

DR. JEFFREY PAULO H. PEREZ

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EDUCATION

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- 2016 – 2020 PhD in Earth Sciences (Geochemistry), Freie Universität Berlin, Germany
Summa cum laude, Doctoral defence: Jan. 17, 2020
 Dissertation: "Green rust formation and reactivity with arsenic species"
 Supervisor: Liane G. Benning
- 2014 – 2016 MSc in Environmental Sanitation, Ghent University, Belgium
Summa cum laude (1st in class, top 5%)
- 2007 – 2012 BSc in Chemical Engineering, University of the Philippines Los Baños, Philippines
Cum laude (5th in class, top 10%), 5-year undergraduate program

POSITIONS AND EXPERIENCE

Technische Universität Berlin, Berlin, Germany, and **Aarhus University**, Roskilde, Denmark

Since 01.2026 DAAD-PRIME Research Fellow
 Chair of Soil Science, TUB | Head: Prof. Dr. Carsten W. Müller
 Environmental Microbiology Section, AU | Head: Prof. Dr. Alexandre Magno Barbosa Anesio

GFZ Helmholtz Centre for Geosciences, Potsdam, Germany

Since 11.2025 Tenured Scientist and Workgroup Leader of Environmental Mineralogy and Biogeochemistry
 Interface Geochemistry Section (*on temporary leave since 01.2026*)

11.2022 – 10.2025 Discovery Research Fellow, Organic and Earth Surface Geochemistry Section
 Head: Prof. Dr. Christian Hallmann

02.2020 – 10.2022 Postdoctoral Scientist, Interface Geochemistry Section
 Supervisor: Prof. Dr. Liane G. Benning

10.2016 – 01.2020 Doctoral Research Fellow (MSCA-ITN PhD Fellowship), Interface Geochemistry Section
 Supervisor: Prof. Dr. Liane G. Benning

Universiteit Gent, Ghent, Belgium

09.2015 – 08.2016 MSc thesis student, Laboratory of Analytical Chemistry and Applied Ecochemistry and Centre
 for Ordered Materials, Organometallics and Catalysis
 Supervisor: Prof. dr. ir. Gijs du Laing, Prof. dr. Pascal van der Voort

University of the Philippines Los Baños, Laguna, Philippines

07.2012 – 07.2014 Instructor (non-tenure track), Dept. of Engineering Science, College of Engineering and Agro-
 Industrial Technology

INTERNATIONAL MOBILITY | 13 months total

CNRS Géosciences Environnement Toulouse, Toulouse, France

02.2022 – 03.2022 Stable Isotope Geochemistry group, Host: Dr. Romain Guilbaud
 Simulating iron mineral formation in early Earth oceans and role in regulating phosphorous availability

University of Leeds, Leeds, United Kingdom

01.2022 – 05.2022 Leeds Electron Microscopy and Spectroscopy Centre, Host: Dr. Andy P. Brown
 Revealing arsenic and green rust reactions at nanoscale using STEM-EDX and mono- EELS

University of Copenhagen, Copenhagen, Denmark

10.2017 – 02.2018 NanoGeoScience group, Nano-Science Centre, Host: Dr. Dominique J. Tobler

05.2017 Abiotic transformation of arsenic-bearing ferrihydrite under ferruginous conditions

HONORS and AWARDS

2022	Young Scientist at the 71 st Lindau Nobel Laureate Meeting for Chemistry, selected as one of the 611 participants via a global multi-step selection process
2020	Friedrich-Robert-Helmert-Award, awarded for the best doctoral thesis in GFZ Potsdam
2019	Best Poster Award, Research in Progress 2019 Joint Meeting organised by the Clay Minerals Group (Mineralogical Society of Great Britain and Ireland) and RSC Environmental Chemistry Group
2016	Water Technology Award (2 nd place, Innovation Prize), awarded by Water Circle Belgium for the best master's thesis on water treatment technology in the Flanders Region, Belgium
2016	Environmental Science & Technology Award, awarded by ArcelorMittal and Indaver NV for the best master's thesis from the Faculty of Bioscience Engineering, Ghent University
2012	University President's Medal of Excellence, University of the Philippines System
2012	Medal of Academic Excellence in Engineering, University of the Philippines Los Baños
2012	Medal of Academic Excellence in Science, University of the Philippines Los Baños
2012	Most Outstanding Student Leader in Engineering, University of the Philippines Los Baños

