

## Jing Yan

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### EDUCATION

#### University of Delaware, Newark, DE

Ph.D. in Plant and Soil Sciences Dec. 2016

Research Advisor: Dr. Yan Jin

Thesis: Quantification and Characterization of Mobile Colloids: Their Potential Role in Carbon Cycling under Varying Redox Conditions

Overall GPA: Graduate: 3.7/4.0

#### Lanzhou University, Lanzhou, China

Bachelor of Engineering in Environmental Engineering July 2009

Overall GPA: 82.5/100    Major: 84.3/100

### RESEARCH EXPERIENCE

#### Soil and Environmental Physics Lab at University of California, Merced

Merced, CA

#### Postdoctoral Research Fellow

May. 2017 ~ present

##### *Rhizosphere Engineering and Management for Sustainable Agriculture Development*

- Explore the utilization of agro-ecological concepts, i.e. plant hydraulic redistribution, to facilitate nutrient extraction and uptake from resource segregated zone in the soil
- Investigate the mechanisms of water, nutrient movement, and transport in rhizosphere by examining plant growth, soil physical properties and developing mathematical models
- Lead a 7-member research team, responsible for project planning, decision making and task assigning
- Contribute to proposal development for future research (submitted to USDA)

##### *Mobilization and Transport of Pyrogenic Organic Matter or Biochar in Soils*

- Investigate the mechanisms of transport and retention of pyrogenic organic matter in agricultural or wildfires-disturbing soils
- Interdisciplinary research collaborated with Dr. Fernanda Santos, Dr. Asmeret Berhe, Dr. Francois Blanchette (University of California, Merced), Dr. Sanjai Parikh (University of California, Davis)
- Develop collaborative research proposal funded by University of California, Merced

***Soil Water Retention Characteristics and its Impacts on Evapotranspiration***

- Model soil evapotranspiration across different soil types by using Hydrus simulation to understand the water vapor exchange in soil-plant-atmosphere continuum in AmeriFlux Network
- Interdisciplinary research collaborated with Dr. Benjamin Sulman (Oak Ridge National Laboratory)

**Environmental Soil Physics Lab at University of Delaware**

**Newark, DE**

**Research Assistant**

**Sep. 2010 ~ Apr. 2017**

***Soil Colloid Mobilization under Different Redox Conditions at Laboratory and Field Scales***

- Systematically studied coupling effects of DOM and redox conditions on soil colloid release
- Identified key processes and mechanisms controlling organo-mineral interactions in colloidal phase under varying redox conditions
- Examined carbon cycles pertaining to colloid release and transport in wetland surface and subsurface flows
- Contributed to the successful application of a \$400K USDA project

***Quantification/Composition Analysis of Small Mobile Natural Colloids from Different Natural Ecosystems***

- Developed innovative methodology to quantify colloids in size fraction of < 0.1, 0.1-0.45, 0.45-1.0  $\mu\text{m}$
- Quantification and characterization of operationally neglected fraction of colloids and colloidal organic carbon in size fraction of < 0.45  $\mu\text{m}$
- Identified the spatial-temporal hotspots that promoting mobilization and transport of colloidal organic carbon or phosphorous
- Examined the impacts of water chemistry and hydrology on colloid mobility and stability
- Led a 3-member research team, responsible for project planning, decision making and task assigning

**Key Lab of Western China's Environmental Systems at Lanzhou University**

**Lanzhou, China**

**Research Assistant**

**Dec. 2008 ~ July 2010**

***Heavy Metal Accumulation in Plants Grown in Hexi Corridor, China***

- Examined Cd, Pb uptake and its effect on plant growth and yield

***Palaeoenvironmental and Palaeoclimatic Changes in Qarhan paleolake, Qaidam Basin, China***

- Determined organic matter content of lake sediment core
- Investigated lake productivity and reconstructed palaeoenvironmental conditions

***Investigation and Analysis of Industrial Solid Waste and Surface Water Pollution Management in Lanzhou, China***

- Investigated the pollution of industrial solid waste, domestic and industrial wastewater
- Modeled the solid waste and wastewater production and designed waste management plans

