

## **Development of a process route for the beneficiation of Bismuth crusts**

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In the BMBF-financed project "BiRec", GTT Technologies cooperates with industry and academic partners in order to develop alternative routes for the beneficiation of Bismuth crusts resulting from the processing of Lead ores.

Bismuth is increasingly becoming an important raw material, because it may substitute Lead in many applications with the advantage of being less aggressive for the environment and for human health. When the Lead ore contains Bismuth, two products result from the Kroll-Betterton refinement process: the Lead rich melt and a Pb-Ca-Mg-Bi crust, which contains 6-12% Bi. To extract the Bismuth from this secondary product, the presently utilized routes involve the utilization of environmentally aggressive substances.

In this project, we aim to develop an alternative route based on three processing steps to beneficiate the Bismuth crusts: melt centrifugation, ultra-selective oxidation and fractioned crystallization. The development of the process is being based on experiments, pilot plant tests and FactSage thermodynamic simulations of the various processing stages. A combined flow-sheeting/thermodynamic approach on the basis of SimuSage is being developed to optimize the process parameters.