24
Cr
Chromium

EU import: **45%**

Year of discovery: **1761**

applications

Chrome plating, stainless steel leather tanning, Cr-alloy steel, pigment, aerospace, refractory bricks

41
Nb
Niobium

EU import: **100%**

Year of discovery: **1801**

applications

Prosthetics and pacemakers, commemorative coins, superconducting magnets

42
Mo
Molybdenum

EU import: **100%**

Year of discovery: **1778**

applications

Metallurgy, fertilizer, military armor, aircraft parts, electrical contacts, industrial motors, filaments

23
V
Vanadium

EU import: **100%**

Year of discovery: **1801**

applications

Ferrovanadium alloys steel additive (in axles, bicycle frames, crankshafts, gears), titanium alloys (jet engines, high-speed airframes, dental implants)

CHROMIC is a research and innovation action financed by the European Commission under the Horizon 2020 Programme (Grant Agreement Number 730471), running from November 2016 until October 2020.

Project coordination

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CHROMIC

efficient mineral processing and Hydrometallurgical RecOvery of by-product Metals from low-grade metal containing seCondary raw materials

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CHROMIC

efficient mineral processing and Hydrometallurgical RecOvery of by-product Metals from low-grade metal contaIning seCondary raw materials

This project received funding from the European Union's **Horizon 2020 Research and Innovation** program under **Grant Agreement n° 730471**

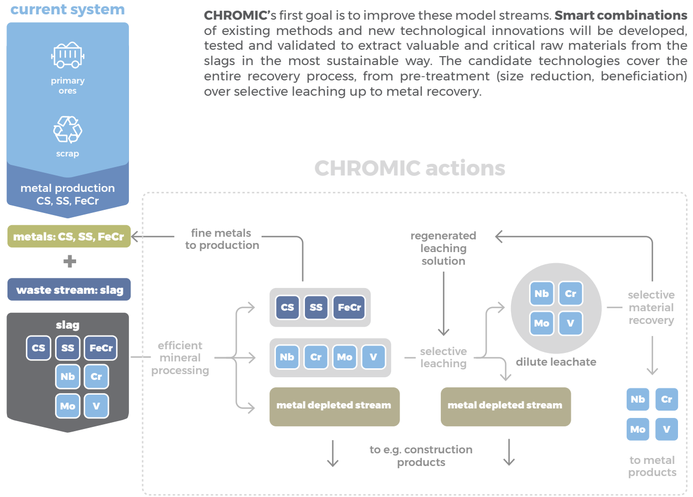
The **CHROMIC project** is developing new recovery processes for chromium, niobium, molybdenum and vanadium. These four metals are crucial for the European industry, but they are sourced mainly from outside Europe - in particular from South Africa, Brazil, USA, China, Russia, Kazakhstan and Turkey. Europe does have large stocks of industrial by-products, such as steel, stainless steel and ferrochrome slags, which contain significant amounts of these four elements that are currently not fully exploited. These slags are used mainly as aggregates in the construction industry, with small fractions of some slags even being landfilled. In these applications, the entrapped valuable elements are not used to their full value. The CHROMIC project aims to unlock the potential of these resources, by developing new sustainable ways of metal recovery, leading to a zero-waste recycling of the entire slag materials.

The goals of the project

CHROMIC has many goals at multiple levels. By addressing a technological challenge, it aims to bring about economic and environmental improvements that will benefit not only the related industry, but society as a whole.

CHROMIC project: main areas of interest

The project will focus on **carbon steel (CS), stainless steel (SS) and ferrochrome (FeCr)** production chains. In these model streams, great amounts of slags are produced, and they contain useful metal resources at low concentrations that, nowadays, are not recovered from the material.



Current production system and the new CHROMIC system

CHROMIC's first goal is to improve these model streams. **Smart combinations** of existing methods and new technological innovations will be developed, tested and validated to extract valuable and critical raw materials from the slags in the most sustainable way. The candidate technologies cover the entire recovery process, from pre-treatment (size reduction, beneficiation) over selective leaching up to metal recovery.

The final goal of **CHROMIC** is to recover maximal value from secondary resources, in line with the requirements of the circular economy and with market demand. By turning valuable compounds which are left in the slag into metal, Europe's raw materials supply source can be diversified. At the same time, fractions of primary materials are recovered that can be reused as input flows in production processes. This will improve the sustainability and reduce the environmental impact of the metal industry. Furthermore, in some cases a more efficient use of resources can free up land currently used for landfilling or intermediary stocks, alleviating the burden for future generations.

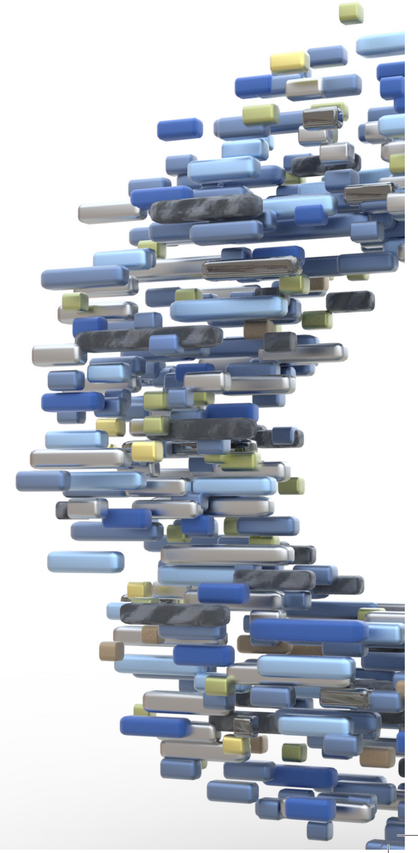
effiCient mineral processing and Hydrometallurgical RecOvwery of by-product Metals from low-grade metal contalning seCondary raw materials

EU project reference: http://cordis.europa.eu/project/rcn/206225_en.html

CHROMIC: expected impact

300 M€ value **recovery** per year	**secure** supply of **crucial metals**	**reduce** environmental **impact**

CHROMIC is an inclusive project. Among its key goals is to involve relevant local and professional communities in devising a new value chain for critical raw materials, based on the circular economy context. Through participatory events, CHROMIC will collect the views and expectations of European citizens about the occupational, environmental and health aspects of metal production and recovery. This knowledge will help to prepare a path for successful market application of the technologies developed by the project.



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