**TEACHING EXPERIENCE**

**Guest Lecturer, Life and Environmental Sciences, University of California, Merced** **Sep. 2017, Oct. 2018**

- Taught undergraduate level course independently on chapters of Hydrologic Cycle and Water Budget and Infiltration in Hydrology and Climate
- Taught laboratory session in Hydrology and Climate
- Mentored 6 undergraduate students on experimental design and performance

**Teaching Assistant, Department of Plant and Soil Sciences, University of Delaware** **May 2016**

- Taught graduate level course independently on chapter of Soil Temperature and Heat Flow in Environmental Soil Physics
- Mentored multiple visiting scholars on course planning, organizing and presentation skills

**VOLUNTEER & SERVICE EXPERIENCE**

**Institution Service, Life and Environmental Sciences, University of California, Merced** **May. 2017 ~ present**

- Serve as postdoctoral fellow ambassador between ecology, environment and evolution, responsible for chairing and organizing social and intellectual activities to unite different scientific disciplines
- Organize weekly seminar series, Enviro-Lunch, for 2018 Spring, Fall, and 2019 Spring semesters

**Professional Service** **Apr. 2015 ~ present**

- Reviewers for Journal of Environmental Quality, Applied Soil Ecology, Horticulture Tech
- External examiner for a master thesis at the Memorial University of Newfoundland, Canada

**Volunteer Experience** **Sep. 2010 ~ present**

- Lab tour host for Mariposa high school students at the University of California, Merced
- Judge at the Delaware Science Olympiad, responsible for organizing and supervising contests for middle and high school students at the University of Delaware
- Director of the local chapter of Non-profile Environmental Conservation Organization, *Roots and Shoots*, at the Lanzhou University, China, responsible for promoting environmental conservation through interacting with general publics

**SCHOLARSHIPS, HONORS & AWARDS**

- Environmental Systems - Life & Environmental Sciences - Quantitative and Systems Biology

- Postdoctoral Fellowship, University of California, Merced **Oct. 2018**
- 2018-2019 Interdisciplinary Small Grants Program, University of California, Merced **July 2018**
- Top 10 Pitch, Pitch: 90 Elevator Pitch Contest, University of Delaware **Nov. 2015**
- Second Place in Research Poster Presentation Award, Delaware Environmental Institute (DENIN) Graduate Student Research Symposium, University of Delaware **Oct. 2015**
- Excellent Student Senator, Lanzhou University **Oct. 2008**
- Third-Level Scholarship, Lanzhou University **Sep. 2007, 2008**
- Prominent Group in Summer Research Practice, Lanzhou University **Oct. 2007**
- Excellent Membership of Student Association, Lanzhou University **Dec. 2006**
- Second-Level Scholarship, Lanzhou University **Sep. 2006**

## RESEARCH FUNDINGS & PROPOSAL APPLICATIONS

- University of California President's Postdoctoral Fellowship Program (applied independently; under review) **Nov. 2018**
- Environmental Systems - Life & Environmental Sciences - Quantitative and Systems Biology Postdoctoral Fellowship, internally funded by University of California, Merced **Oct. 2018**
- Agriculture and Food Research Initiative program (AFRI), United States Department of Agriculture (USDA)- The National Institute of Food and Agriculture (NIFA) (Not PI; contributing to proposal development; provision of preliminary data; under review) **Aug. 2018**
- 2018-2019 Interdisciplinary Small Grants Program, internally funded by University of California, Merced (developed collaborative proposal and applied independently) **July 2018**
- AFRI, externally funded by USDA - (Not PI; Researcher performing the research) **May 2017**
- Professional Development Award, internally funded by University of Delaware **Apr. 2014, Dec. 2015**
- Young Scientists Travel Award, externally funded by European Geosciences Union **Jan. 2014**
- Quality Grant Program (NIWQP), externally funded by USDA-NIFA (Not PI; contributing to proposal development; provision of preliminary data) **May 2013**
- Christina River Basin Critical Zone Observatory (CRB-CZO) project, externally funded by the National Science Foundation (NSF) (Not PI; Researcher performing the research) **Sep. 2010**

## PUBLICATIONS

1. Jing Yan, Teamrat Ghezzehei, "Engineering the Rhizosphere: a Novel Agro-ecological Approach on Nutrient Loss Reduction," *In revision*.
2. Jing Yan, Ronald Manelski, Bruce Vasilas, Yan Jin, "Colloid Mobilization and its Effects on Biogeochemical Cycling of Organic Carbon in Wetlands with Different Hydroperiods," *In revision*.
3. Jing Yan, Deb Jaisi, Yan Jin, "Spatial-temporal Investigation of Natural Colloids and Colloidal

Inorganic Phosphorus in the Chesapeake Bay,” *In revision*.

