

Emiliano M. Silva

Sustainable Mining Researcher

Primavera do Leste, 78850-000

Mato Grosso, Brazil

✉ emilianomsilva@gmail.com

🌐 emilianomsilva.github.io

☎ +55 (65) 98121 4041

in linkedin.com/in/emilianomsilva

id orcid.org/0009-0009-5783-3998



Professional Summary

Ph.D. Candidate in Mineral Engineering at the University of São Paulo (USP) with an interdisciplinary background in chemistry, geosciences, civil engineering, mineral processing, and forensic science. Research focuses on sustainable extractive metallurgy, mercury-free gold recovery, artisanal and small-scale gold mining (ASGM), environmental geochemistry, and mine-waste valorization. Author of five peer-reviewed publications in 2025–2026, including three first-author papers, with research and field experience across Brazil, Colombia, Suriname, and Canada.

Combines experimental and field research with more than a decade of experience in structured technical investigation, analytical reasoning, quality assurance, evidence-based reporting, multidisciplinary leadership, and decision-making under operational constraints. This background supports applied research linking process diagnostics, cleaner mineral-processing interventions, and circular approaches to mining residues.

Research & Technical Expertise

Extractive Metallurgy	Gold recovery; hydrometallurgy and leaching; metallurgical accounting; process diagnostics; Au–Ag recovery assessment; mercury-loss evaluation; ASGM process characterization.
Field & Environmental	Field-campaign planning; process and environmental sampling; water-quality assessment; trace-element monitoring; QA/QC; resource-efficiency assessment.
Analytical & Quantitative	Analytical chemistry; geochemical data interpretation; experimental data analysis; statistics; scientific visualization; R, Python, and Excel.
Applied Technical Work	Technical and scientific reporting; forensic investigation; chain-of-custody procedures; project planning; budgeting; resource allocation; multidisciplinary team coordination.

Education

2023–Present	Ph.D. Candidate in Mineral Engineering , <i>University of São Paulo (USP)</i> , São Paulo, Brazil Research on mercury-free processing pathways for artisanal and small-scale mining, with emphasis on alternative leaching technologies, gold recovery, and sustainable mineral processing.
2020–2022	B.Sc. in Civil Engineering , <i>Faculdade Anhanguera</i> , Mato Grosso, Brazil Final project investigated soil-cement bricks as a lower-impact material for sustainable construction.

- 2017–2018 **Specialization in Criminal Forensics and Forensic Sciences**, *Faculdade Poliinsino*, Mato Grosso, Brazil
- 2010–2012 **M.Sc. in Geosciences**, *Federal University of Mato Grosso (UFMT)*, Mato Grosso, Brazil
Dissertation: *Statistical Analysis of Surface-Water Quality Parameters as Indicators of Selenium Geochemistry in a Canadian Coal Mine*. Research period at the University of British Columbia, Vancouver, Canada, supported by an ELAP scholarship.
- 2005–2009 **B.Sc. in Chemistry**, *Federal University of Mato Grosso (UFMT)*, Mato Grosso, Brazil
Undergraduate research focused on monitoring total mercury in fish from the Manso Hydroelectric Reservoir, Mato Grosso, Brazil.

Research Experience & International Collaboration

- 2023–Present **Researcher**, *NAP.Mineração – Research Center for Responsible Mining*, University of São Paulo, Brazil
Conduct international field and experimental research on sustainable ASGM in Brazil, Colombia, and Suriname. Design and perform process diagnostics, environmental and metallurgical sampling, data analysis, gold-recovery assessment, and mercury-loss evaluation. Research portfolio has produced five peer-reviewed papers in 2025–2026, including three as first author, spanning system-wide process diagnostics, alternative lixiviants, mercury reduction, and tailings valorization.
- 2011 **Visiting Research Student**, *Norman B. Keevil Institute of Mining Engineering*, University of British Columbia, Vancouver, Canada
Conducted research in environmental geochemistry under Prof. Marcello Mariz da Veiga. Investigated surface-water quality and selenium geochemistry in coal-mining environments as an Emerging Leaders in the Americas Program scholarship recipient.
- 2011 **Junior Geochemist, Trainee**, *Lorax Environmental Services Ltd.*, Vancouver, Canada
Contributed to the project *Role of Nitrate in the Remobilization and Attenuation of Selenium in Coal Mine Waste*, involving Lorax, the Mine Environment Neutral Drainage program, Natural Resources Canada, and industry partners. Analyzed surface-water and geochemical datasets from coal-mining operations.

