

Superb Network

The Helmholtz Institute Freiberg maintains close contacts to the German Raw Materials Agency (DERA), the Helmholtz Association of German Research Centres, the Fraunhofer Society, and other non-university research institutions.

The network that has been established with universities in Germany and abroad also plays a decisive role in conducting successful, applied research of natural resources. Particularly close ties exist with the TU Bergakademie Freiberg.

The Helmholtz Institute Freiberg also attaches great importance to maintaining long term partnerships with national and international industrial enterprises.

The Institute is well integrated into the network of German and European raw materials policy-makers. Close ties exist to the:

- Advisory Board for the Development of a National R&D Strategy for New Resource Technologies initiated by the Federal Ministry of Education and Research (BMBF)
- European Innovation Partnership – Raw Materials Initiative
- European Research Area Network on the Industrial Handling of Raw Materials for European Industries (ERA-MIN)
- European Technology Platform on Sustainable Mineral Resources (ETP-SMR)
- European Rare Earths Competency Network (ERECON).

Cover picture: Crystal aggregate consisting of chalcopyrite, galenite, sphalerite, and calcite. Such an assemblage may contain, for example, indium, germanium, and silver.

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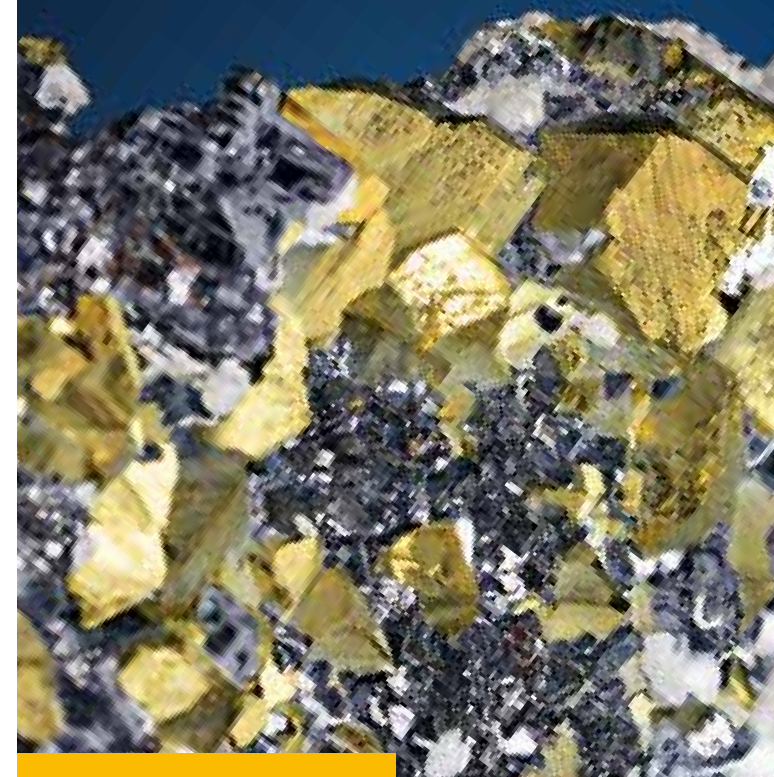
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Federal Ministry
of Education
and Research