GRANTS and FELLOWSHIPS (as PI or *co-PI) | Total: ~538K EUR to date

2026	DAAD Postdoctoral Researchers International Mobility Experience (PRIME): ~177,000 EUR, a highly competitive international mobility scheme for postdoctoral researchers (<15% success rate)
2026	DAAD Conference Travel Programme: 800 EUR to attend the MinSoc@150 Conference
2026	Royal Society of Chemistry (RSC) Researcher Development and Travel Grant: ~600 EUR to attend the MinSoc@150 Conference
2026	Geo.X Grow Your Idea Network Grant: 5,800 (co-PI)
2024	European Association of Geochemistry (EAG) Early Career Science Ambassador: ~1,200 EUR to attend the 9 th International Symposium of Interactions of Soil Minerals with Organic Components and Microorganisms (ISMOM 2024) in Tsukuba, Japan
2024	GFZ Innovations Expedition Fund for fieldwork in Greenland: 7,500 EUR
2023	RSC Researcher Development and Travel Grant: ~600 EUR to attend the Goldschmidt 2023 Conference
2022	GFZ Discovery Research Fellowship: ~250,000 EUR, a 3-year independent research fellowship
2022	Procope Mobility Grant: 3,800 EUR, awarded by the French Ministry for Foreign Affairs and International Development for research mobility at CNRS GET in Toulouse, France
2022	GFZ Innovations Expedition Fund for fieldwork in Iceland: 10,000 EUR
2022	GFZ Expedition Fund for Synchrotron Beamtime Access: 7,000 EUR (co-PI)
2022	DAAD Research Internship for Science and Engineering (RISE) funding for undergraduate trainee: ~2,800 EUR, 2-month research internship
2022	RSC Researcher Development Grant for early career scientists: ~600 EUR to attend the GeoMinKöln 2022 Conference of DMG and DGGV
2021	GFZ Innovations Expedition Fund for fieldwork in Iceland: 6,500 EUR
2021	Expedition Fund for Synchrotron Beamtime Access: 4,000 EUR (co-PI)
2019	DAAD RISE funding for undergraduate trainee: ~3,200 EUR, 2-month research internship
2019	Geo.X Travel Grant for early career scientist: 2,500 EUR for research mobility at University of Leeds, UK
2018	RSC Researcher Mobility Grant (5,800 EUR) for research mobility at University of Leeds, UK
2018	Conference Travel Grant: 500 EUR for the As2018 Conference in Beijing, China
2017	Workshop Travel Grant: ~400 EUR for the Total Scattering Summer School in Como, Italy
2016	Marie Skłodowska-Curie PhD Fellowship (EU-H2020 MSCA-ITN Metal-Aid)
2014	VLIR-UOS Master's Scholarship: ~34,000 EUR (success rate <10%)
2007	DOST Undergraduate Scholarship, Philippines: ~13,000 EUR (success rate <13%)

FUNDED SYNCHROTRON BEAMTIME | Total awarded beamtime: ~1,768 hours, ~796K EUR

April 2026	Cr and Fe K-edge X-ray absorption spectroscopy (XAS) at ID20-scanning beamline of Diamond Light Source (DLS), UK (120 hours, ~54K EUR)
Feb. 2026	C and Fe K-edge X-ray microspectroscopic imaging (SXM, μ -XANES) at I08 beamline of DLS, UK (168 hours, ~76K EUR)
Dec. 2025	Ce L _{III} -edge XAS at ID20-scanning beamline of Diamond Light Source, UK (120 hours, ~54K EUR)
Sept. 2024	C and Fe K-edge SXM and μ -XANES at I08 beamline of Diamond Light Source, UK (144 hours, ~65K EUR)
June 2024	C and Fe K-edge SXM and μ -XANES at I08 beamline of Diamond Light Source, UK (144 hours, ~65K EUR)
Sept. 2023	Mn and Cr K-edge XAS at BM20 beamline of European Synchrotron Radiation Facility (ESRF), France (144 hours, ~65K EUR)
May 2023	P and Fe K-edge X-ray microspectroscopic imaging (μ -XANES, μ -XRF) at ID21 beamline of ESRF, France (120 hours, ~54K EUR)
Dec. 2022	C and Fe K-edge SXM and μ -XANES at I08 beamline of Diamond Light Source, UK (144 hours, ~65K EUR)
Sept. 2022	Cr and Fe K-edge XAS at BM20 beamline of ESRF, France (144 hours, ~65K EUR)
Nov. 2021	As and Fe K-edge XAS at BM23 beamline of ESRF, France (120 hours, ~54K EUR)
Feb. 2020	As and Fe K-edge XAS at I20-scanning beamline of Diamond Light Source, UK (96 hours, ~43K EUR)
Nov. 2018	As K-edge XAS at BM23 beamline of ESRF, France (112 hours, ~50K EUR)
Sept. 2018	As and Fe K-edge XAS at SUL-X beamline, KARA-KIT Light Source, Germany (120 hours, ~54K EUR)
Feb. 2017	X-ray powder diffraction (XRPD) and pair distribution function (XPDF) at I15 beamline of Diamond Light Source, UK (72 hours, ~32K EUR)

SCIENTIFIC PUBLICATIONS

No. of publications: 35 (12 as first / co-first author) | h-index: 18 | i10-index: 24 (Google Scholar)

No. of citations: 1203 ([Google Scholar](#)), 1002 ([Scopus](#)), 937 ([Web of Science](#))

* – corresponding author, † – co-first author, **bold** – self, underlined – supervised student author

