeting. Modesto, CA. February 7, 2017 (*Invited*).

Parikh. S.J. Geogenic Arsenic and rice cultivation. Department of Geosciences, Georgia State University. March 23, 2017 (*Invited*).

Parikh, S.J. Evaluating biochar's potential for soil remediation. 2016 ZJU-UCD Joint International Symposium on Soil and the Environment. Zhejiang University, Hangzhou, China. March 19, 2016 (*Invited*).

Parikh, S.J. Biochar interactions with soil contaminants and the UC Davis Biochar Database. EPA Webinar on Biochar. December 8, 2016 (*Invited*).

Parikh, S.J. (Invited). Variation in physical and chemical properties of biochar. Building Healthy Soils in California, California Bioresources Alliance with the Associate of Compost Producers, and the Central Valley Regional Water Control Board. Rancho Cordova, CA. November 4-5, 2015.

Parikh, S.J., D. Rippner, R. Davis, M. Dumlao, J. Sutcliffe, A. McElrone, P. Green, and T. Young. Examining the dynamics of nanoparticles in plants. USDA NIFA Food Safety Project Directors' Meeting. Portland, OR. July 24, 2015.

Parikh, S.J. Arsenic: Sources and mobility in soil and water. Understanding elements in foods and beverages from the ground Up: Analysis, exposure, and risk assessment. Genome Center Auditorium, UC Davis. April 29, 2015 (*Invited*).

Parikh S.J. and M.C. Buelow. Can biochar enhance native soil carbon stocks? 2014 Annual Field Day for the Russell Ranch Sustainable Agriculture Facility, Agricultural Sustainability Institute, UC Davis. May 28, 2014 (*Invited*).

Parikh, S.J. Investigating biochar impacts in long term agricultural research. Balancing Resource Conservation and Ag Production through Long-Term Ag Research Workshop. Western Sustainable Agriculture Research & Education (SARE) and University of California Agriculture and Natural Resources (ANR), July 9, 2013 (*Invited*).

Parikh, S.J., Arsenic biogeochemistry in soil. Agricultural and Environmental Graduate Group Seminar, University of California, Davis, CA. May 4, 2009 (*Invited*).

Parikh, S.J., FTIR spectroscopy in biogeochemistry: Exploring molecular mechanisms at mineral surfaces, Guest Seminar, Carnegie Institute of Washington, Washington, D.CC., November 21, 2008 (*Invited*).

Parikh, S.J. Soil chemistry in the 21st century: Biogeochemistry for sustainability, Departmental Seminar, University of California, Department of Land, Air and Water Resources, Davis, CA. May 19, 2008 (*Invited*).

Parikh, S.J., M. Ginder-Vogel, B.J. Laffertry, D.L. Sparks, Realtime analysis of arsenic oxidation via Mn-oxides at the solid-liquid interface, USDA Project Directors Meeting for Soil Processes, USGS, Menlo Park, CA. February 22, 2008.

Parikh, S.J., Biogeochemical processes at interfaces, Departmental Seminar, Utah State Univ., Plants, Soils and Biometerology Department. Logan, UT. April 9, 2007.

Parikh, S.J., Examining the interactions between bacteria, soil minerals, and environmental contaminants via FTIR spectroscopy, Departmental Seminar, The University of Maryland, Department of Environmental Science and Technology, College Park, MD. September 14, 2006 (*Invited*).

Parikh, S.J. and J. Chorover. Bacterial adhesion to nanohematite is mediated by complexation with biomolecule phosphate groups. NSF Sponsored Workshop: "Frontiers in Exploration of the Critical Zone," Oct. 24-26, 2005. University of Delaware, Newark, DE.

Parikh, S.J. and J. Chorover. An in situ investigation of Pseudomonas aeruginosa biofilm formation on germanium substratum. The Penn State University 5th Annual Environmental Chemistry Symposium, March 22-23, 2002. University Park, PA.

Parikh, S.J., Interaction of phenathrene and degradation products with estuarine sediment and extracted humic fractions, Departmental Seminar, The University of Arizona, Department of Soil, Water and Environmental Science, Tucson, AZ. March 11, 2002.

Parikh, S.J., Interaction of organic contaminants with estuary sediments, The University of Arizona Student Showcase, Tucson, AZ. November 9, 2001.

Parikh, S.J., Sorption and desorption of PAHs to estuarine sediment to humic fractions, Departmental Seminar, The Pennsylvania State University, Department of Crop and Soil Sciences, University Park, PA. 2001.

Parikh, S.J. and J. Chorover. 2001. Does humic structure influence phenanthrene and ionized metabolites sorption to estuarine sediment and organic matter fractions? The Penn State University 4th Annual Environmental Chemistry Symposium, Mar. 17-18, 2001. University Park, PA.

