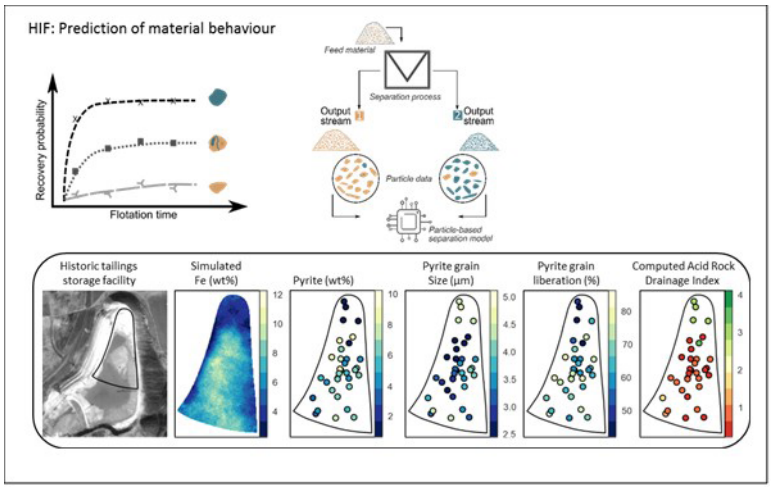
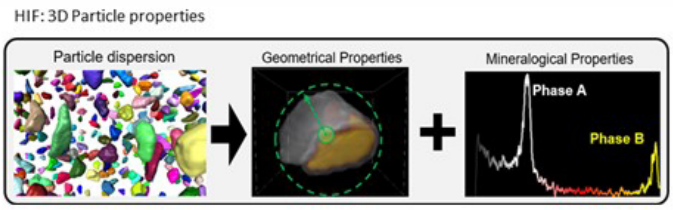
SC4: Predictive Geometallurgy

Raimon Tolosana Delgado, Lucas Pereira & José Godinho
(all Helmholtz-Zentrum Dresden Rossendorf,
Helmholtz Institute Freiberg for Resource Technology -HIF)

Pre-conference short course 28 August 2023, ETH Zürich

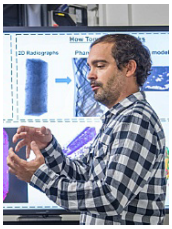
Geometallurgy aims to optimise the mineral value chain based on a spatially resolved, precise and quantitative understanding of the geology and mineralogy of ores. Predictive geometallurgy goes beyond this by introducing forecasting models for the behaviour of ores throughout the process chain, and taking into account operational economics. The course is divided into two main blocks: First, introductory presentations on advanced material characterization as well as current principles and applications of geometallurgy. The second part of the course is interactive with time to discuss questions from the talks followed by a series of hands-on exercises using web-based apps.
The hands-on exercises will reinforce the concepts presented in the lectures. This will allow participants to get a good feel for the data types common in geometallurgical programmes, and how they can be integrated into geometallurgical models for mine planning, scheduling, and overall optimisation of operations.





Raimon Tolosana-Delgado is an engineering geologist and PhD in environmental physics and technology, with twenty years of experience in geostatistics, compositional data analysis and other tailored data analysis and modelling methods for geosciences. In the last ten years, he has worked at the HIF contributing with his mathematical and statistical expertise to the development and extension of predictive geometallurgy.

Lucas Pereira is a geological engineer (Ouro Preto-BR) with Master's degree in geo-resources engineering (Liège-BE, Nancy-FR, and Luleå-SE), and PhD in particle-based separation models – machine learning applied to mineral processing understanding and prediction (Freiberg-DE). He is the leader of the particle-based modelling group at the processing department of the HIF.



José Godinho is an experimental geochemist interested in developing new methods to characterize Earth materials, especially using 3D imaging techniques. During his PhD at Stockholm University and post-docs at Oak Ridge National Lab and at the University of Manchester he focused his studies on understanding the time-dependent dynamic mechanisms of mineral dissolution and crystal growth. José also worked at the Diamond Light Source and have several months of synchrotron user time at different beamlines. In the past five years, he has specialized in developing new laboratory-based CT methods to characterize materials and in situ processes. In the last four years, he has worked at the HIF where he applies 3D imaging to the raw materials sector.