Manuscripts under review and in revision

- **Perez, J.P.H.***, Trivedi, C.B., Chen, Z.C., Stovall, A., Antony, R., Overduin, P.P., Strauss, J., Ellegaard-Jensen, L., Anesio, A.M., Hallmann, C., Gislason, S.R., Benning, L.G. Iron-rich polar wetlands are hotspots for organic carbon export. Under review in *Nature Communications*.
- Forjanes, P., Fernández Díaz, L., Astilleros, J.M., **Perez, J.P.H.**, Paje, M.C., Bahl, C., Griesshaber, E., Schmah, W.W., Benning, L.G. Calcite formation or aragonite preservation? The role of thermal history in the diagenetic pathways of *Arctica islandica* aragonitic skeletons. In revision in *Geology*.
- Wang, C., Steele, A., Benning, L.G., Lee, S., Wirth, R., Schreiber, A., Lu, W., Kaulich, B., Collocho Hurtarte, L.C., **Perez, J.P.H.**, Pommier, A., Cody, G., Herrero Perez, M.J., Strobel, T.A., Rogers, K. Spontaneous mineral-driven electrochemical synthesis of organic matter under Martian conditions. In revision in *Nature Geoscience*. (Preprint: [10.21203/rs.3.rs-8911322/v1](https://doi.org/10.21203/rs.3.rs-8911322/v1)).
- Desmau, M., Couasnon, T., Blukis, R., **Perez, J.P.H.**, Benning, L.G. Quantification of partial oxidation of magnetite to maghemite in aqueous solution using XRD. In revision in *ACS Omega*.
- McCutcheon, J., McQuaid, J.B., Freeman, H.M., **Perez, J.P.H.**, Hawkins, J., Lutz, S., Chevrollier, L.A., Formenti, P., Chevaillier, S., Tranter, M., Benning, L.G. Deposition and accumulation of soot particles on the Greenland Ice Sheet: Implications for albedo and melting. In revision in *Environmental Science & Technology*.

Published peer-reviewed scientific articles

1. **Perez, J.P.H.***, Chan, A.L.H., Mosselmans, J.F.W., Benning, L.G. (2025). Coexisting phosphate controls arsenate speciation and partitioning during Fe(II)-catalyzed ferrihydrite transformation. *ACS Earth & Space Chemistry*, 9(6), 1642-1653. DOI: [10.1021/acsearthspacechem.5c00061](https://doi.org/10.1021/acsearthspacechem.5c00061).

2. Paskin, A., Couasnon, T., Blukis, R., **Perez, J.P.H.**, Reinsch, S., Roddatis, V., Syczewski, M., Benning, L.G. (2025). Temperature-induced phase transitions of vivianite: *In situ* analysis of a redox-driven crystallization. *Inorganic Chemistry*, 64(36), 18227–18236. DOI: [10.1021/acs.inorgchem.5c02399](https://doi.org/10.1021/acs.inorgchem.5c02399).
3. Villegas, V., Rajarajan, A., Funke, E., Mbedim S., Sparmann, S., **Perez, J.P.H.**, Schupp, B., Wolinska, J. (2025). Exposure to polystyrene nanoplastics increases diversity and shifts the microbiome composition of *Daphnia* in both parasite-infected and uninfected hosts. *Environmental Pollution*, 382, 126698. DOI: [10.1016/j.envpol.2025.126698](https://doi.org/10.1016/j.envpol.2025.126698).
4. Forjanés, P., **Perez, J.P.H.**, Berryman, C., Syczewski, M.D., Benning, L.G. (2025). Textural and chemical inheritance during a pseudomorphic double mineral transformation. *Geochemical Perspectives Letters*, 34, 50–56. DOI: [10.7185/geochemlet.2513](https://doi.org/10.7185/geochemlet.2513).
5. Delina, R.E.G., **Perez, J.P.H.***, Roddatis, V.V., Stammeier, J.A., Prieur, D., Scheinost, A.C., Tan, M.M., Garcia, J.J.L., Arcilla, C.A., Benning, L.G. (2025). Immobilization of chromium by iron oxides in nickel-cobalt laterite mine tailings. *Environmental Science & Technology*, 59(11), 5683–5692. DOI: [10.1021/acs.est.4c05383](https://doi.org/10.1021/acs.est.4c05383).
6. Guilbaud, R., Andersen, M.B., Freeman, H.M., **Perez, J.P.H.**, Uhlig, D., Benning, L.G. (2025). Mackinawite partial oxidation to green rust produces a large, abiotic uranium isotope fractionation. *Communications Earth & Environment*, 6(96). DOI: [10.1038/s43247-025-02088-5](https://doi.org/10.1038/s43247-025-02088-5).