Funding (35 Total Grants [>$10.6 million], 24 as PI [>$2.5 million], Grants < $5K not listed)

$30,000, PI. Examining the impact of nanopesticides and nanofertilizers on farm worker safety. *National Institute for Occupational Safety and Health (NIOSH)* via Western Center for Agricultural Health and Safety at UC Davis. 11/1/2020-10/31/2021.

$224,973, co-PI (PI: D. Geisseler). Development of site-specific nitrogen fertilization recommendations for annual crops, *California Department of Food and Agriculture (CDFA), Fertilizer Education and Research Program (FREP)*. 01/01/2021-12/31/2023

$499,997, PI. Development of Novel Applications of Animal Wastes and Biochar for Nutrient Capture and Subsequent Fertilizer Value. *United States Department of Agriculture – National Institute for Food and Agriculture (USDA-NIFA)*. 03/01/2017 - 04/20/2020.

$1,760,000, co-PI (PI: S. Ying). UC Consortium for drought and carbon management. *University of California, Presidents Research Catalyst*. 01/01/2016 - 12/31/2019.

$304,875, PI. Evaluation of Biochar for On-Farm Soil Management in California. *California Department of Food and Agriculture (CDFA), Fertilizer Education and Research Program (FREP)*. 01/01/2017 - 12/31/2021.

$1,760,000, co-PI (PI: B. Houlton). Working Lands Innovation Center*. California Strategic Growth Council*. 07/01/2019 - 06/30/2023.

$151,853, PI. Evaluation of Biologically Modified Seed Coatings on Plant Phosphorus Uptake. *Bayer Agrochemicals*. 04/01/2018 - 06/30/2020.

$49,406, PI. Evaluation of Almond Shell and Soft Wood Derived Biochars as Soil Amendments, *Almond Board of Californ*ia. 08/01/2017 - 07/31/2021.

$118,650, PI. Determination of Arsenic Speciation in Rice and Environmental Samples. *California Rice Commission*. 07/01/2016 - 07/31/2021.

$7,500, PI. Chemical compositions of Thomas fire ash and its potential health risks to farmworkers during agriculture recovery. *National Institute for Occupational Safety and Health (NIOSH)* via Western Center for Agricultural Health and Safety at UC Davis. 04/19/2018 - 09/29/2018.

$26,467, co-PI (PI: B. Hammock). Superfund Fate and Transport Core at UC Davis*. National Institute for Environmental Health and Safety (NIEHS)*. 06/01/2016 - 03/31/2017.

$499,921, PI. Examining mechanisms of transport and bioaccumulation of engineered nanoparticles into food crops. *United States Department of Agriculture – National Institute for Food and Agriculture (USDA-NIFA)*. 09/01/2013 - 08/30/2017.

$88,824, PI. Sustainable Management of Forests for Bioenergy Production. *Unites States Department of Agriculture – National Institute for Food and Agriculture (USDA-NIFA)*. 11/15/2012 - 08/30/2016.

$271,000, co-PI (PI: R. Zhang). Producing Value-Added Products from Anaerobic Digester Effluent. *California Department of Food and Agriculture (CDFA)*. 01/01/2015 - 12/31/2016

$65,000, co-PI. (PI: A. Oberholster). Effects of Application of Winery Wastewater on Soil, Grape Nutrition, and Juice and Wine Quality. *University of California – Agriculture and Natural Resources (UC-ANR)*. 11/15/2012 - 11/14/2015.

$411,304, PI. Biochar Amendment: A Sustainable Remediation Strategy for Shallow Soil Contamination by Heavy Hydrocarbons, *Chevron Cooperation*. 05/01/2014 - 12/31/2015.

$180,000, co-P (PI: K. Scow). Superfund Fate and Transport Core at UC Davis. *National Institute for Environmental Health and Safety (NIEHS)*. 02/1/2012 - 01/31/2015.

$15,000, PI. Evaluating inhalation exposure of biochar particulate matter and bound contaminants from agricultural associated dust. *National Institute for Occupational Safety and Health (NIOSH)* via Western Center for Agricultural Health and Safety at UC Davis. 01/01/2014 - 10/01/2014

$320,000, co-PI (PI: A. Furman). Role of Microbiological and Geochemical Heterogeneity in the Fate and Transport of Nitrogen through the Vadose Zone. *Binational Agricultural Research and Development (BARD)*. 07/01/2011 - 12/31/2014.

$59,185, co-PI (PI: W.R. Horwath). Developing Testing Protocols to Assure the Quality of Fertilizer Materials for Organic Agriculture. *California Department of Food and Agriculture (CDFA), Fertilizer Education and Research Program (FREP)*. 7/1/2013-06/30/2014.

$6,000, PI. Development of Click-Radiochemistry Techniques for Environmental Science Research, *Center for Molecular and Genomic Imaging, UC Davis*. 01/01/2013-12/31/2013.