4. Weila Li, Jing Yan, Yan Jin, “Transport of Soil Colloids and its Relation to Biogeochemical Cycling of Organic Carbon under Dynamic Redox Conditions,” *To be submitted soon*.
5. Mohammad Zafar Afsar, Jing Yan, Yan Jin, “Redox Oscillations Enhance Destabilization and Mobilization of Protected Colloidal Soil Organic Carbon,” *Submitted to Environmental Science & Technology under review*.
6. Chun Liu, Asmeret Berhe, Guangming Zeng, Jing Yan, Hao Peng, Haibing Xiao, Danyang Wang, “Identifying the sources of eroded organic matter in sediments using multiple tracers on the Loess Plateau of China in the context of soil erosion and management practice,” *Submitted to Land Degradation & Development under review*.
7. Jing Yan, Ronald Manelski, Bruce Vasilas, Yan Jin, “Mobile Colloidal Organic Carbon: an Underestimated Carbon Pool in Global Carbon Cycles?” *Frontiers in Environmental Science*, 2018, 6:148. DOI: 10.3389/fenvs.2018.00148.
8. Jing Yan, Xia Meng, Yan Jin, “Size-dependent Turbidimetric Quantification of Soil Colloids,” *Vadose Zone Journal*, 2017, 16(5). DOI: 10.2136/vzj2016.10.0098.
9. Jing Yan, Volha Lazouskaya, Yan Jin, “Soil Colloid Release Affected by DOM under Different Redox Conditions,” *Vadose Zone Journal*, 2016, 15(3). DOI: 10.2136/vzj2015.02.0026.
10. Dengjun Wang, Deb P. Jaisi, Jing Yan, Yan Jin, Dongmei Zhou, “Transport and Retention of Polyvinylpyrrolidone-coated Silver Nanoparticles in Natural Soils,” *Vadose Zone Journal*, 2015, 14(7). DOI: 10.2136/vzj2015.01.0007.
11. Heyong Zhu, Taibao Yang, Biao Zeng, Jing Yan, “Current Pollution and Control Countermeasures of Industrial Solid Waste in Lanzhou,” *Safety and Environmental Engineering*, 2011, 18(4), pp. 77-80. (In Chinese)
12. Xiuna Wang, Taibao Yang, Jing Yan, Shan Jiang, Qingsen Jin, “Characteristic analysis and prediction for water pollution in Lanzhou City,” *Water Resources Protection*, 2011, 27(6), pp. 32-35. (In Chinese)
13. Jing Yan, Taibao Yang, “The Preliminary Pollution Investigation and Control on Surface Drinking Water in Lanzhou,” *The Doctoral Forum of China on Earthquake Disasters Environment Research and Sustainable Development in Western China*, pp. 395-398, 2008. (In Chinese)
14. Yilin Wang, Taibao Yang, Jing Yan, “The Pollution Control Countermeasures of Industrial Solid Waste of Lanzhou,” *The Doctoral Forum of China on Earthquake Disasters Environment Research and Sustainable Development in Western China*, pp. 403-407, 2008. (In Chinese)

## PRESENTATIONS

1. [Poster] Fernanda Santos, Jing Yan, Teamrat Ghezzehei, Francois Blanchette, Jeffrey Bird, Asmeret Berhe, “Mobility of Pyrogenic Organic Matter in Sorption Experiments,” *Soil Science Society of America International Soils Meeting, San Diego, CA*, Jan.6 -9, 2019.
2. [Oral] Jing Yan, Teamrat Ghezzehei, “Roots bridge water to nutrients: a novel approach on nutrient loss reduction,” *Soil Science Society of America International Soils Meeting, San Diego, CA*, Jan.6 -9, 2019.