7. Corkett, A., Okhrymenko, M., Roddatis, V., Lebedev, O., van Leusen, J., Delina, R.E.G., **Perez, J.P.H.**, Benning, L.G., Dronskowski, R. (2025). The mixed transition-metal cyanamide $\text{MnCr}_2(\text{NCN})_4$. *Inorganic Chemistry*, 64(6), 2886–2896. DOI: [10.1021/acs.inorgchem.4c04997](https://doi.org/10.1021/acs.inorgchem.4c04997).
8. **Perez, J.P.H.***, Tobler, D.J., Benning, L.G. (2024). Synergistic inhibition of green rust crystallization by arsenic and silica. *Environmental Science: Process & Impacts*, 26(3), 632–643. DOI: [10.1039/D3EM00458A](https://doi.org/10.1039/D3EM00458A).
9. Chen, Z., **Perez, J.P.H.***, Smales, G., Blukis, R., Pauw, B., Stammeier, J., Radnik, J., Smith, A., Benning, L.G. (2024). Impact of organic phosphate on the structure and composition of short-range ordered iron nanophases. *Nanoscale Advances*, 6, 2656–2668. DOI: [10.1039/D3NA01045G](https://doi.org/10.1039/D3NA01045G).
10. Delina, R.E.G., **Perez, J.P.H.***, Stammeier, J.A., Bazarkina, E., Benning, L.G. (2024). Partitioning and mobility of chromium in iron-rich laterites from an optimized sequential extraction procedure. *Environmental Science & Technology*, 58(14), 6391–6401. DOI: [10.1021/acs.est.3c10774](https://doi.org/10.1021/acs.est.3c10774). *Featured in the European Synchrotron Radiation Facility (ESRF) Highlights 2024*
11. Wang, C., von Blanckenburg, F., Lian, E., Yang, S., **Perez, J.P.H.**, Wittman, H. (2024). River-to-ocean pathways of beryllium-9 through estuaries. *Geochimica et Cosmochimica Acta*, 370, 89–103. DOI: [10.1016/j.gca.2024.01.029](https://doi.org/10.1016/j.gca.2024.01.029).
12. **Perez, J.P.H.***, Okhrymenko, M., Blukis, R., Roddatis, V., Mayanna, S., Mosselmans, J.F.W., Benning, L.G. (2023). Vivianite-parasymplectite solid solution: A sink for arsenic in ferruginous environments? *Geochemical Perspectives Letters*, 26, 50–56. DOI: [10.7185/geochemlet.2325](https://doi.org/10.7185/geochemlet.2325).
13. Wang, H., Xu, Y., Kumar, A., Knorr, K.-H., Zhao, X., **Perez, J.P.H.**, Sun, G. (2023). Temperature and organic carbon quality control the anaerobic carbon mineralization in peat profiles via modulating microbes: A case study of Changbai Mountain. *Environmental Research*, 237(1), 116904. DOI: [10.1016/j.envres.2023.116904](https://doi.org/10.1016/j.envres.2023.116904).
14. Paskin, A., Couasnon, T., **Perez, J.P.H.**, Lobanov, S., Blukis, R., Reinsch, S., Benning, L.G. (2023). Nucleation and crystallization of ferrous phosphate hydrate via an amorphous intermediate. *Journal of the American Chemical Society*, 145(28), 15137–15151. DOI: [10.1021/jacs.3c01494](https://doi.org/10.1021/jacs.3c01494).
15. Caraballo, M.A., Asta, M.P., **Perez J.P.H.**, Hochella, M. (2022). Past, present and future global influence and technological applications of iron-bearing metastable nanominerals. *Gondwana Research*, 110, 283–304. DOI: [10.1016/j.gr.2021.11.009](https://doi.org/10.1016/j.gr.2021.11.009). [Invited review paper]
16. Mangayayam, M.C., **Perez, J.P.H.**, Alonso-de Linaje, V., Dideriksen, K., Benning, L.G., Tobler, D.J. (2022). Sulfidation extent of nanoscale zerovalent iron controls selectivity and reactivity with mixed chlorinated hydrocarbons in natural groundwater. *Journal of Hazardous Materials*, 431, 128534. DOI: [10.1016/j.jhazmat.2022.128534](https://doi.org/10.1016/j.jhazmat.2022.128534).
17. **Perez, J.P.H.***, Tobler, D.J., Freeman, H.M., Brown, A.P., Hondow, N.S., van Genuchten, C.M., Benning, L.G. (2021). Arsenic species delay structural ordering during green rust sulfate crystallization from ferrihydrite. *Environmental Science: Nano*, 8(10), 2950–2963. DOI: [10.1039/D1EN00384D](https://doi.org/10.1039/D1EN00384D).

