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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
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 addresses a wide-range of biogeochemical processes at solid-liquid interfaces in the soil and water environment. Examples of my research interests include: (1) examining transport and degradation mechanisms for pharmaceuticals, nanoparticles, hormones, and personal care products in soil and water; (2) evaluating the potential of biochar soil amendments to impact soil fertility, nutrient retention, greenhouse gas emissions, dust generation, and contaminant transport; (3) examining the potential for recycling of wastewater and waste materials (e.g., biosolids, manure, biochar) in agriculture to maximize benefits and minimize risk; (4) studying the mechanisms of soil enzyme preservation in soils and elucidating their impact on nutrient cycling; and (5) elucidating the role of bacterial surface biomolecules in cell adhesion and biomineralization/dissolution and contaminant transformation reactions.

Teaching

- SAS 5: Soil, Water, and Civilizations, annual (instructor)
- SSC 102: Environmental Soil Chemistry, annual (instructor)
- SSC 202: Advanced Topics in Soil Chemistry, annual (instructor)
- SSC 200: Foundations of Soils and Biogeochemistry, annual (contributor)
- SSC 290: Soils and Biogeochemistry Seminar (regular contributor)

Editorial and Review Activities

- Editorial Board, Associate Editor, *Soil Science Society of America Journal,* 2013-present
- Editorial Board, Associate Editor, *Soil Research,* 2015-present
- Editorial Board, Associate Editor, *California Agriculture,* 2015-present
- Series Editor, *Nature Education Knowledge* for Environmental Science Discipline, 2011-2015.
- Editorial Board Member *ISRN Environmental Chemistry*, 2012-2013
- Manuscript Referee: > 25 journals; >150 manuscripts reviewed
- Proposal Reviewer: > 10 funding organizations; > 50 proposals

Professional Service and Awards

- 2016, Invited participant at White House Office of Science and Technology Policy workshop: Gaining Ground -- Soil as Renewable Resource, Washington, D.C.
- 2016 Best Viticulture Paper by the American Society of Enology and Viticulture (Buelow et al, 2015, AJEV)
- 2016, Invited contributing author to FAO Status of World Soil Resources Report
- Biochar Research Advisory Group, Co-Chair, State of California Governor's Office of Planning and Research (also member of Steering Committee)
- Soil Science Society of America (SSSA), Soil Chem. Awards Committee, Chair. 2012-2013, Member 2014
- SSSA, University Education Material Committee (S597), 2013-present
- SSSA, Marion L. & Christie M. Jackson Soil Science Award Committee (S482), 2013-2014
- SSSA, Soil & Environmental Quality Awards Committee. 2012

University Service (UC Davis)

- Program Chair, Soils and Biogeochemistry Graduate Group (SBG), 2016-present
- SBG Graduate Adviser, 2013-2016
- SBG Executive Committee, 2009-present
- SBG Masters Plan II Committee, 2009-present
- SBG Admissions Committee, 2009-2013
- Campus Reviewer for UC Davis Undergraduate Major in Geology, Winter 2016
- College of Agriculture and Environmental Science (CAES) Academic and Strategic Planning Committee, Fall 2015
- Ag. and Environ. Chem. Graduate Adviser, 2012-present
- Ag. and Environ. Chem. Graduate Group Executive Committee, 2010-present
- Ag. and Environ. Chem. Graduate Group Admissions Committee, 2009-present
- Department of Land, Air, and Water (LAWR) Representative to UCD Representative Assembly, 2015-present
- LAWR Curriculum Committee, 2016-present
- LAWR Space Committee, 2013-present
- Chair of LAWR Search Committee for Assistant Professor in Soil Biophysics, 2016-present
- 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

Publications – Peer Reviewed (50)

Menicucci, A.J., H.J. Spero. J. Matthews, S.J. Parikh. 2017. Influence of Exchangeable Oxygen on Biogenic Silica Oxygen Isotope Data. *Accepted.*

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. *Accepted.*

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. *Accepted.*

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. Agriculture, Ecosystems and Environment. 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. Want, 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. Ecosys. 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. Parikh, 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. Parikh, 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. 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. Enivron. 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. Enivron. 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. Enivron. 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 (11)

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. 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.