

# Dr. Jeffrey Paulo H. Perez

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## RESEARCH SUMMARY

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I am an experimental (geo)chemist that with a strong background in aqueous geochemistry, mineral chemistry and nanogeoscience. My research is centered around using molecular and nanoscale solid-state characterization techniques to elucidate reactions at mineral interfaces. Specifically, I focus on iron redox (geo)chemistry and its influence on (i) carbon cycling, (ii) nutrient availability and (iii) contaminant dynamics. I use state-of-the-art electron microscopy (S/TEM) and synchrotron-based X-ray techniques (XAS, PDF) to pinpoint and visualize these (geo)chemical reactions at the mineral interface. By doing so, I am able to derive a quantitative and mechanistic understanding of these key (geo)chemical interfacial reactions that are not currently possible with conventional laboratory techniques.

## EDUCATION

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- 2017 – 2020    **PhD Earth Science (Geochemistry), Freie Universität Berlin, Germany**  
*Summa cum laude*, Doctoral defense: Jan. 17, 2020  
Dissertation: “*Green rust formation and reactivity with arsenic species*”  
Supervisor: Prof. Dr. Liane G. Benning
- 2014 – 2016    **MSc Environmental Sanitation, Ghent University, Belgium**  
*Summa cum laude (1<sup>st</sup> in class, top 5%)*
- 2007 – 2012    **BSc Chemical Engineering, University of the Philippines Los Baños, Philippines**  
*Cum laude (5<sup>th</sup> in class, top 10%), 5-year undergraduate program*

## RESEARCH EXPERIENCE

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- Feb. 2020 – Present    **Postdoctoral Scientist, GFZ German Research Centre for Geosciences, Germany**  
*Section 3.5 Interface Geochemistry, Department of Geochemistry*
- Feb. – Mar. 2022    **Visiting Researcher, CNRS Géosciences Environnement Toulouse (GET), France**  
*Stable Isotope Geochemistry Group*  
Host: Dr. Romain Guilbaud
- Oct. 2016 – Jan. 2020    **PhD Research Fellow, GFZ German Research Center for Geosciences, Germany**  
*Section 3.5 Interface Geochemistry*  
Marie Skłodowska-Curie PhD Fellowship (EU H2020 MSCA-ITN Metal-Aid)
- Jan. – May 2019    **Visiting Researcher, University of Leeds, United Kingdom**  
*Leeds Electron Microscopy and Spectroscopy Centre (LEMAS), Bragg Centre for Materials Research*  
“*Revealing green rust oxidation in situ using monochromated scanning transmission electron microscopy electron energy loss spectroscopy*”  
Hosts: Dr. Andy P. Brown, Dr. Helen M. Freeman
- Sept. 2018    **Visiting Researcher, Karlsruhe Institute of Technology, Germany**  
*Geochemistry Working Group, Institute of Applied Geosciences*  
“*X-ray absorption spectroscopy of arsenic-bearing iron (oxyhydr)oxides*”  
Host: Prof. Dr. Thomas Neumann
- Oct. 2017 – Feb. 2018    **Visiting Researcher, University of Copenhagen, Denmark**  
*NanoGeoScience, Nano-Science Centre, Department of Chemistry*  
“*Abiotic transformation of arsenic-bearing iron (oxyhydr)oxides to green rust*”  
Host: Dr. Dominique J. Tobler

- Sept. 2015 – July 2016      **Master’s thesis student, Ghent University, Belgium**  
*Centre for Ordered Materials, Organometallics & Catalysis (COMOC)*  
*Laboratory of Analytical Chemistry and Applied Ecochemistry (ECO-CHEM)*  
 Dissertation: “Iron oxide nanoparticles in covalent organic frameworks: Novel hybrid adsorbents for metal sequestration” (Grade: 18/20)  
 Supervisors: Prof. dr. Pascal Van Der Voort, Prof. dr. ing. Gijs Du Laing
- June – July 2015              **Research Intern, Universidad de Cuenca, Ecuador**  
*Ucubamba Waste Water Treatment Plan, ETAPA*  
 Internship: “Monitoring, performance evaluation and improvement of sludge treatment in the waste stabilization pond in Cuenca, Ecuador” (Grade: 18/20)
- June 2011 – Mar. 2012      **Bachelor’s thesis student, University of the Philippines Los Baños, Philippines**  
*Department of Chemical Engineering*  
 Thesis: “Parametric and optimization studies on the two-stage acid hydrolysis of cogon grass (*Imperata cylindrica*) for xylose production” (Grade: 1.0 or 100%)  
 Supervisor: Dr. Butch Bataller