3. [Oral] Benjamin Sulman, Jing Yan, Teamrat Ghezzehei, "Why (and how) to determine soil water retention curves for Ameriflux sites," *2018 AmeriFlux PI Meeting*, Bloomington, IN, Oct. 22-23, 2018.
4. [Poster] Jing Yan, Teamrat Ghezzehei, "Roots bridge water to nutrients: a novel agro-ecological approach on nutrient loss reduction," *2018 California Department of Food and Agriculture's Fertilizer Research and Education Program (FREP) and the Western Plant Health Association (WPHA)*, Seaside, CA, Oct. 22-24, 2018.
5. [Poster] Jing Yan, Teamrat Ghezzehei, "Roots bridge water to nutrients: a novel approach on nutrient loss reduction," *European Geosciences Union, 2018 Annual Meeting*, Vienna, Austria, Apr. 8-13, 2018.
6. [Poster] Mohammad Zafar Afsar, Jing Yan, Yan Jin, "Colloid Mobilization and Biogeochemical Cycling of Organic Carbon in Wetlands," Project Director's meeting for *USDA National Institute of Food and Agriculture (NIFA) programs related to Water and Agroecosystems (NIWQP and AFRI PD's Meeting)*, Arlington, VA, Jan 30, 2018.
7. [Oral] Jing Yan, Teamrat Ghezzehei, "Roots Bridge Water to Nutrients: a Study of Utilizing Hydraulic Redistribution through Root Systems to Extract Nutrients in the Dry Soils," *Annual Meeting of the W-3188 Multi-State Research Project: Soil, Water, and Environmental Physics across Scales*, Las Vegas, NV, Jan. 2-3, 2017.
8. [Oral] Jing Yan, Teamrat Ghezzehei, "Roots Bridge Water to Nutrients: a Study of Utilizing Hydraulic Redistribution through Root Systems to Extract Nutrients in the Dry Soils," *American Geophysical Union, Fall Meeting*, New Orleans, LA, Dec. 11-15, 2017.
9. [Oral] Yan Jin, Mohammad Afsar, Jing Yan, "Quantification and Characterization of Colloidal Organic Carbon Released Under Oscillating Water Content and Redox Conditions," *Soil Science Society of America International Annual Meeting*, Tampa, FL, Oct. 22-25, 2017.
10. [Oral] Jing Yan, Ronald Manelski, Bruce Vasilas, Yan Jin, "Dynamic Release and Transport of Colloids and Colloidal Organic Carbon in a Seasonally Saturated Wetland," *Annual Meeting of the W-3188 Multi-State Research Project: Soil, Water, and Environmental Physics across Scales*, Las Vegas, NV, Jan. 2-4, 2017.
11. [Poster] Jing Yan, Ronald Manelski, Bruce Vasilas, Yan Jin, "Dynamic Release and Transport of Colloids and Colloidal Organic Carbon in a Seasonally Saturated Wetland," *American Geophysical Union, Fall Meeting*, San Francisco, CA, Dec. 12-16, 2016.
12. [Oral] Ronald Manelski, Bruce Vasilas, Yan Jin, Jing Yan, "Bridging the Scale: Connecting the Colloid Scale to Hydrodynamic Characteristics," *Soil Science Society of America International Annual Meeting*, Phoenix, AZ, Nov. 6-9, 2016.
13. [Poster] Jing Yan, Xia Meng, Yan Jin, "Size-dependent Turbidimetric Quantification of Mobile Colloids in Field Samples," *American Geophysical Union, Fall Meeting*, San Francisco, CA, Dec. 14-18, 2015.
14. [Oral] Mohammad Zafar Afsar, Jing Yan, Yan Jin, "Mobilization and Release of Colloidal Carbon from a Soil Column under Redox Oscillation Condition," *American Geophysical Union, Fall Meeting*, San Francisco, CA, Dec. 14-18, 2015.
15. [Poster] Jing Yan, Xia Meng, Yan Jin, "Size-based Fractionation and Quantification of Mobile

