Amrita Bhattacharyya, PhD

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EDUCATION

PhD: Soil Chemistry, **Pennsylvania State University**, **USA** (December 2012)

MS: Soil Chemistry, **University of Calcutta, India** (2007)

BS: Chemistry (Honors); Physics and Mathematics (Minors), **University of Calcutta, India** (2004)

EMPLOYMENT HISTORY AND RESEARCH EXPERIENCE

Aug 2022 – Present	**Assistant Professor, Department of Chemistry, University of San Francisco**
Jul 2018 — Dec 2021	Project Scientist, Lawrence Berkeley National Laboratory
Feb 2020 — Jul 2022	Research Fellow, California State University East Bay
Jul 2015 — Jun 2018	Postdoctoral Fellow, Lawrence Berkeley National Laboratory
Mar 2013 — Jun 2015	Postdoctoral Fellow, Colorado State University
Aug 2008 — Dec 2012	Graduate Research Assistant, Pennsylvania State University

TEACHING AT USF

- CHEM 111 (General Chemistry I)
- CHEM 260 (Analytical Chemistry)

RESEARCH INTERESTS

- Environmental geochemistry problems driven by energy- and climate-related questions.
- Influence of organic matter-mineral interactions on carbon degradability.
- Impact of wildfires on biogeochemistry of terrestrial ecosystems.
- Effects of natural organic matter on metal/radionuclide sorption, release and transport behavior.

PUBLICATIONS

Total citations: 336, h-index: 8, i10-index: 8 (Source: Google Scholar)

- **Bhattacharyya, A.**, Pett-Ridge, J. et al. Redox dynamics shape the fate of plant carbon in wet tropical soil: an integrated microscale (STXM-SIMS) and system level analysis. *Environmental Science & Technology (in review)*

- Rowley, M.C., Nico, P.S., Bone, S.E., Marcus, M.A., Pegoraro, E.F., Castanha, C., Kang, K., **Bhattacharyya, A.**, Torn, M., Peña, J. Association between soil organic carbon and calcium in acidic grassland soils from Point Reyes National Seashore, CA. *(in review)*
- Sokol, N.W., Foley, M.M., Blazewicz, S.J., **Bhattacharyya**, A., Estera-Molina, K., Firestone, M., Greenlon, A., Hungate, B.A., Kimbrel, J., Liquet, J., Lafler, M., Marple, M., Nico, P.S., Slessarev, E., Pett-Ridge, J. Divergent microbial traits influence the transformation of living versus dead root inputs to soil carbon. *(in review)*
- **Bhattacharyya, A.,** Kukkadapu, R.K., Bowden, M., Pett-Ridge, J. and Nico, P. (2022) Fast redox switch leads to rapid transformation of goethite in humid tropical soils: A mossbauer spectroscopy study. *Soil Science Society of America Journal, 86*(2), 264-274.
- Cabugao, K.G.M., Gushgari-Doyle, S., Chacon, S. S., Wu, X., **Bhattacharyya, A.**, Bouskill, N., and Chakraborty, R. (2022) Characterizing Natural Organic Matter Transformations by Microbial Communities in Terrestrial Subsurface Ecosystems: A Critical Review of Analytical Techniques and Challenges. *Frontiers in Microbiology, 13:86489.*
- Yuan, X., Liu, T., Fox, P., **Bhattacharyya, A.**, Dwivedi, D., Williams, K.H., Davis, J.A., Waite, T.D. and Nico, P.S. (2022) Production of hydrogen peroxide in an intra-meander hyporheic zone at East River, Colorado. *Scientific Reports*, *12*(1), pp.1-10.
- Bates, C.T. and **Bhattacharyya, A.,** et al. (2022) Conversion of marginal land into switchgrass conditionally accrues soil carbon but reduces methane consumption. *The ISME Journal*, *16*(1), pp.10-25.
- Lin, Y., and **Bhattacharyya, A.**, et al. (2021) Differential effects of redox conditions on the decomposition of litter and soil organic matter. *Biogeochemistry,* 1-15.
- Dong, W., **Bhattacharyya, A**., et al. (2020) Geochemical controls on release and speciation of Fe (II) and Mn(II) from hyporheic sediments of East River, Colorado. *Frontiers in Water*, **1**, 1-13.
- **Bhattacharyya, A.**, et al. (2019) Ligands representing important functional groups of natural organic matter facilitate Fe redox transformations and resulting binding environments *Geochimica et Cosmochimica Acta,* **251***,* 157-175.
- **Bhattacharyya, A.,** et al. (2018) Redox fluctuations control the coupled cycling of iron and carbon in tropical forest soils. *Environmental Science and Technology,* **52** (24), 14129-14139.
- Lin, Y., **Bhattacharyya, A.**, Campbell, A.N., Nico, P.S., Pett-Ridge, J. and Silver, W.L. (2018) Phosphorus fractionation responds to dynamic redox conditions in a humid tropical forest soil. *Journal of Geophysical Research: Biogeosciences*, *123*(9), pp.3016-3027.
- **Bhattacharyya, A.**, et al. (2018) Iron speciation in peats: Chemical and spectroscopic evidence for the co-occurrence of ferric and ferrous iron in organic complexes and mineral precipitates. *Organic Geochemistry,* **115,** 124-137.
- **Bhattacharyya, A.,** et al. (2017) Biogenic non-crystalline U (IV) revealed as major component in uranium ore deposits. *Nature Communications*, **8**, 15538.
- Percak-Dennett, E., **Bhattacharyya, A.**, et al. (2017) Microbial acceleration of aerobic pyrite oxidation at circumneutral pH. *Geobiology* 00:1–14.
- **Bhattacharyya, A.**, et al. (2013) Redox interactions between Fe and cysteine: Spectroscopic studies and multiplet calculations. *Geochimica et Cosmochimica Acta*, **122**, 89-100.

