

Marie Skłodowska-Curie PostDoc Positions in Germany

“Expression of Interest” for hosting Fellows

This template should be used by institutions interested in hosting postdoctoral fellows within the Marie Skłodowska-Curie Individual Fellowship programme. Host institutions should be located in Germany.

1. Valid for the following MSCA-IF Calls¹:

x 2019	x 2020
--------	--------

2. Interested host institution:

TU Bergakademie Freiberg
Akademiestr. 6
09599 Freiberg
Germany

3. Institute/Department:

Faculty of Geotechnology, Geosciences and Mining
Department of Mine Surveying and Geodesy
Reiche Zeche Mine
Fuchsmühlenweg 9B
09599 Freiberg, Germany
<http://tu-freiberg.de/fakult3/mage>

4. Contact person (name and e-mail address):

Univ. Prof. Dr.-Ing. Jörg Benndorf, MPhil
Tel: +49 (0) 3731 39-2612 E-Mail: Joerg.Benndorf@mabb.tu-freiberg.de

¹ MSCA Individual Fellowships are selected on the basis of annual calls for proposals. Forthcoming and open calls for proposals can be found on the [Funding & tender opportunities Portal](#) of the European Commission.

5. Project idea/position (scientific requirements, topic, discipline):

Rough outline of idea/position:

Data assimilation for high-dimensional geological modelling

The topic of data assimilation has gained attention over the past five years as an opportunity to update geo-models as new data become available. In particular, the Kalman-Filter Approach has been further developed as an engine for real-time model updating in the context of real-time management of mineral resources in several European projects (e.g. H2020 funded project Real-Time Mining and RFCS funded project RTRO-Coal). For example, Wambeke and Benndorf (2018) demonstrated the value added of integrating online sensor data about hardness of ore for optimal ball mill control.

So far, attributes have been considered as separate uncorrelated variables. As part of this fellowship proposal, methods of data assimilation in geosciences shall be extended to multi-variate data including compositional data. This will allow to correctly accounting for correlated attributes, in particular mineral compositions. This is an essential step to incorporate sensor signals, which naturally are relative measures and thus should be treated as compositions.

At the moment, known approaches are limited to two-point statistics. To utilize the full information content of highly dense sensor data, high-order statistics shall be integrated in the assimilation framework. This allows accounting for geometrically more complex structures.

During the fellowship, methods should be theoretically developed and verified. Also a typically norm for the flow of information and necessary data base structures should be developed. For validation, a test in the research mine Reiche Zeche Freiberg can be considered. Areas of application include grade control modelling, the integrating geophysical and remote sensing data and environmental modelling in the context of pollution transport.

It is expected that candidates publish their work in international peer review journal papers and independently connect to global research centers focusing on related subjects as part of their professional network development.

Applicants should have demonstrated their ability of scientific work in a related field and an effective communication of results as part of their previous work.

Reference:

Wambeke, T. ;Elder, D. ;Miller, A. ;Benndorf, J.& Peattie, R. 2018 Real-time reconciliation of a geometallurgical model based on ball mill performance measurements – a pilot study at the Tropicana gold mine, Mining Technology, DOI: 10.1080/25726668.2018.1436957

Please tick:

☐ Life Sciences

☐ Natural Sciences

☒ Engineering Sciences

☐ Social Sciences and Humanities

6. Deadline² for considering interests by postdoctoral applicants:

Interested applicants should contact no later than September 10th, 2019.
However, we ask applicants to contact us as early as possible in order to plan and support the project in the best possible way.

² Please consider that the preparation of a Marie Skłodowska-Curie proposal requires some time and that the fellow and supervisor have to agree on a project and training opportunities for the fellow.