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EDUCATION AND TRAINING

1998 Ph.D., Environmental Engineering, Johns Hopkins University
1994 M.S., Low-Temperature Aqueous Geochemistry, University of Alabama
1984 M.E., Hydrogeochemistry, Zhejiang University, China
1982 B.S., Geology, Zhejiang University, China

RESEARCH AND PROFESSIONAL EXPERIENCE

2006-present, **Scientist (Level V)**, Geochemistry group, Fundamental and Computational Science Directorate, PNNL, Richland, Washington, *Research on fundamental mechanisms governing the dynamics of biotransformation of natural organic carbon and nitrate, and geochemical and biogeochemical transformation of metals and radionuclide contaminants (U, Tc, Cr, As) in soils and sediments; establishment of genome-informed, microbial community based kinetic models describing microbial and biogeochemical processes in groundwater/soil/sediment systems; and development of unified theories and multi-scale models for describing water flow and biogeochemical reactive transport of solutes and contaminants in heterogeneous soils, sediments, and ecological systems.*

2002-2006, **Senior Research Scientist (Level IV)**, Geochemistry, Fundamental and Computational Science Directorate, PNNL, Richland, Washington, *Research on the kinetics of biogeochemical redox transformation of metals and radionuclides in subsurface sediments, modeling of coupled biogeochemical reactions with diffusive mass transfer.*

2000-2002, **Senior Research Scientist (Level III)**, Environmental Dynamics and Simulations, Environmental Molecular Science Laboratory, PNNL, Richland, Washington, *Research on microbial reduction of iron minerals focusing on development of biokinetics for describing microbial growth and respiration; development of multi-site equilibrium and kinetic models of radionuclides sorption (Cs and Sr).*

1998-2000, **Postdoctoral Research Fellow**, Environmental Dynamics and Simulations, Environmental Molecular Science Laboratory, PNNL, Richland, Washington, *Research on modeling microbial reduction of iron minerals and uncertainty analysis of biokinetics model.*

SELECTED PUBLICATIONS *(h-index of 32 from 120 publications)*

Yang X, C Liu, Y Fang, CR Hinkle, H Li, VL Bailey, and B Bond-Lamberty, 2015, Simulations of ecosystem hydrological processes using a unified multi-scale model, *Ecological Modelling* 296:93-101. doi:10.1016/j.ecolmodel.2014.10.032

Liu C, Shang J, Shan H, and Zachara JM, 2014, Effect of subgrid heterogeneity on scaling geochemical reactions: A case of U(VI) desorption, *Environ. Sci. Technol.*, doi:10.1021/es404224j.

Kerisit SN and C Liu, 2014, Molecular dynamics simulations of uranyl and uranyl carbonate adsorption at alumino-silicate surfaces, *Environ. Sci. Technol.*, 48, 3899-3907.

Zhang X, C Liu, BX Hu, G Zhang, 2014, Uncertainty analysis of multi-rate kinetics of Uranyl desorption from sediment, *J. Contam. Hydrol.*, 156, 1-15.

Shang J, C Liu, Z Wang, and J Zachara, 2014, Long-term kinetics of U(VI) desorption from Sediments, *Water Resour. Res.*, doi:10.1002/2013WR013949.

Ma, R, C Liu, J Greskowiak, H Prommer, C Zheng and JM Zachara. 2014. Influence of calcite on uranium(VI) reactive transport in the groundwater-river mixing zone. *J. Contam. Hydrol.*, 156, 27-37.

Yang X, C Liu, J Shang, Y Fang, and V Bailey, 2014, A unified multiscale model for pore-scale flow simulations in soils, *Soil Soc. Sci. Am. J.*, doi:10.2136/sssaj2013.05.0190.

Wang D, C Su, C Liu, B Gao, Y Wang, X Hao, D Zhou, and 2014, Transport of fluorescently labeled hydroxyapatite nanoparticles in saturated granular media at environmentally relevant concentrations of surfactants, *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 457, 58-66

Ma R, C Zheng, C Liu, J Greskowiak, H Prommer, and J M Zachara, 2014, Assessment of Controlling Processes for Field-Scale Uranium Reactive Transport under Highly Transient Flow Conditions, *Water Resour. Res.*, 50, doi:10.1002/2013WR013835

Weng H-X, X-W Ma, F-X Fu, J-J Zhang, Z Liu, L-X Tian, C Liu, 2014, Transformation of heavy metal speciation during sludge drying: mechanistic insights, *J. Hazard. Mater.* 265, 96-103.

Wang Z, JM Zachara, J Shang, C Jeon, J Liu, and C Liu, 2014, Investigation of U(VI) adsorption in quartz-chlorite mineral mixtures, *Environ. Sci. Technol.*, 48, 7766-7773, DOI: 10.1021/es500537g

Liu C, J Shang, SN Kerisit, and JM Zachara. 2013. Scale-dependent rates of uranyl surface complexation reaction in sediments. *Geochim. Cosmochim. Acta*, 105, 326-341.

Shang J, C Liu, and Z Wang**,** 2013. Transport and retention of engineered nanoporous particles in porous media: Effects of concentration and flow dynamics, *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 417, 89-98

Zhang C, Liu C, Shi Z., 2013 Micromodel investigation of transport effect on the kinetics of reductive dissolution of hematite, *Environ. Sc. Technol*., 47, (9) 4131-4139.

Kerisit S. and C Liu, 2013, Aqueous uranyl(VI) cation: Structure, kinetics, and thermodynamics from an atomistic potential model. *Phy. Chem. A* 117, 6421-6432.

Stoliker DL, C Liu, DB Kent, and JM Zachara. 2013. Characterizing particle-scale equilibrium adsorption and kinetics of uranium(VI) desorption from U-contaminated sediments, *Water Resour. Res.*, 49, 1-15, doi:10.1002/wrcr.20104.

Fang Y, M Huang, C Liu, H Li, LR Leung, 2013, A generic biogeochemical module for Earth System Models, *Geosci. Model Dev.*, 6, 1997-1988.

Liu J, C I Pearce, C Liu, Z Wang, L Shi, E Arenholz, and K M Rosso, 2013, $Fe_{3-x}Ti_xO_4$ Nanoparticles as Tunable Probes of Microbial Metal Oxidation, *J. Am. Chem. Soc.*, DOI: 10.1021/ja4015343.

SYNERGISTIC ACTIVITIES

- Elected Fellow of Geological Society of America (GSA), 2011
- Editor-in-Chief and editorial board member for 4 journals in Geochemistry and Biotechnology.
- Proposal reviewer for funding agencies: Department of Energy, National Science Foundation, and American Chemical Society American Petroleum Institute.
- Peer-reviewer for over 40 professional journals in Earth and Environmental sciences