18. Figueroa Campos, G.A., **Perez, J.P.H.**, Block, I., Sagu, S.T., Saravia Celis, P., Taubert, A., Rawel, H.M. (2021). Preparation of activated carbons from spent coffee grounds and coffee parchment and assessment of their adsorbent efficiency. *Processes*, 9, 1396. DOI: [10.3390/pr9081396](https://doi.org/10.3390/pr9081396).
19. Krone, L.V., Hampl, F.J., Schwerdthelm, C., Bryce, C., Ganzert, L., Kitte, A., Übernickel, K., Dielforder, A., Aldaz, S., Oses, R., **Perez, J.P.H.**, Sanchez, P., Wagner, D., Weckmann, U., von Blackenburg, F. (2021). Deep weathering in the semi-arid Coastal Cordillera, Chile. *Scientific Reports*, 11, 13057. DOI: [10.1038/s41598-021-90267-7](https://doi.org/10.1038/s41598-021-90267-7).
20. **Perez, J.P.H.***, Schiefler, A.A., Navaz Rubio, S., Reischer, M., Overhue, N.D., Benning, L.G., Tobler, D.J. (2021). Arsenic removal from natural groundwater using 'green rust': Solid phase stability and contaminant fate. *Journal of Hazardous Materials*, 401, 123327. DOI: [10.1016/j.jhazmat.2020.123327](https://doi.org/10.1016/j.jhazmat.2020.123327).
21. Füllenbach, L.C., **Perez, J.P.H.**, Freeman, H.M., Thomas, A.N., Mayanna, S., Parker, J.E., Göttlicher, J., Steininger, R., Radnik, J., Benning, L.G., Oelkers, E.H. (2020). Nanoanalytical identification of siderite dissolution-coupled Pb removal mechanisms from oxic and anoxic aqueous solutions. *ACS Earth & Space Chemistry*, 4, 11, 1966-1977. DOI: [10.1021/acsearthspacechem.0c00180](https://doi.org/10.1021/acsearthspacechem.0c00180).
22. Wang, H.Y., Byrne, J.M., **Perez, J.P.H.**, Thomas, A.N., Göttlicher, J., Höfer H.E., Mayanna, S., Kontny, A., Kappler, A., Guo, H.M., Benning, L.G., Norra, S. (2020). Arsenic sequestration in pyrite and greigite in the buried peat of As-contaminated aquifer. *Geochimica et Cosmochimica Acta*, 284, 107-119. DOI: [10.1016/j.gca.2020.06.021](https://doi.org/10.1016/j.gca.2020.06.021).
23. **Perez, J.P.H.***, Freeman, H.M., Brown, A.P., Van Genuchten, C.M., Dideriksen, K., Tobler, D.J., Benning, L.G. (2020). Direct visualization of arsenic binding on green rust sulfate. *Environmental Science & Technology*, 54, 3297-3305. DOI: [10.1021/acs.est.9b07092](https://doi.org/10.1021/acs.est.9b07092). Featured in the ESRF [Highlights 2020](#).
24. Mangayayam, M.C., **Perez, J.P.H.**, Dideriksen, K., Freeman, H.M., Bovet, N., Benning, L.G., Tobler, D.J. (2019). Structural transformation of sulfidized zerovalent iron and its impact on long-term reactivity. *Environmental Science: Nano*, 6, 3422-3430. DOI: [10.1039/C9EN00876D](https://doi.org/10.1039/C9EN00876D).
25. Hövelmann, J., Stawski, T.M., Freeman, H.M., Besselink, R.B., Mayanna, S., **Perez, J.P.H.**, Hondow, N.S., Benning, L.G. (2019). Struvite crystallization and the effect of Co²⁺ ions. *Minerals*, 9(9), 503. DOI: [10.3390/min9090503](https://doi.org/10.3390/min9090503).
26. Freeman, H.M., **Perez, J.P.H.**, Hondow, N., Benning, L.G., Brown, A.P. (2019). Beam-induced oxidation of green rust monitored by STEM-EELS. *Micron*, 122, 46-52. DOI: [10.1016/j.micron.2019.02.002](https://doi.org/10.1016/j.micron.2019.02.002).
27. **Perez, J.P.H.***, Tobler, D.J., Thomas, A., Freeman, H.M., Dideriksen, K., Radnik, J., Benning, L.G. (2019). Adsorption and reduction of arsenate during the Fe²⁺-induced transformation of ferrihydrite. *ACS Earth & Space Chemistry*, 3(6), 884-894. DOI: [10.1021/acsearthspacechem.9b00031](https://doi.org/10.1021/acsearthspacechem.9b00031).
28. **Perez, J.P.H.*†**, Folens, K.†, Leus, K., Vanhaecke, F., Van Der Voort, P., Du Laing, G. (2019). Progress in hydrometallurgical technologies to recover critical raw materials and precious metals from low-concentrated streams. *Resources, Conservation and Recycling*, 142, 177-188. DOI: [10.1016/j.resconrec.2018.11.029](https://doi.org/10.1016/j.resconrec.2018.11.029). [Review article]
29. **Perez, J.P.H.***, Freeman, H.M., Schuessler, J.A., Benning, L.G. (2019). The interfacial reactivity of arsenic species with green rust sulfate (GR_{SO4}). *Science of the Total Environment*, 648, 1161-1170. DOI: [10.1016/j.scitotenv.2018.08.163](https://doi.org/10.1016/j.scitotenv.2018.08.163).
30. Leus, K., Folens, K., Nicomel, N.R., **Perez, J.P.H.**, Filippousi M., Meledina, M., Dîrtu, M.M., Turner, S., Van Tendeloo, G., Garcia, Y., Du Laing, G., Van Der Voort, P. (2018). Removal of arsenic and mercury species from water by covalent triazine framework encapsulated γ-Fe₂O₃ nanoparticles. *Journal of Hazardous Materials*, 353, 312-319. DOI: [10.1016/j.jhazmat.2018.04.027](https://doi.org/10.1016/j.jhazmat.2018.04.027).
31. Leus, K.†, **Perez, J.P.H.†**, Folens, K., Meledina, M., Van Tendeloo, G., Du Laing, G., Van Der Voort, P. (2017). UiO-66-(SH)₂ as stable, selective and regenerable adsorbent for the removal of mercury from water under environmentally-relevant conditions. *Faraday Discussions*, 201, 145-161. DOI: [10.1039/C7FD00012J](https://doi.org/10.1039/C7FD00012J).