Selected Peer-Reviewed Publications

- Druiventak, A., Vriesde, E., Silva, E. M., & Veiga, M. M. (2026). From byproduct to business: A conceptual micro-enterprise model for artisanal and small-scale gold mining (asgm) tailings in suriname. *The Extractive Industries and Society*, 27, 101931. <https://doi.org/10.1016/j.exis.2026.101931>
- Silva, E. M., da Veiga, M. M., & De Tomi, G. (2026). System-wide evaluation of gold and silver recovery and mercury losses in an artisanal amalgamation–cyanidation circuit: A diagnostic approach to mercury-free processing. *Minerals*, 16(8), 784. <https://doi.org/10.3390/min16080784>
- Silva, E. M., Barreto, M. C. S., Veiga, M. M., & De Tomi, G. (2025). From agro-industrial waste to gold lixiviant: Evaluating cassava wastewater applications in artisanal mining. *Mining*, 5, 64. <https://doi.org/10.3390/mining5040064>
- Silva, E. M., Vriesde, E., Druiventak, A., Veiga, M. M., & De Tomi, G. (2025). Production of cement-tailings bricks with artisanal gold mining waste. *Cleaner Waste Systems*, 11, 100269. <https://doi.org/10.1016/j.clwas.2025.100269>
- Veiga, M. M., Anene, N. C., & Silva, E. M. (2025). Four decades of efforts to reduce or eliminate mercury pollution in artisanal gold mining. *Minerals*, 15(4), 376. <https://doi.org/10.3390/min15040376>

Awards & Research Funding

- 2011 **Emerging Leaders in the Americas Program Scholarship**, *Canadian Bureau for International Education*, Canada
Supported research at the University of British Columbia, Vancouver, Canada.
- 2010 **M.Sc. Scholarship**, *National Council for Scientific and Technological Development (CNPq)*, Brazil
- 2009 **Full Funding Award for Attendance**, *9th International Conference on Mercury as a Global Pollutant*, Guiyang, China
- 2007–2009 **Undergraduate Research Scholarships**, *Institute of Mato Grosso Research (IPEM/UFMT)*, Brazil

Teaching & Academic Service

- 2017–2020 **Part-time Lecturer and Program Coordinator**, *Faculdade Poliensino*, Mato Grosso, Brazil
Coordinated and taught postgraduate specialization coursework in Criminalistics and Forensic Sciences, with emphasis on crime-scene processing and forensic investigative methodologies.
- 2012–2014 **Full-time Lecturer**, *Centro Universitário de Várzea Grande (UNIVAG)*, Mato Grosso, Brazil
Taught Statistics, Materials Science, General Chemistry, and Analytical Chemistry. Contributed to the institutional accreditation process for the Civil Engineering program.
- 2011–2014 **Guest Lecturer**, *State University of Mato Grosso (UNEMAT)*, Mato Grosso, Brazil
Delivered classroom and laboratory modules in General and Analytical Chemistry for chemistry degree students.
- 2010–2011 **Assistant Professor**, *Federal University of Mato Grosso (UFMT)*, Mato Grosso, Brazil
Taught Applied Analytical Chemistry and General Chemistry for Civil, Sanitary, and Environmental Engineering programs. Managed laboratory sessions and supported student training in chemical-analysis methods.

Professional & Leadership Experience

- 2022–Present **Construction Engineer**, *Independent Practice*, Mato Grosso, Brazil
Manage the field execution, budgeting, resource allocation, procurement, and quality control of more than ten residential construction projects. Coordinate construction teams and suppliers, control costs and material use, and deliver practical solutions under operational constraints.
- 2014–Present **Official Forensic Expert and Crime Scene Investigator**, *POLITEC, State Secretariat of Public Security*, Mato Grosso, Brazil
Conduct official forensic examinations and crime-scene investigations that support criminal-justice proceedings and public-safety decision-making. Apply rigorous procedures for evidence collection, documentation, analysis, and chain-of-custody control, and prepare technically defensible reports for legal proceedings. Previously served as Regional Manager for the Juína and Primavera do Leste units, coordinating operations and liaising with judicial and regulatory authorities.

Languages

Portuguese	Native
English	Advanced professional proficiency; Duolingo English Test 130/160 (July 2026)
Spanish	Professional working proficiency; used in international fieldwork
Italian	Basic; currently studying



For updated professional, visit:
<https://emilianomsilva.github.io/>