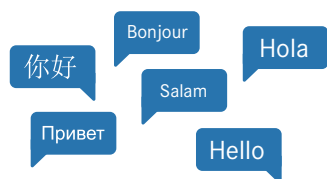




Scientific Director Jens Gutzmer (left) and Administrative Manager Simone Raatz (right)

The **Helmholtz Institute Freiberg for Resource Technology (HIF)** has the objective to develop innovative technologies so that mineral and metalliferous raw materials needed in the context of a sustainable Circular Economy can be produced and recycled in an efficient and environmentally benign manner.

The institute is part of the **Helmholtz-Zentrum Dresden-Rossendorf**. Researchers work in close collaboration with the **TU Bergakademie Freiberg**. The HIF is a founding core member of the **European EIT Raw Materials** partnership, having played a decisive role in its establishment. Furthermore, the HIF is coordinator of the regional network **recomine**.



35 nationalities

Diversity promotes our sense of togetherness



More than 150 employees
... are our most important resource.



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The Institute in Facts and Figures

HZDR
HELMHOLTZ ZENTRUM
DRESDEN ROSSENDORF

HiF

HELMHOLTZ INSTITUTE FREIBERG
FOR RESOURCE TECHNOLOGY



The Metallurgy Pilot Plant



Characterization with cameras and sensors



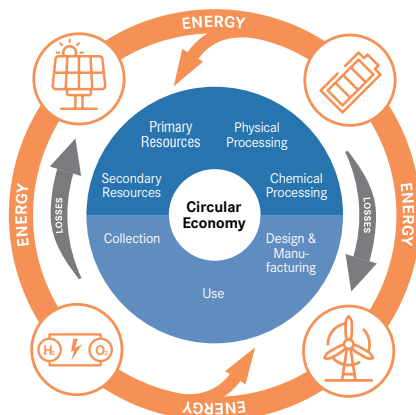
Exploration with drones

Our Vision & Mission:

We are a key enabler for a sustainable Circular Economy of minerals and metals.

We achieve this by:

- Creating & providing fundamental understanding;
- Developing innovative technologies & systems;
- Quantifying possibilities & limits of the Circular Economy;
- Collaborating with society, stakeholders & decision makers.



Our Research focuses on:

- Strategic mineral and metalliferous raw materials from complex primary and secondary resources.
- Development of technologies for a more efficient and environmentally benign exploration, beneficiation and recycling.

Our Partnerships:



Our Solutions cover:

■ Resource Exploration and Characterization

Our exploration activities focus on non-invasive methods using drones, cameras and sensors. Some of the sensors we develop by our own and integrate them into exploration and characterization systems. We are able to characterize complex raw materials comprehensively at various scales, using state-of-the-art machine learning approaches for data processing.

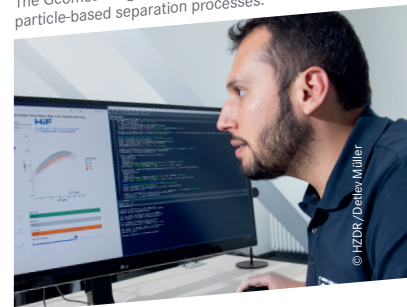
■ Process Development

Each raw material is unique, so process development starts off at HIF with particle characterization, all the way down to the nano scale. This knowledge is used not only to identify the most suitable beneficiation solutions, but also to describe their mode of action. A systematic use of design of experiments allows us to go from laboratory to industrial scale with minimal experimentation.

■ System Assessment

In geomaterials, the HIF connects relevant knowledge about raw materials and associated technologies across disciplines. The precise understanding of the composition and micro-structure of the raw materials is used to assess the effects of technological innovations on resource and energy efficiency as well as environmental impact.

The Geometallurgical data is used to model particle-based separation processes.



Flotation of raw material particles.