Peer-reviewed extended conference abstracts

1. **Perez, J.P.H.***, Freeman, H.M., Schuessler, J.A., Benning, L.G. (2019). Efficient removal of arsenic species by green rust sulfate (GR_{SO4}). In: Y.G. Zhu, H. Guo, Bhattacharya, P., Ahmad, A., Bundschuh, J. & R. Naidu (eds.) "Environmental Arsenic in a Changing World As2018". Interdisciplinary Book Series: "Arsenic in the

Environment—Proceedings". Series Editors: J. Bundschuh & P. Bhattacharya, CRC Press/Taylor and Francis (ISBN 978-1-138-48609-6), pp. 409-411.

2. **Perez, J.P.H.*†**, Mangayayam, M.C., Navaz Rubio, S., Freeman, H.M., Tobler, D.J., Benning, L.G. (2018). Intercalation of aromatic sulfonates in 'green rust' via ion exchange. *Energy Procedia*, 146, 179-187. DOI: [10.1016/j.egypro.2018.07.023](https://doi.org/10.1016/j.egypro.2018.07.023).

Non-peer-reviewed publications

1. Addicoat, M., Bennett, T., Chapman, K., Denysenko, D., Dincă M., Doan, H., . . . **Perez, J.P.H.**, . . . Yaghi, O. (2017). New directions in gas sorption and separation with MOFs: General discussion. *Faraday Discussions*, 201, 175-194. DOI: [10.1039/C7FD90044A](https://doi.org/10.1039/C7FD90044A). [Discussion Paper]
2. Carraro, F., Chapman, K., Chen, Z., Dincă, M., Easun, T., Eddaoudi, M., . . . Perez, J.P.H., . . . Yaghi, O. (2017). Catalysis in MOFs: General discussion. *Faraday Discussions*, 201, 369-394. DOI: [10.1039/C7FD90046E](https://doi.org/10.1039/C7FD90046E). [Discussion Paper]

Data publications

1. Krone, L.V., Hampl, F.J., Schwerdthelm, C., Bryce, C., Ganzert, L., Kitte, A., Übernickel, K., Dielforder, A., Aldaz, S., Osés, R., **Perez, J.P.H.**, Sanchez, P., Wagner, D., Weckmann, U., von Blackenburg, F. (2021). Physical and geochemical data on a drill core from the semi-arid Coastal Cordillera, Chile. *GFZ Data Services*. DOI: [10.5880/GFZ.3.3.2021.002](https://doi.org/10.5880/GFZ.3.3.2021.002).

SCIENTIFIC PRESENTATIONS | presenting author only

Selected conference contributions († - keynote or invited talk)

1. **Perez, J.P.H.†** Redox-active iron (nano)minerals and their impact on contaminant behaviour in natural and engineered systems. Mineralogical Society at 150: Past Discoveries and Future Frontiers, Mineralogical Society of the UK and Ireland, June 23-25, 2026, oral presentation [keynote talk].
2. **Perez, J.P.H.**, Chen, Z., Forjanes, P.F., Linke, T., Stammeier, J.A., Antony, R., Colochio Hurtarte, L.C., Kazemian, M., Kaulich, B., Gíslason, S., Hallmann, C., Benning, L.G. The dual role of iron minerals in carbon stabilisation and export in polar wetlands. DMG Section Meeting 2026: Petrology/Petrophysics & Geochemistry, June 12-13, 2026, oral presentation.
3. **Perez, J.P.H.†** Iron-mediated cycling and export of organic carbon from polar wetlands. Glacial flour as a source of nutrients workshop, British Antarctic Survey, March 17-19, 2026, oral presentation [invited talk].
4. **Perez, J.P.H.**, Trivedi, C., Chen, Z.C., Antony, R., Kaulich, B., Vieth-Hillebrand, A., Gíslason, S.R., Hallmann, C., Benning, L.G. Iron-rich peatlands as hotspots of organic carbon export to polar aquatic ecosystems. Goldschmidt 2025, July 6-11, 2025, oral presentation. DOI: [10.7185/gold2025.31824](https://doi.org/10.7185/gold2025.31824).
5. Chen, Z., **Perez, J.P.H.**, Trivedi, C.B., Stammeier, J.A., Linke, T., Gíslason, S.R., Benning, L.G. Could siderite be a stable carbon sink in iron-rich polar soils in a future warming climate? Goldschmidt 2025, July 6-11, 2025, poster presentation. DOI: [10.7185/gold2025.31267](https://doi.org/10.7185/gold2025.31267).
6. **Perez, J.P.H.**, Trivedi, C., Chen, Z.C., Antony, R., Kaulich, B., Vieth-Hillebrand, A., Gíslason, S.R., Hallmann, C., Benning, L.G. Export of soil organic carbon from iron-rich polar peatlands to aquatic ecosystems: Insights from molecular spectroscopy and chromatography. 9th International Symposium of Interactions of Soil Minerals with Organic Components and Microorganisms, Oct. 15-18, 2024, poster presentation.
7. **Perez, J.P.H.†**, Chan, A.L.H., Mosselmans, J.F.W., Benning, L.G. *Influence co-existing phosphate in the speciation and partitioning of arsenate in Fe(II)-bearing minerals*. Goldschmidt 2023, July 9-14, 2023, oral presentation [invited talk]. DOI: [10.7185/gold2023.18519](https://doi.org/10.7185/gold2023.18519)
8. **Perez, J.P.H.**, Okhrymenko, M., Blukis, R., Roddatis, V., Mayanna, S., Mosselmans, J.F.W., Benning, L.G. *Structural incorporation of arsenate into vivianite*. GeoMinKöln 2022, Sept. 12-15, 2022, oral presentation.
9. **Perez, J.P.H.**, Chan, A.L.H., Okhrymenko, M., Blukis, R., Mosselmans, J.F.W., Mayanna, S., Roddatis, V., Benning, L.G. *Competing immobilization pathways for arsenate and phosphate in Fe (II)-bearing minerals: Adsorption vs. structural incorporation*. Goldschmidt 2021, July 5-9, 2021, oral presentation [virtual]. DOI: [10.7185/gold2021.5099](https://doi.org/10.7185/gold2021.5099).