## TEACHING EXPERIENCE

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- Mar. 2021 – Present          **Lecturer, GFZ German Research Centre for Geosciences**  
*Section 3.5 Interface Geochemistry, Department of Geochemistry*
  - Co-teach the graduate level course ‘Mineral Characterization’ (offered through Freie Universität Berlin) with Prof. Liane G. Benning, specifically on the topics of ‘Gas Sorption Analysis’ and ‘Applications of X-ray Absorption Spectroscopy in Environmental Geochemistry’
- June 2012 – June 2014      **Instructor 4, University of the Philippines Los Baños, Philippines**  
*Dept. of Engineering Sciences, College of Engineering & Agro-Industrial Technology*
  - Course development and teaching engineering courses to Bachelor students, usually 2-3 lecture (30-35 students) and 2-3 practical courses (20 students) per semester: *Statics of Rigid Bodies, Mathematical Methods in Engineering, Engineering Graphics, Computer Applications in Engineering*
  - Coordination, development, outreach and teaching (1 class per semester, 3 h per week; 20-30 students) for literacy and civic welfare training programs

## HONORS and AWARDS

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- 2022    ▪ **Young Scientist, 71<sup>st</sup> Lindau Nobel Laureate Meeting for Chemistry**
- 2020    ▪ **Friedrich-Robert-Helmert-Award**, awarded by the *Freunde und Förderer des GFZ Potsdam* for the *best PhD thesis*
- 2019    ▪ **Best Poster Award**, Research in Progress 2019 Joint Meeting, organized by the Clay Minerals Group (Mineralogical Society of Great Britain and Ireland) and RSC Environmental Chemistry Group
- 2016    ▪ **Water Technology Award** (2<sup>nd</sup> place, *Innovation Prize*), awarded by *Water Circle Belgium* for the *best master’s thesis on water treatment technology in Flanders Region, Belgium*
- **Environmental Science & Technology Thesis 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
- **Medal of Academic Excellence in Engineering**, University of the Philippines Los Baños
- **Medal of Academic Excellence in Science**, University of the Philippines Los Baños
- **Most Outstanding Student Leader in Engineering**, University of the Philippines Los Baños

## GRANTS and FELLOWSHIPS | Total: ~341,500 EUR to date

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- 2022    ▪ **Procope Mobility Grant** (3,800 EUR), awarded by the *French Ministry for Foreign Affairs and International Development*

- **GFZ Innovations Expedition Fund** for fieldwork in Iceland (10,000 EUR), *Principal Investigator*
- **GFZ Expedition Fund** for synchrotron beamtime access (5,000 EUR), *Co-principal investigator*
- **DAAD Research Internship in Science and Engineering (RISE)** funding for undergraduate trainee (~2,800 EUR, 2 months), *Principal Investigator*
- 2021 ▪ **GFZ Innovations Expedition Fund** for fieldwork in Iceland (6,500 EUR), *Principal Investigator*
- **GFZ Expedition Fund** for synchrotron beamtime access (4,000 EUR), *Co-principal investigator*
- 2019 ▪ **Geo.X Travel Grant** for outgoing early career scientist (2,500 EUR)
- **DAAD RISE** funding for undergraduate trainee (~3,200 EUR, 2 months), *Principal Investigator*
- 2018 ▪ **Royal Society of Chemistry (RSC) Researcher Mobility Grant** (5,800 EUR)
- **Geo.X Conference Travel Grant** for *As2018 Conference in Beijing, China* (500 EUR)
- 2017 ▪ **Travel Grant** for the *Total Scattering for Nanotechnology Summer School* (~400 EUR)
- 2016 ▪ **Marie Skłodowska-Curie PhD Fellowship** (EU-H2020 MSCA-ITN Metal-Aid; ~250,000 EUR)
- 2014 ▪ **VLIR-UOS MSc Scholarship**, Belgium (~34,000 EUR, success rate <10%)
- 2013 ▪ **Basic Research Grant**, University of the Philippines Los Baños (~2,600 EUR)
- 2007 ▪ **DOST Undergraduate Scholarship**, Philippines (~13,000 EUR; success rate 13%)

