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PARTNER ORGANISATIONS



EU MSCA-ETN REDMUD



Introducing REDMUD

To tackle its (critical) raw material dependency, Europe needs comprehensive strategies based on sustainable primary mining, substitution and recycling. Freshly produced flows and stocks of landfilled industrial residues such as mine tailings, non-ferrous slag and bauxite residue (BR) can provide major amounts of critical metals and, concurrently, minerals for low-carbon building materials. The European Training Network for Zero-Waste Valorisation of Bauxite Residue (REDMUD) targets the vast streams of new and stockpiled BR in the EU-28. BR contains several critical metals, is associated with a substantial management cost, whereas spills have led to major environmental incidents, including the Ajka disaster in Hungary. To date, zero-waste valorisation of BR is not occurring yet. The creation of a zero-waste BR valorisation industry in Europe urgently requires skilled scientists and engineers, who can tackle the barriers to develop fully closed-loop environmentally-friendly recovery flow sheets.

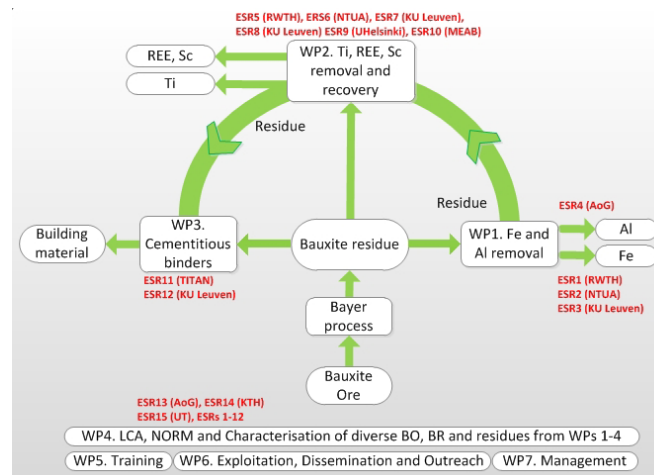
REDMUD Goals and Challenges

REDMUD trains 15 researchers in the S/T of bauxite residue valorisation, with emphasis on the recovery of Fe, Al, Ti and rare earths (incl. Sc) while valorising the residuals into building materials. An intersectoral and interdisciplinary collaboration of EU-leading institutes and scientists has been established, which covers the full value chain, from BR to recovered metals and new building materials. Research challenges include the development of efficient extraction of Fe, Al, Ti and rare earths (incl. Sc) from distinct (NORM classified) BRs and the preparation of new building materials with higher than usual Fe content.

REDMUD Consortium

REDMUD draws its talents from 9 Beneficiaries, including 6 Research Institutes (KU Leuven (coord.), UHelsinki, RWTH Aachen, KTH, NTUA, UTartu) and 3 Companies (MEAB, Aluminium of Greece, Titan). Concurrently, REDMUD is strengthened with 4 additional Partner Organisations (UPatras, UAveiro, Bay Zoltan, Tasman Metals) and an Advisory Board.

REDMUD GENERAL WORKFLOW



Meet REDMUD's 15 Researchers



Buhle Xakalashe
ESR 1, RWTH Aachen (Germany)
Carbothermic reduction removing metallic Fe with controlled cooling to create specific phases for increased leaching efficiency
Supervisors: Prof. B. Friedrich



Chiara Cardenia
ESR 2, NTUA (Greece)
Iron oxide removal from BR through microwave roasting and magnetic separation
Supervisors: Prof. I. Paspiliaris



Chengjun Yu
ESR 3, KU Leuven (Belgium)
Direct electroreduction of iron oxides from BR
Supervisors: Prof. J. Franssaer, Prof. B. Blanpain



Pritii Tam Wai Yin
ESR 4, Aluminium of Greece (Greece)
Recovery of aluminium oxide from BR
Supervisors: Dr. D. Kosmetatos, Prof. D. Panias



Gozde Alkan
ESR 5, RWTH Aachen (Germany)
Selective leaching for Ti recovery
Supervisors: Dr. S. Stopic



Chiara Bonomi
ESR 6, NTUA (Greece)
Ionic Liquid leaching for reactive metals (Ti, Sc, REE) recovery
Supervisors: Prof. D. Panias



Rodolfo Marin
ESR 7, KU Leuven (Belgium)
Process Intensification for rare earth element recovery from BR
Supervisor: Prof. T. Van Gerven, Prof. K. Binnemans



Dzenita Kasapovic
ESR 8, KU Leuven (Belgium)
Recovery of rare earths with supported ionic liquid phases
Supervisors: Prof. K. Binnemans



Wenzhong Zhang
ESR 9, U Helsinki (Finland)
Separation of REEs using inorganic metal phosphate ion exchangers
Supervisors: Dr. R. Harjula, Dr. R. Koivula



Bengi Yagmurlu
ESR 10, MEAB (Germany)
Selective recovery and purification of Sc compounds from leach solutions
Supervisors: C. Dittrich, Prof. B. Friedrich



David Ariño Montoya
ESR11, Titan (Greece)
Fe-rich hydraulic binders from BR
Supervisors: Dr. M. Chaniotakis, Prof. G. Angelopoulos, Dr. Y. Pontikes



Tobias Hertel
ESR 12, KU Leuven (Belgium)
Fe-rich inorganic binders from BR
Supervisors: Prof. B. Blanpain, Dr. Y. Pontikes



Johannes Vind
ESR 13, Aluminium of Greece (Greece)
Analysis of the secondary and trace bauxite elements distribution through the Bayer process and its by-products
Supervisors: Dr. V. Vassiliadou, Dr. M. Taxiarchou



Peter James Joyce
ESR 14, KTH (Sweden)
Comprehensive Life Cycle Assessment (LCA) of BR valorisation and enhancement of LCA methodology to include Naturally Occurring radioactive Material (NORM)
Supervisor: Associate Prof. A. Bjorklund, Prof. K. Van Acker



Andrei Goronovski
ESR 15, University of Tartu (Estonia)
Systematic study and NORM-LCA methodology development of NORM aspects in the BR valorisation chain
Supervisors: Associate Prof. A. Tkaczyk



"This Summer School is organised under the umbrella of the European Union's EU Framework Programme for Research and Innovation Horizon 2020. The aim is to bring PhD students and postdocs together to learn and discuss about red mud."