10. **Perez, J.P.H.**, Freeman, H.M., Brown, A.P., Van Genuchten, C.M., Tobler, D.J., Dideriksen, K., Benning, L.G. *Mapping arsenic-induced changes on the green rust surface at the nanoscale*. Goldschmidt 2019, Aug. 18-23, 2019, Barcelona (Spain), oral (flash talk) and poster presentation.
11. **Perez, J.P.H.**, Tobler, D.J., Freeman, H.M., Dideriksen, K., Cecatto, M., Benning, L.G. *Fate and role of arsenic during green rust formation via reductive dissolution of ferrihydrite*. Goldschmidt 2018, Aug. 12-17, 2018, Boston (USA), oral presentation.

Selected invited seminars and colloquia

1. Iron-mediated biogeochemical cycling and export of organic carbon from polar wetlands. Dept. of Plant and Environmental Sciences, **University of Copenhagen**. Copenhagen, Denmark, March 3, 2026.
2. Particulate and dissolved organic carbon in iron-rich subarctic peatlands. Permafrost Research Group, **AWI Helmholtz Centre for Polar and Marine Research**. Potsdam, Germany, June 3, 2024.
3. Impact of co-existing oxyanions on the speciation, partitioning and stability of arsenic in Fe(II)-bearing minerals. Dept. of Plant and Environmental Sciences, **University of Copenhagen**. Copenhagen, Denmark, Oct. 3, 2023.
4. Arsenic speciation controls the immobilization mechanism and stability of mixed valence iron minerals. ESRF User Meeting 2023. **European Synchrotron Radiation Facility (ESRF)**. Grenoble, France, Feb. 8, 2023.
5. Competitive immobilization of arsenate and phosphate in Fe(II)-bearing minerals: Incorporation versus adsorption. School of Earth Sciences, **University of Bristol**. Nov. 16, 2022. [virtual]
6. How the speciation of arsenic affects its interaction with reactive iron minerals. #ESRScience Live Online Seminars. **European Synchrotron Radiation Facility (ESRF)**. July 18, 2022. [YouTube video](#) [virtual]
7. Synergistic inhibition of green rust formation from ferrihydrite by arsenic and silica. **CNRS Géosciences Environnement Toulouse (GET)**. Toulouse, France, Mar. 10, 2022.
8. Arsenic removal from natural groundwater using green rust. London Geochemistry & Isotope Centre, **University College London**. Mar. 3, 2021 [virtual].

SUPERVISION OF STUDENTS AND RESEARCHERS | * denotes still active

BSc students

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| 10.2022 – 02.2023 | Hannes Arb Research Internship
Effect of organic ligands on the formation of short-range ordered iron nanophases |
| 07.2022 – 08.2022 | Alexandra Stovall DAAD Research Internships in Science and Engineering (RISE)
Extraction of organic carbon from naturally occurring iron colloids |
| 07.2019 – 08.2019 | Marharyta Okhrymenko Research Internship
Synthesis and characterisation of vivianite-parasymplectite solid solution ($\text{Fe}^{\text{II}}_3(\text{P}_{1-x}\text{As}_x\text{O}_4)_2 \cdot 8\text{H}_2\text{O}$) |
| 06.2019 – 08.2019 | A. Li Han Chan DAAD Research Internships in Science and Engineering (RISE)
Influence of co-existing phosphorus and arsenic on green rust formation and transformation |

MSc students

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|-------------------|---|
| 01.2026 – 06.2026 | Hans Denzel Natividad MSc Research
Investigation of dissolved organic matter (DOM) diversification in peatlands using advanced spectroscopic and spectrometric techniques
Co-supervised with Dr. Stefanie Pötz (GFZ), Dr. Jeffrey Hawkes (Uppsala University) and Dr. Riin Rebane (University of Tartu) |
| 03.2024 – 12.2025 | Rutuja Sakore MSc Research
Sorption of cyanobacterial organic matter with iron minerals in simulated early Earth oceans
Co-supervised with Prof. Christian Hallmann (GFZ and Universität Potsdam) |
| 04.2020 – 03.2021 | Isabell Grün Research Internship
Iron mineral precipitation in simulated early Earth oceans |
| 10.2018 – 12.2019 | David Matzdorff Research Internship
Synthesis of metal-organic frameworks from mineral precursors |

PhD students (co-supervised with Prof. Liane G. Benning at Freie Universität Berlin)

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|-------------------|---|
| 06.2023 – Present | Marco Ajmar* Marie Skłodowska Curie PhD Fellowship (MSCA-DTN ICEBIO)
Nutrient cycles in glacial environments: From glaciers to the ocean |
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11.2020 – 06.2025	Zhengzheng Chen CSC PhD Scholarship Iron-mediated biogeochemical cycling of carbon in (sub)Arctic soils (DOI) Doctoral defence: June 20, 2025 (<i>Magna cum laude</i>)
10.2020 – 12.2024	Ruth Esther Delina DAAD PhD Scholarship From rocks to wastes: Tracing the fate of chromium in mining-impacted lateritic environments (DOI) Doctoral defence: Dec. 3, 2024 (<i>Magna cum laude</i>)
10.2020 – 07.2024	Alice Paskin Helmholtz Recruiting Initiative Nucleation, growth, and transformation phenomena of vivianite (DOI) Doctoral defence: July 10, 2024 (<i>Magna cum laude</i>)