MEETING ABSTRACTS (*presenting author in last three years included)

- **Bhattacharyya, A.,** McFarlane, K., Slessarev, E., Nico, P.S., Firestone, M. and Pett-Ridge, J. (2021) Deeply rooted: Impact of Switchgrass Cultivation on Carbon Turnover in Marginal Soils. (Oral Presentation, American Geophysical Union Meeting, New Orleans, LA)
- **Bhattacharyya, A.,** Massey, M., Grangeon, S., Tournassat, C. and Tinnacher, R.M. (2021) Molecular-level insights on uranium surface speciation in engineered barrier systems. (Oral Presentation, Virtual Goldschmidt Annual Meeting)
- **Bhattacharyya, A.,** Kukkadapu, R., Campbell, A.N., Lin, Y., Bowden, M., Silver, W., Nico, P.S. and Pett-Ridge, J. (2020) Rapid Reduction Leads to Changes in Iron Oxide Crystallinity in Humid Tropical Soils. (Poster Presentation, Virtual American Geophysical Union Meeting)
- **Bhattacharyya, A.**, Campbell, A.N., Weber, P., Nico, P.S. and Pett-Ridge, J. (2020) The impact of redox fluctuations on soil organic matter decomposition in tropical forest soils (Oral Presentation, Virtual Goldschmidt Meeting)
- **Bhattacharyya, A.**, Dewey, C., Nico, P.S. and Pett-Ridge, J. (2019) Abiotic reduction-complexation reactions of iron with natural organic matter at circumneutral pH (Oral Presentation, American Geophysical Union Meeting, San Francisco, CA).
- **Bhattacharyya, A.**, McFarlane, K., Nico, P.S., Nuccio, E.E., Firestone, M. and Pett-Ridge, J. (2019) Impacts of depth and soil type on carbon turnover and mineral-organic interactions under switchgrass cultivation (Oral Presentation, International Soil Science Meeting, San Diego, CA).

SYNERGISTIC ACTIVITIES

- **Invited Speaker**: Stanford Synchrotron Radiation LightSource (SSRL) Annual User's Meeting, 2015, Stanford, CA. Elucidating the role of non-crystalline U(IV) in U roll-front formation.
- **Session Convener**:
  - Biogeosciences Session: Microbe-mineral-organic interactions in terrestrial ecosystems, Virtual American Geophysical Union Meeting, 2020
  - Division of Soil and Environmental Quality: Session: Environmental Impacts of Hydraulic Fracturing, ISR U Mining, and Alternative Energy Production, Soil Science Society of America Annual Meeting, 2014, Long Beach, CA, USA.
- **Co-chair of Women in Science and Engineers' Council (WSEC)** Networking Committee, Berkeley Lab (2017- 2019); Active member of WSEC and **IDEA (Inclusion, Diversity, Equity and Accountability)** communities at Berkeley Lab.
- **Judge:** Oral and poster presentations for Soil Chemistry Division, Soil Science Society of America Annual Meetings
- **Publicity Chair**: Environmental Chemistry Student Symposium, Penn State University, 2012.
- **Workshop Instructor**: Math Options STEM workshop for 7th and 8th grade girls, 2010-2012.
- **Judging Coordinator**: Environmental Chemistry Student Symposium, Penn State University, 2011.
- **Reviewer:** Contribute reviews to journals Nature Communications, Environmental Science and Technology, Clays and Clay Minerals, Geochimica et Cosmochimica Acta, NSF proposals, Minerals, Chemical Geology

AWARDS AND SCHOLARSHIPS

- Graduate Research Assistantship - NSF, Pennsylvania State University, August, 2008-July 2010
- Graduate Research Assistantship - Pennsylvania State University, August, 2010- December, 2012
- Best Oral Presentation – MS Dissertation, University of Calcutta, 2007

PROFESSIONAL AFFILIATIONS

American Chemical Society

Geochemical Society

Soil Science Society of America

American Geophysical Union

LANGUAGES

English	Highly proficient
Bengali	Native speaker
Hindi	Highly proficient