

ABSTRACT

The project Characterization and technological procedures for recycling and reuse of flotation tailings from the "Rudnik" mine (REASONING) is a multidisciplinary research project of tailings examination through geological, mineralogical, geochemical, geophysical scientific investigations and the development of appropriate technological methods for the use of tailings in industry. REASONING, funded by the "PRIZM" program of the Science Fund of the Republic of Serbia, examines tailings formed during decades of exploitation and flotation processing of ore from the "Rudnik" mine. The primary objectives of the project are characterization, development of technological methods for efficient extraction of useful metals and other elements present in tailings and assessment of the possibility of using tailings as raw material. Research will be carried out through work packages that will aim to: measure and track changes in physical-chemical conditions in the tailing with depth, correlate magnetic susceptibility with heavy metals contents with depth and to define the enrichment zones, determine distribution of mineral associations, variations and trends in the composition of pore waters, heavy metals and accompanied elements in tailing with depth, investigate distribution of stable mineral association and elements distribution through theoretical geochemical modeling, investigate optimal pathway for elements extraction through theoretical approach, investigate the electrochemical separation of elements from synthetic and leached solutions, and investigate technological procedure for the valorization of useful components from the tailing material. The project team consists of researchers from geology, mineral industry, technology, chemistry from six domestic and one scientific research institution from abroad. The REASONING project will contribute to the study of the distribution of elements, extraction procedures and the way of using tailings from the "Rudnik" mine tailings, and the results of this project should be a standard for future research and complex valorization of tailings in Serbia.

Keywords: Prizma, REASONING, Rudnik, tailings, Science Fund of the Republic of Serbia