

## Partners



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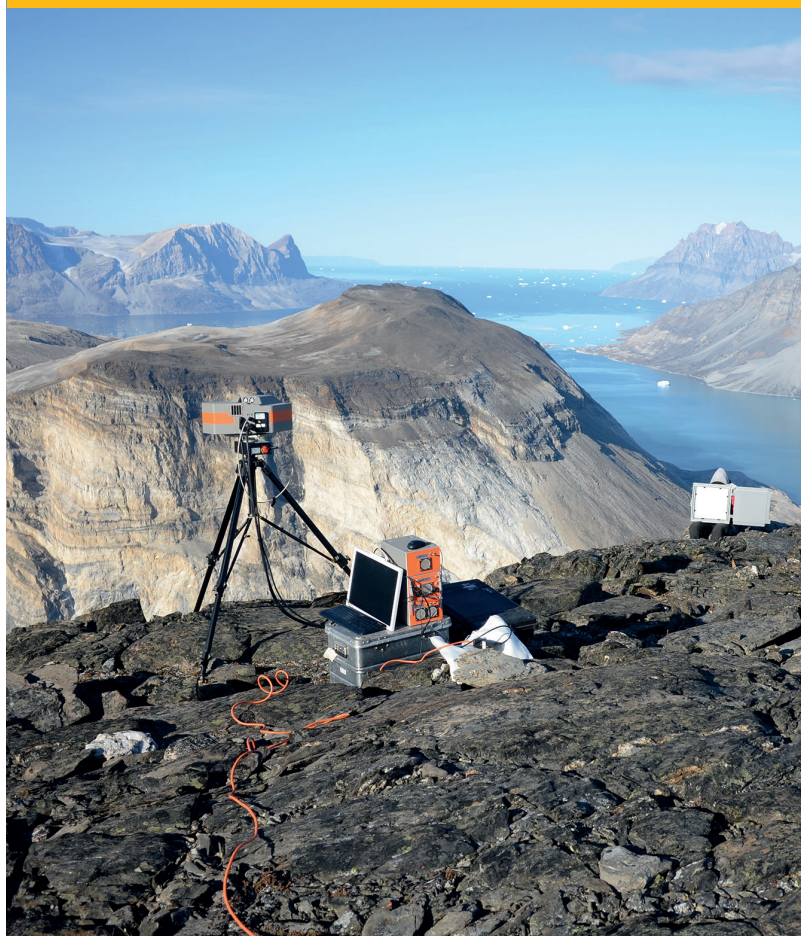
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## Mineral exploration today: Quick, precise and non-invasive



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Helmholtz Institute Freiberg for Resource Technology

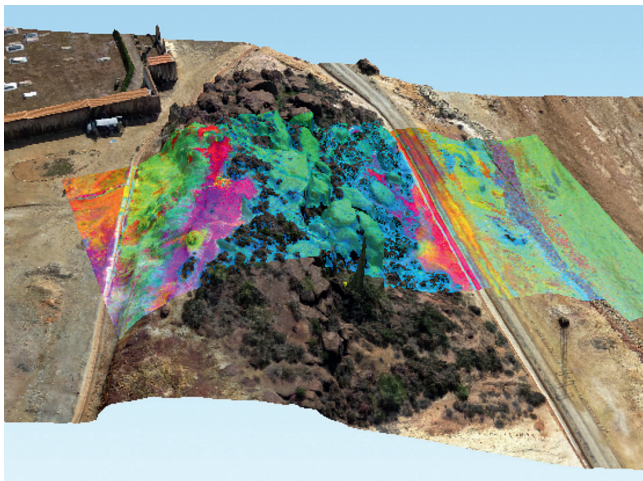


## THE BACKGROUND

### Exploration challenges

All over the world, mining companies are facing great challenges in exploring and developing new deposits of raw materials. In order to meet an ever-rising demand, mineral exploration is pushing further into remote locations; however, it is becoming more difficult because of the decreasing metal ore grades. The recycling of residues from tailings can therefore play an important part in securing future raw materials. Be it primary or secondary resources – there is an urgent need for innovative ways to explore and assess them.

In order to locate and characterize new ore deposits, the scientists at the Helmholtz Institute Freiberg for Resource Technology (HIF) are searching at the surface for minerals associated with these deposits by measuring the spectral properties of these minerals in the infrared range. Images are captured by special cameras on planes or satellites. The HIF team also use their own drones. They are one of the few groups around the world who are employing drone-borne hyperspectral exploration technology.



The HIF research team use drones and special cameras to locate and characterize ore deposits. This false-color hyperspectral image overlain on a 3D model reveals spectral contrasts of typical minerals associated with ore deposits in the Rio Tinto district in Spain. Picture credits: HZDR.

## THE GOAL

### Focus on drone-borne technologies

The HIF researchers are developing innovative technologies for the exploration of mineral raw materials.

Drone-borne technologies provide fast, accurate and inexpensive information which is depicted in three-dimensional mineral maps of the surface and which can lead to potential discoveries of deposits. In addition, the methods are non-invasive and can be used not only for exploration, but also in geomorphology, structural and lithological mapping, vegetation analyses and environmental studies.

The researchers are also testing geophysical methods for contactless exploration of mineral deposits down to a depth of 500 meters. The data gathered here are included in three-dimensional geological models of the subsurface. What is more, the HIF team are developing concepts for involving the local population in new exploration projects at an early stage.

### Our strengths

// We combine data at different resolution (multi-scale) and from different sensors (multi-source) to create a powerful integrated model.

// Working with HIF experts in the modelling, evaluation and analysis of raw materials, we are able to optimally assess the potential of deposits.

// We plan to test our technologies at our own test sites in Germany and abroad.

**Interested in working with us? Get in touch!**