

TRANSTECH Project completed

In cooperation with the German project partners – the project coordinator **IME Metallurgical Process Technology and Metal Recycling** at RWTH Aachen University and the company **MiMi Tech GmbH** – and with the Canadian cooperation partner **University of Toronto** UoT, **MEAB Chemie Technik GmbH** has developed new leaching concepts and integrated them into an industrial process chain.

As a part of the BMBF funding program "*r4 - Innovative Technologies for Resource Efficiency - Economic Strategic Raw Materials*", the **TRANSTECH** collaborative project "*Development of transformative leaching technologies to increase the resource efficiency of Li, Co and Ag leading raw materials*" is aimed to research new approaches to improve the effectiveness of conventional leaching processes. These processes include the use of known technologies such as microwave, plasma and ultrasound, with the aim of increasing the reactivity of water, for example by generating free radicals. The treated water could reduce the chemical consumption for the leaching processes and making waste materials, which are uneconomical to process, viable in an environmentally friendly manner.

The focus of the investigations was on the starting materials, especially residues containing silver, lithium and cobalt, which are considered as waste products.

The tasks of MEAB consisted of the technical support, the development of a leaching process for silver-containing slag as well as the development of a process chain for the extraction of cobalt from transformatively obtained leaching solution and its review on a semi-technical scale. Firstly, the impurities in the solution were removed by stepwise treatments. Iron and manganese were successfully separated with the help of potassium permanganate via an oxidative precipitation (98% Fe, 97% Mn), and then copper is precipitated in metallic form via cementation process (99% Cu). The 99% of the remaining cobalt in the leaching solution was extracted selectively from nickel and transferred to further process steps.