## FUNDED SYNCHROTRON BEAMTIME

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- Sept. 2022 Cr K-edge X-ray absorption spectroscopy (XAS) at the BM20 beamline of the European Synchrotron Radiation Facility (ESRF), France, *Principal Investigator* (144 hours)
- Nov. 2021 As and Fe K-edge XAS at the BM23 beamline of ESRF, France, *Principal Investigator* (120 hours)
- Feb. 2020 As and Fe K-edge XAS at the I20-scanning beamline of Diamond Light Source, UK, *Principal Investigator* (96 hours)
- Nov. 2018 As K-edge XAS at the BM23 beamline of ESRF, France, *Principal Investigator* (112 hours)
- Sept. 2018 As and Fe K-edge XAS at the SUL-X beamline of ANKA-KIT, Germany, *Co-investigator* (120 hours)
- Feb. 2017 X-ray powder diffraction (XRPD) and pair distribution function (XPDF) at the I15 beamline of Diamond Light Source, UK, *Co-investigator* (72 hours)

## SCIENTIFIC OUTPUT

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\* – *co-first authors*, **bold** – *self*, underlined – supervised student author

Total no. of publications: 21 (9 as first / co-first author) | *h*-index: 11 (Google Scholar)

No. of citations (as of May 6, 2022): 385 ([Google Scholar](#)), 321 ([Scopus](#)), 289 ([Web of Science](#))

### **Manuscripts in preparation and under review**

1. **Perez, J.P.H.**, Okhrymenko, M., Blukis, R., Roddatis, V., Mayana, S., Mosselmans, J.F.W., Benning, L.G. Structural incorporation of arsenate in the ferrous iron phosphate mineral vivianite. In preparation for submission.
2. Reischer, M., Sun, W., **Perez, J.P.H.**, Mangayayam, M.C., Füllenbach, L.C., Nilabh, S., . . . , Tobler, D.J., Dideriksen, K. Injection and transport of sulfidized nanoparticulate zero valent iron (S-nZVI) in clastic sediments: A tank experiment. Under review in *Journal of Contaminant Hydrology*.

### **Peer-reviewed publications**

1. 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).
2. Caraballo, M.A., Asta, M.P., **Perez J.P.H.**, Hochella, M. (2022, *in press*). Past, present and future global influence and technological applications of iron-bearing metastable nanominerals. *Gondwana Research*. DOI: [10.1016/j.gr.2021.11.009](https://doi.org/10.1016/j.gr.2021.11.009). [*Invited review manuscript*]
3. **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, 2950-2963. DOI: [10.1039/D1EN00384D](https://doi.org/10.1039/D1EN00384D).

4. 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).
5. Krone, L.V., Hampl, F.J., Schwerdhelm, 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).
6. **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).
7. 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).
8. 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).
9. **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 European Synchrotron Radiation Facility (ESRF) Highlights 2020*.
10. 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).
11. 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 Co<sup>2+</sup> ions. *Minerals*, 9(9), 503. DOI: [10.3390/min9090503](https://doi.org/10.3390/min9090503).
12. 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).
13. **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 Fe<sup>2+</sup>-induced transformation of ferrihydrite. *ACS Earth & Space Chemistry*, 3(6), 884-894. DOI: [10.1021/acsearthspacechem.9b00031](https://doi.org/10.1021/acsearthspacechem.9b00031).
14. **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]
15. **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<sub>SO4</sub>). *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).
16. **Perez, J.P.H.**, Freeman, H.M., Schuessler, J.A., Benning, L.G. (2019). Efficient removal of arsenic species by green rust sulfate (GR<sub>SO4</sub>). 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. [Extended conference abstract]
17. **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). [Extended conference abstract]
18. 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  $\gamma$ -Fe<sub>2</sub>O<sub>3</sub> 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).

