Recovery of Tungsten, Niobium and Tantalum occurring as by-products in mining and processing waste streams

Why W, Nb and Ta?

Tungsten (W), **Niobium (Nb)** and **Tantalum (Ta)** are **refractory metals** displaying extraordinary chemical, heat and wear resistance but are listed as **Critical Raw Materials** by the European Commission.

19 500	12 500	~300	EU demand (t/y)
44% W	100% Nb	100% Ta	EU import reliance
87 000	75 000	1800	global production (t/y)

Low volume, high importance

Although the usage of **W**, **Nb** and **Ta** is small, they are essential in applications including **capacitors** for **mobile phones** and **hearing aids**, **high-strength steel** for **pipelines**, **superconducting magnets** for **MRI machines** and **carbides** for **cutting tools** and **drilling bits**.

Did you know?

Tantalum is named after the Greek demigod Tantalus, who was condemned to eternal frustration, because this element is so resistant to acid. Niobium is named after Niobe, the daughter of Tantalus [1].

tarantula

Project information

Grant agreement ID: 821159

Ongoing

1 Jun 2019 – 30 Nov 2023 (54 M)

6.9 MEUR

Coordinator: tecnalia (Spain)

Consortium: 16 partners covering the whole value chain

vito, KU LEUVEN, SINTEF, LIÈGE université, CHALMERS, sidenor, Saloro, EMINES, CRONIMET, Strategic Minerals Spain, idener, vito, TIC TANTALUM-NIOBIUM, ICAMCYL, PNO

The **TARANTULA** project has been aiming to reduce the dependence of the EU on refractory metal imports by valorizing unconventional European resources. Novel metallurgical technologies have been developed aiming to increase the recovery rates and selectivity to finally unlock the metals from resources that are currently considered as waste.

▲ Dumps of flotation residue from tungsten mining (Salau, France) still contain a high value in tungsten [2].

▲ Deep Eutectic Solvents (DES) systems for leaching followed by liquid/liquid extraction technologies and electrodeposition are used in TARANTULA to increase the recovery of W, Nb and Ta

What Tarantula has achieved so far?

- Concluded the studies on commercial viability of the Ta, Nb & W resources within the European Union
- Investigated environmentally friendly technics in the processing of mineral bearing ores for Ta, Nb & W
- Explored technologies that would aid in a robust supply chain of Ta, Nb & W into the EU member states
- Selected the most promising worksheet for upscaling and constructed the pilot
- Organised workshops informing the EU community of the benefits of having critical minerals mined and processed within the EU

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https://h2020-tarantula.eu

Sources
[1] TIC (https://www.tanb.org/index)
[2] ©BRGM