Trace Metals for a Healthy Economy



Helmholtz Institute Freiberg for Resource Technology



Our Mission: Contributing to a Sustainable Supply

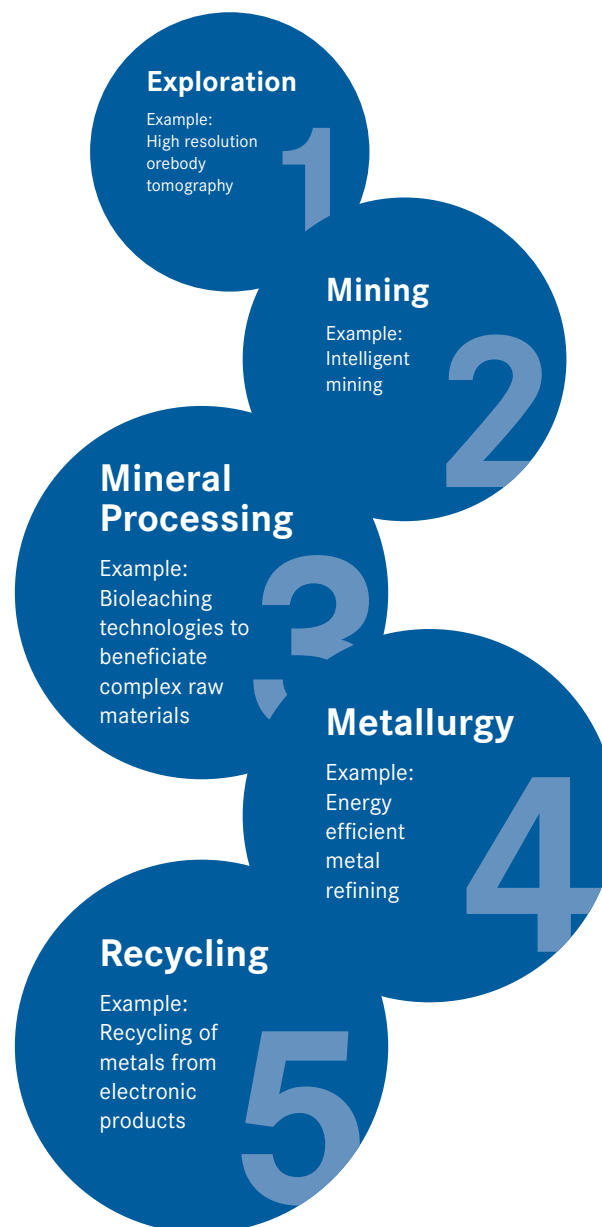
High tech needs them to survive: Germanium, gallium, indium, and other rare metals. But also such rare earth metals as scandium, yttrium, or lanthanum. Without them, it would be impossible to build energy saving light bulbs and mobile phones. Yet the demand for these trace metals is higher than their technological availability, which is why global competition has intensified for these strategic economic resources. Germany as a high tech country has to play an active role to ensure a sustained and stable supply of metalliferous raw materials to the global economy.

In order to advance and promote the development of technologies for the efficient use of mineral resources, Germany's Federal Government founded the Helmholtz Institute Freiberg for Resource Technology in 2011. The institute is to make a vital contribution towards implementing the national strategy on raw materials.

New Technologies – New Technologists

At the Helmholtz Institute Freiberg, experts from diverse research fields are working together on new technologies in order to obtain and provide metalliferous raw materials. Research is conducted on a broad range of topics – with a specific focus on mineral processing, metallurgy, and recycling. Central issues revolve around raw materials and energy efficiency as well as environmental protection – all within the scope of a more efficient and environmentally friendlier value creation in the minerals business.

With innovative technologies, the Helmholtz Institute Freiberg wishes to help establishing long-term relationships to countries that contribute to the supply of metalliferous raw materials to the global economy. The institute is also involved in the development of programs for the education and training of young scientists and technologists who will apply these new technologies.



Above and Below the Surface

The coveted metalliferous raw materials are found as natural resources in the Earth's crust, but also in discarded technological products. Either way, it is an increasingly complex task to extract and beneficiate such resources. That's why the Helmholtz Institute Freiberg addresses both issues. Core research topics include:

- Domestic raw materials in complex deposits
- Assessing the occurrence and distribution of high tech metals in known as well as previously unused raw material sources
- Geobiotechnological approaches to processing and refining by bioleaching and biosorption
- Recycling of high tech metals.

When it comes to the highly coveted rare earths, the Helmholtz Institute Freiberg wants to actually pursue a number of different paths. Rare earths occur in larger concentrations in electric motors, engines, and energy saving light bulbs. The requisite recycling procedures, though, are still in their infancy. Their continued development is, thus, a major research topic. At the same time, rare earth deposits around the globe are to be sampled and new evaluation models developed.

Excellent Infrastructure

Thanks to the joint use of research facilities both at the Helmholtz-Zentrum Dresden-Rossendorf (HZDR) and the TU Bergakademie Freiberg, the Helmholtz Institute Freiberg has access to a unique infrastructure:

- A fully-fledged underground mine equipped for research and education ("Reiche Zeche")
- Well-equipped pilot plant facilities for mineral processing and metallurgy
- Labs for the chemical and physical characterization of metalliferous raw materials, for example, at the HZDR's Ion Beam Center.