19. Leus, K.\*, **Perez, J.P.H.\***, Folens, K., Meledina, M., Van Tendeloo, G., Du Laing, G., Van Der Voort, P. (2017). UiO-66-(SH)<sub>2</sub> 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).
20. 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]
21. 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]

### **Conference presentations (first author contributions only)**

1. **Perez, J.P.H.**, Chan, A.L.H., Okhrymenko, M., Blukis, R., Mosselmans, J.F.W., Mayana, 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.
2. **Perez, J.P.H.**, Freeman, H.M., Brown, A.P., Van Genuchten, C.M., Tobler, D.J., Dideriksen, K., Benning, L.G. *Direct nanoscale observation of arsenic sequestration sites on green rust surfaces*. German Mineralogical Society (DMG) Poster Session, Nov. 30-Dec. 3, 2020, poster presentation. [virtual]
3. **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.
4. **Perez, J.P.H.**, Freeman, H.M., Brown, A.P., Van Genuchten, C.M., Tobler, D.J., Dideriksen, K., Benning, L.G. *Revealing the interfacial reactions between green rust and arsenic species at the nanoscale*. Clay Minerals Group Research in Progress Meeting, May 17, 2019, Newcastle (UK), poster presentation.
5. **Perez, J.P.H.**, Freeman, H.M., Hondow, N., Brown, A.P., Benning, L.G. *Interaction between 'green rust' and arsenic revealed by STEM-EDX elemental mapping and mono-EELS*. Microscopy Characterization of Organic-Inorganic Interfaces: Advances in imaging beam sensitive materials in the transmission electron microscope, Mar. 8-9, 2019, Berlin (Germany), poster presentation.
6. **Perez, J.P.H.**, Mangayayam, M.C., Navaz Rubio, S., Freeman, H.M., Tobler, D.J., Benning, L.G. *Intercalation of aromatic sulfonates in 'green rust' via ion exchange*. International Carbon Conference, Sept. 10-14, 2018, Reykjavik (Iceland), poster presentation
7. **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.
8. **Perez, J.P.H.**, Freeman, H.M., Schuessler, J.A., Benning, L.G. *Efficient removal of arsenic species by green rust sulfate (GR<sub>SO4</sub>)*. 7<sup>th</sup> International Congress on Arsenic in the Environment - Environmental Arsenic in a Changing World (As2018), July 1-6, 2018, Beijing (China), oral presentation.
9. **Perez, J.P.H.**, Freeman, H.M., Schuessler, J.A., Benning, L.G. *The role of 'green rust' as a control on arsenic mobility in contaminated groundwaters*. Environmental Sciences: Water (Gordon Research Conference and Seminar), June 23-29, 2018, New Hampshire (USA), poster presentation.
10. **Perez, J.P.H.**, Navaz Rubio, S., Schuessler, J.A., Freeman, H.M., Benning, L.G. *Interfacial reactivity of green rust sulfates with metal contaminants*. Goldschmidt 2017, Aug. 13-18, 2017, Paris (France), poster presentation.
11. **Perez, J.P.H.**, Folens, K., Leus, K., Meledina, M., Dîrtu, M.M., Garcia, Y., Van Tendeloo, G., Du Laing, G., Van Der Voort, P. *Supported  $\gamma$ -Fe<sub>2</sub>O<sub>3</sub> nanoparticles in CTF-1: A novel hybrid adsorbent for heavy metal sequestration*. New directions in porous crystalline materials: Faraday Discussion, June 5-7, 2017, Edinburgh (UK), poster presentation.

### **INVITED TALKS**

1. Synergistic inhibition of green rust formation from ferrihydrite by arsenic and silica. **CNRS Géosciences Environnement Toulouse (GET), France**. March 10, 2022.
2. Arsenic removal from natural groundwater using green rust. London Geochemistry & Isotope Centre, **University College London, United Kingdom**. March 3, 2021 [Virtual].



- Green rust formation and its reactivity with arsenic species. Interface Geochemistry Seminar Series, **GFZ German Research Centre for Geosciences, Germany**. Jan. 14, 2021 [Virtual].
- Nano- and molecular-scale investigations of the interaction between green rust and arsenic species. School of Chemical and Process Engineering, **University of Leeds, United Kingdom**. May 24, 2019.
- Making the invisible, visible: Looking at green rust and arsenic species at the nano-scale. Department of Chemical Engineering, **University of the Philippines Los Baños, Philippines**. April 18, 2018.

