iTARG3T. Innovative targeting & processing of W-Sn-Ta-Li ores: towards EU's self-supply

Title of the project: iTARG3T. Innovative targeting & processing of W-Sn-Ta-Li ores: towards EU's self-supply

Duration of the project: 2019 - 2021

Lead Partner

Agencia Estatal Consejo Superior de Investigaciones Cientificas M.P., CSIC (Spanish National Research Council), Spain

Partners

AGH University of Science and Technology, Poland
Fakulta Geologie Narodnej Univerzity Tarasa Szevczenka v Kijeve (University of Kiev), Ukraine
Geomet s.r.o., Czech Republic
Lithica SCCL, Spain
Luleå University of Technology (LTU), Sweden
Martin Luther Universität Halle-Wittenberg, Germany
Mineral and Energy Economy Research Institute of the Polish Academy of Sciences (MEERI), Poland
Redstone Exploration Services Sp. z o.o., Poland
Sociedade Mineira de Pegmatites Ltda (Pegmatítica), Portugal
Universidad Politecnica de Madrid, UPM (Technical University of Madrid), Spain
University of Zagreb – Faculty of Mining, Geology and Petroleum Engineering (UNIZG-RGNF), Croatia
Valoriza Minería SLU, Spain

Project website: https://eitrawmaterials.eu/project/itarg3t/

Contact person UNIZG-RGNF: Associated Professor Sibila Borojević Šoštarić

Contact e-mail: sborosos@rgn.hr

This activity has received funding from the European Institute of Innovation and Technology (EIT), a body of the European Union, under the Horizon 2020, the EU Framework Programme for Research and Innovation

Executive Summary

Europe has a large potential for the production and self-supply of tungsten-tin-tantalum-(lithium) (in further text: W, Sn, Ta, and Li) - raw materials 'critical' for the economy. Despite their deposits being abundant, specific problems related to their exploration, resource evaluation, mining, and concentrate production hamper their development. This project aims to overcome these limitations, leading to the opening of new mines by providing innovative tools for deposit targeting & development.

Project objective and scope

This project is of key strategic importance to the EIT Raw Materials KIC and Europe, as it aims to pave the way for Europe's self-sufficiency in an entire suite of critical raw materials – W, Sn,Ta, Li, and the tools developed will be largely applicable to other mineral deposit types and commodities as well. Here, it is important to reemphasize that Europe possesses the metal resources required to make it self-sustainable and to ensure the demand of its industry for many decades. However, in order for this to happen, it badly needs to restart its primary production hampered by decades of low metal prices, inadequate exploration methods, poor technological practices, and inappropriate to missing community relations policies, that made it lag behind with regard to the rest of the world. The change requires major technological upgrades and multiple-prong innovativeness along the full value chain of the raw material cycle, which in this project we aim to design, test, refine, and successfully apply.

The iTARG3T project aims to contribute significantly to the discovery and development of new W, Sn, Ta, Li deposits in Europe by improving exploration success in environments that are technically challenging and developing mineral processing solutions that will make ores increasingly economic to mine. The combination of exploration with the prediction of geometallurgical behavior of ores and innovative approaches to obtaining the social license for mining will add value to many existing and new projects and improve the capability of decision makers of going ahead with these projects.

Detailed objectives:

a. Developing conceptual exploration models and technologies for W-Sn-Ta-(Li) in key districts of RIS countries (Western Iberia, Erzgebirge, Eastern Europe);

b. Definition of pathfinders and vectors to ore for the most economically significant styles of W-Sn-Ta-(Li) mineralization;

c. Testing potential geophysical techniques for specific application in exploration for these deposit types;

d. A study of the state of the art of W-Sn-Ta-(Li) mining in Europe and prediction of market evolution: laying the path towards European self-supply;

e. Improvement of resource evaluation and grade control methods, using image processing of drillcore and stope faces at mines;

f. Testing new, efficient geometallurgy methods: innovative comminution for improved recovery rates, recovery of byproducts, and low energy - low water (dry) consumption technological processes, minimizing the loss of fine-grained ore minerals.

g. Evaluation of the social impact of W-Sn-Ta-(Li) small-scale mining and developing new tools to obtain the social license to operate;

This activity has received funding from the European Institute of Innovation and Technology (EIT), a body of the European Union, under the Horizon 2020, the EU Framework Programme for Research and Innovation

h. Training opportunities for European geologists in the field of W-Sn-Ta-(Li) exploration and mining, including some short courses open to graduate students from RIS countries.

This activity has received funding from the European Institute of Innovation and Technology (EIT), a body of the European Union, under the Horizon 2020, the EU Framework Programme for Research and Innovation