TEACHING EXPERIENCE

2021 – Present	Lecturer, GFZ Helmholtz Centre for Geosciences - Co-teach the graduate-level course 'Mineral Characterisation' (<i>Mineralbeschreibung</i>, MSc-GG047), offered through Freie Universität Berlin, with Prof. Dr. Liane G. Benning - Specific topics: <i>Synchrotron X-ray Absorption Spectroscopy</i>, <i>Infrared Spectroscopy</i>, <i>Thermal Analysis (TGA-DSC)</i>, and <i>Surface Area and Porosity Analysis</i>
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SKILLS AND EXPERTISE

- Fieldwork: Anoxic soil core sampling, water sampling for trace element and dissolved organic carbon analysis, sampling for microbiological community analysis
- Laboratory skills: mineral synthesis, wet laboratory experience under strict anoxic conditions (i.e., glovebox), DNA extraction from soils, sediments and water
- Mineral characterisation skills: powder X-ray diffraction (XRD), nitrogen sorption analysis (surface area and porosity), UV-VIS spectrophotometry, infrared (IR) spectroscopy, X-ray photoelectron spectroscopy (XPS), thermogravimetric analysis (TGA), differential scanning calorimetry (DSC)
- Analytical skills: low-level analysis of dissolved organic carbon (DOC; ppb-level), trace elements (ICP-OES/MS) and nutrients (N, P, Si; discrete flow analysis)
- Advanced transmission electron microscopy: high-resolution TEM imaging, analytical spectroscopy (EDX, EELS), analysis of beam-sensitive materials
- Synchrotron-based techniques: X-ray absorption spectroscopy (XAS), X-ray total scattering, X-ray atomic pair distribution function (PDF) analysis, X-ray microspectroscopy (μ -XRF, μ -XANES, STXM-NEXAFS)
- Geochemical modelling (Geochemist Workbench, PHREEQC, Visual MINTEQ)

ADDITIONAL TRAININGS RECEIVED

2025	Chemical Speciation and Multisurface Geochemical Modelling (Goldschmidt 2025 Prague, Czechia)
2025	Analysis and Characterisation of Dissolved Organic Matter (Uppsala University, Sweden)
2024	Multivariate Statistics with R (Helmholtz Information and Data Academy, Germany)
2024	Introduction to Statistics with R (Helmholtz Information and Data Academy, Germany)
2023	Applications of Microsensors for Biogeochemical Research (Unisense, Denmark)
2021	Advanced Infrared Microspectroscopy Analysis Training (Diamond Light Source, United Kingdom)
2020	Small- and Wide-Angle X-ray Scattering for Nanomaterials (BAM, Germany)
2019	Metal Stable Isotopes as Fingerprints in the Earth and Environment (GFZ Potsdam, Germany)
2018	Electron Microscopy Summer School (University of Leeds, United Kingdom)
2017	Geochemical Modelling with PHREEQC (GFZ Potsdam, Germany)
2017	Total X-ray Scattering for Nanotechnology (University of Insubria and Italian CNR, Italy)

COMMISSIONS OF TRUST

Outreach

- 11.2026 – Present GFZ Diversity, Equity and Inclusion (DEI) Advisory Board
- 07.2024 Organiser, Pride on the Hill, *the first Pride/CSD event at Telegrafenberg, co-organised with the GFZ Diversity Team*
- 05.2024 – 12.2025 Co-founder / Core Team, Out on the 'Berg, *the LGBTQIA+ network at Telegrafenberg*
- 08.2020 – 07.2024 Mentor, GradMAP Philippines (Graduate Mentorship & Assistance Program), *a mentoring program for Filipino students planning to pursue graduate studies abroad*
- 06.2017 – 06.2020 At-large organiser for Sec. 3.5, "Lange Nacht der Wissenschaften" (Long Night of Science), *public open science day at the GFZ*

Scientific Representation

- 06.2023 – 07.2024 YoungMin DMG, *early career scientist workgroup of the DMG German Mineralogical Society*
- 06.2022 – 07.2024 PostDoc representative, GFZ

Conference Session Convening

- 07.2025 Session Chair and Co-convenor, Goldschmidt 2025 Prague
- 07.2023 Session Chair and Co-convenor, Goldschmidt 2023 Lyon
- 08.2022 Session Chair and Main Convener, GeoMinKöln 2022
- 07.2021 Session Chair and Main Convener, Virtual Goldschmidt 2021

Scientific Meeting and Workshop Organisation

- 05.2026 Co-organiser, "Unlocking Crystal Structure with Synchrotron and Mössbauer Methods", Philippine Nuclear Research Institute, Quezon City, Philippines
- 04.2026 Co-organiser, "[Redox-sensitive elements as drivers of carbon release from high-latitude landscapes](#)", Geo.X Grow Your Ideas Workshop, Potsdam, Germany

Peer-reviewed Scientific Journals

- 11.2024 – Present Handling Editor, Advances in Geochemistry & Cosmochemistry (AGC) Journal
- 10.2018 – Present Reviewer for Scientific Journals (selected): Science Advances, Geochemical Perspective Letters, Geochimica et Cosmochimica Acta, Geoderma, Chemical Geology, Environmental Science & Technology (*73 verified reviews, see [Web of Science profile](#)*)

Grant Proposals

- 03.2025 – Present UK Research & Innovation (UKRI), Natural Environment Research Council (NERC)

Professional Membership

American Chemical Society, European Association of Geochemistry, DGGV German Geological Society, DMG German Mineralogical Society, Royal Society of Chemistry