$25,000, PI. Examining the Desorption, Bioavailability, and Impact on Antimicrobial Resistance of Pharmaceuticals Sequestered in Biosolids and Biochar. Superfund Fate and Transport Core at UC Davis via *National Institute for Environmental Health and Safety (NIEHS)*. 06/01/2012-05/31/2013.

$41,000, PI. Examining the Desorption, Bioavailability, and Impact on Antimicrobial Resistance of Pharmaceuticals Sequestered in Biosolids and Biochar. Superfund Fate and Transport Core at UC Davis via *National Institute for Environmental Health and Safety (NIEHS)*. 06/01/2011-05/31/2012.

$399,808, co-P (PI: K. Tate). Transport and Mitigation of beef cattle veterinary pharmaceuticals and hormones in surface and sub-surface runoff from grazed watershed, K.W. Tate (Principal Investigator), *United States Department of Agriculture – National Institute for Food and Agriculture (USDA-NIFA)*. 01/01/2010 12/31/2012.

$25,000, co-PI. (PI: W.R. Horwath). Developing testing protocols to assure the quality of fertilizer materials for organic agriculture, *Organic Trade Association*. 09/01/2010-08/30/2011.

$89,961, PI. Effects of K-rich irrigation water on soil properties and grape vine health, *Kearney Foundation of Soil Science*. 01/01/2010-12/31/2011.

$84,834, PI. Investigating the Influence of Biochar on the Soil N-Cycle, C Sequestration, and Stabilization with Soil Minerals, *David and Lucile Packard Foundation*: UC Davis Agricultural Sustainability Institute (ASI). 01/01/2010-06/30/2011.

$88,059, PI. A Multiscale Investigation of Monensin Sorption, Facilitated Transport, and Abiotic Degradation in Soil, *Kearney Foundation of Soil Science*. 01/01/2009-06/30/2011.

Teaching

- SAS 5: Soil, Water, and Civilizations
- SSC 010: Soils in Our Environment
- SSC 102: Environmental Soil Chemistry
- SSC 202: Advanced Topics in Soil Chemistry
- SSC 298: Foundations of Soils and Biogeochemistry, (annual contributor)
- SSC 290: Soils and Biogeochemistry Seminar (~1 quarter/year)

Professional Leadership and Service

- Chair, Division of Soil Chemistry, Soil Science Society of America (SSSA), 2019 (2018 Chair-Elect, 2020 Past-Chair)
- National Panel Manager, United States Department of Agriculture (USDA) National Institute of Food and Agriculture (NIFA) Grants Program, 2017
- SSSA, Soil Chemistry and Mineralogy Award Committee (2018-2019)
- SSSA, Soil Chemistry Mentoring Committee (2018-2020)
- SSSA, Dellavalle Soil Science Scholarship Committee. (2018-2020)
- SSSA, Soil Chem. Awards Committee, Chair, 2012-2013, Member 2014
- SSSA, University Education Material Committee (S597), 2013-2016
- SSSA, Marion L. & Christie M. Jackson Soil Science Award Committee (S482), 2013-2014
- SSSA, Soil & Environmental Quality Awards Committee, 2012

- Biochar Research Advisory Group, Co-Chair, State of California Governor's Office of Planning and Research (also member of Steering Committee), 2016-2020
- Panel Member, USDA-NIFA Grants Program, 2015

University Service (UC Davis)

- Office of Research, Inductively Coupled Plasma Mass Spectroscopy (ICP-MS) Faculty Advisory Committee (FAC), 2020-present
- College of Agriculture and Environmental Sciences (CAES) Faculty Executive Committee (FEC), 2018-2021 (Secretary 2019-2020)
- CAES FEC Budget Subcommittee (2020-2021)
- CAES Graduate Education Committee, 2018-2021
- CAES Academic and Strategic Planning Committee, Fall 2015
- Graduate Council Program Review Committee, 2018-2019
- Chair, Graduate Group in Horticulture and Agronomy Review Committee, 2020
- Review Committee, Undergraduate Major in Geology, Winter 2016
- Chair, Soils and Biogeochemistry Graduate Group (SBG), 2016-2019
- SBG Graduate Adviser, 2013-2019
- SBG Executive Committee, 2009-2019
- SBG Masters Plan II Committee, 2009-present
- SBG Admissions Committee, 2009-2013, 2016-2019
- Ag. and Environ. Chem. Graduate Adviser, 2012-present
- Ag. and Environ. Chem. Graduate Group Executive Committee, 2010-2016
- Ag. and Environ. Chem. Graduate Group Admissions Committee, 2009-2016
- LAWR Executive Committee, 2018-present
- LAWR Space Committee, 2013-present
- Chair, LAWR Search Committee for Assistant Professor in Soil Biophysics, 2016-2017
- LAWR Search Committee for Assistant Nutrient Management Specialist in Cooperative Extension, 2013-2014.
- LAWR Safety & Equipment Committee. 2009-present
- LAWR Seminar Committee, Chair. 2009-2010