- Colloids and Colloidal Organic Carbon in Field Samples," *Soil Science Society of America International Annual Meeting*, Minneapolis, MN, Nov. 15-18, 2015.
16. [Oral] Jing Yan, "Soil Carbon Stabilization and its Impacts on Global Climate Change" *The Pitch: 90 Elevator Pitch Contest*, University of Delaware, Newark, DE, Nov. 12, 2015.
  17. [Poster] Jing Yan, Xia Meng, Yan Jin, "Size Fractionation and Quantification of Mobile Colloids and Organic Carbon in Field Samples," *DENIN Graduate Student Research Symposium*, University of Delaware, Newark, DE, Oct. 8, 2015.
  18. [Oral] Jing Yan, "Soil Colloid and Colloid-facilitated Transport of Contaminants" *The Pitch: 90 Elevator Pitch Contest*, University of Delaware, Newark, DE, Nov. 12, 2014.
  19. [Invited Oral] Yan Jin, Jing Yan, "Soil Colloid Release and Stability Affected by Redox Conditions and Dissolved Organic Matter," *Chinese Soil Physics Annual Conference*, Guilin, China, Aug. 8-10, 2014.
  20. [Poster] Jing Yan, Ronald Manelski, Bruce Vasilas, Yan Jin, "Investigation of Colloid Mobilization and Biogeochemical Cycling of Organic Carbon, Nitrogen and Phosphorous in Wetlands," Project Director's meeting for *USDA National Institute of Food and Agriculture (NIFA) programs related to Water and Agroecosystems (NIWQP and AFRI PD's Meeting)*, Arlington, VA, Oct 29-31, 2014.
  21. [Oral] Jing Yan, Volha Lazouskaya, Yan Jin, "Quantification and Composition Analysis of Small Mobile Colloids from Different Aquatic Ecosystem," *European Geosciences Union General Assembly*, Vienna, Austria, Apr. 27-May 2, 2014.
  22. [Oral] Jing Yan, Volha Lazouskaya, Yan Jin, "Soil Colloid Release and Stability Affected By DOM under Different Redox Conditions," *Soil Science Society of America International Annual Meeting*, Tampa, FL, Nov. 3-6, 2013.
  23. [Poster] Jing Yan, Volha Lazouskaya, Yan Jin, "Soil Colloid Release and Stability Affected by DOM under Different Redox Conditions," *V<sup>th</sup> Plant and Soil Sciences Symposium*, Longwood Gardens, Kennett Square, PA, May 28, 2013.
  24. [Invited Oral] Jing Yan, Volha Lazouskaya, Yan Jin, "Soil Colloid Release and Stabilization under Different Redox Conditions and Effect of DOM," *Department of Plant & Soil Sciences Fall Seminars*, University of Delaware, Newark, DE, Nov. 2, 2012.
  25. [Poster] Jing Yan, Volha Lazouskaya, Deb Jaisi, Kirk Czymmek, Shreeram Inamdar, and Yan Jin, "Quantification and Characterization of Small Mobile Soil Colloids: Their Potential Role in Carbon Cycling," *DENIN Research Symposium*, University of Delaware, Newark, DE, Jan. 12, 2012,
  26. [Poster] Jing Yan, Yan Jin, Kirk Czymmek, Shreeram Inamdar "Quantification and Characterization of Small Mobile Soil Colloids: Their Potential Role in Carbon Cycling," *American Geophysical Union, Fall Meeting*, San Francisco, CA, Dec. 5-9, 2011.
  27. [Oral] Jing Yan, Volha Lazouskaya, Deb Jaisi, Kirk Czymmek, Shreeram Inamdar, Weinan Pan, Yan Jin, "Quantification/Composition Analysis of Small Mobile Soil Colloids: Implications in Colloid Mobilization and Carbon Cycling," *International Workshop on Design of Global Environmental Gradient Experiments using International CZO Networks*, University of Delaware, DE, Nov. 8-10, 2011.
  28. [Oral] Jing Yan, Yan Jin, "Carbon Mineral Complexes and Colloid in the Groundwater," *CRB-CZO*

*Scientist Gathering Meeting*, Stroud Water Research Center, Avondale, PA, Feb 2, 2011.