## SKILLS AND EXPERTISE

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- Fieldwork: Anoxic soil core sampling, water sampling for trace element and dissolved organic carbon analysis, sampling for DNA and RNA extraction and analysis
- Laboratory skills: inorganic and organic material synthesis, iron mineral synthesis, wet laboratory experience in under strict anoxic conditions (i.e., glovebox)
- Analytical and material characterization skills: trace element analysis (ICP-OES/MS, AAS), powder X-ray diffraction (XRD), nitrogen sorption analysis (surface area and porosity), UV-Vis spectrophotometry, infrared (IR) spectroscopy, X-ray photoelectron spectroscopy (XPS)
- Advanced transmission electron microscopy: high-resolution TEM imaging, analytical spectroscopy (EDX, EELS), analysis of beam-sensitive materials
- Synchrotron techniques: X-ray absorption spectroscopy (XAS), pair distribution function (PDF) analysis
- Geochemical modelling in Geochemist Workbench
- Language skills: Filipino (native), English (*bilingual* proficient), German (B1, intermediate)

## MENTORING EXPERIENCE

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### *Past student supervision at GFZ Potsdam*

April 2020 – Mar. 2021	Isabell Grün (MSc student), Research Assistant
July 2019 – Aug. 2019	Marharyta Okhrymenko (high school student), Research Intern
June 2019 – Aug. 2019	Alicia Li Han Chan (BSc student), Research Intern <i>Funded by DAAD Research Internship in Science and Engineering (RISE)</i>
Oct. 2018 – Dec. 2019	David Matzdorff (MSc student), Research Assistant

### *Current PhD co-supervision at GFZ Potsdam / Freie Universität Berlin*

Nov. 2020 – Present	Zhengzheng Chen, <i>funded by CSC PhD scholarship</i>
Oct. 2020 – Present	Ruth Esther G. Delina, <i>funded by DAAD PhD scholarship</i>
Oct. 2020 – Present	Alice Paskin, <i>funded by Helmholtz Recruiting Initiative Grant</i>

## PROFESSIONAL ENGAGEMENT AND OUTREACH ACTIVITIES

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### *Outreach*

2020 – 2022	Mentor, GradMAP Philippines (Graduate Mentorship and Assistance Program), <i>a mentoring program for Filipino students planning to pursue graduate studies abroad</i>
2019	Organizer and Media Documentation, Metal-Aid MSCA-ITN Tank Injection Experiment at NIRAS A/S, <i>public outreach event</i>
2017 – 2020	At-large Organizer for Sec. 3.5, “Lange Nacht der Wissenschaften” (Long Night of Science), <i>public open science day at the GFZ Potsdam</i>
2016 – 2020	Social Media Manager, MSCA-ITN METAL-AID

### *Conference and Meeting Convening, Scientific Representation*

May 2022 – Present	PostDoc Representative, GFZ Potsdam
April 2021 – Present	Organizer, Science Talks at Sec. 3.5 in GFZ Potsdam (monthly)
July 2021	Session Chair and Main Convener, Virtual Goldschmidt 2021
Nov. 2020 – Present	Organizer, Mineral Chemistry Journal Club at Sec. 3.5 in GFZ Potsdam (monthly)
Jan. 2020 – Present	Organizer, Interface Geochemistry Seminar Series (IGSS) at GFZ Potsdam (monthly)

***Reviewer for Peer Reviewed Journals***

Selected Journals: ACS Earth & Space Chemistry, Environmental Science & Technology, Environmental Science: Nano, Environmental Science: Processes & Impacts, Geochemical Perspective Letters, Geochimica et Cosmochimica Acta, Geoderma (38 verified reviews, see [Publons profile](#) for additional reviewer statistics)

***Professional Membership***

American Chemical Society, European Association of Geochemistry, European Electron Microscopy Society, German Geological Society (DGGV), German Mineralogical Society (DMG), Royal Society of Chemistry, Royal Microscopical Society