PhD Thesis Opportunity – Sustainable Recovery of Critical Raw Materials

The role

The PhD candidate will undertake research on the recovery of critical raw materials from industrial residues and by-products. The project will involve experimental laboratory work, chemical and mineralogical analyses, process optimisation, and data interpretation, aiming to advance sustainable metal recovery methods and improve resource efficiency. As a member of a multidisciplinary and international research team, the candidate will gain hands-on experience with state-of-the-art analytical and process technologies, develop expertise in industrial sustainability, and have the opportunity to collaborate with leading experts and participate in international research stays. This PhD provides a unique opportunity to build a strong profile at the intersection of industrial process innovation, circular economy strategies, and environmental sustainability, while contributing to solutions for more efficient and environmentally responsible metal recovery. The successful candidate will also have the chance to disseminate results in high-impact journals and conferences, strengthening their academic and professional visibility.

What do we look for?

- ### Qualifications
  Master's degree in Chemistry, Chemical Engineering, or Environmental Engineering.
- ### Competences
  Solid background in chemical analysis; additional knowledge of mineralogy is considered an asset. Experience or strong motivation for experimental laboratory work. General understanding of metal recovery processes and their role in the energy transition and circular economy. Good communication skills in English, both spoken and written. Ability to work independently as well as collaboratively within multidisciplinary and international team.

Working conditions

- Contract duration: 3-years full-time contract
- Location: Barcelona
- Target start date: January 2026

The institute

The **Institute of Environmental Assessment and Water Research (IDAEA)** is an environmental research center of the **Spanish National Research Council (CSIC)**. Distinguished by its interdisciplinary approach, our research spans chemistry, biology, toxicology, hydrology, and geology, addressing a wide range of environmental challenges.

At IDAEA, we investigate the origin and health effects of emerging contaminants, the atmosphere-ocean exchange and biogeochemistry of anthropogenic chemicals, paleoclimatic changes, and the use of chemometric tools for big data analysis. Our expertise also extends to water resource management, air quality issues, and circular economy strategies.

Our research is grounded in the One Health concept, recognizing the deep interconnection between the health of humans, animals, plants, and ecosystems. With a strong capacity for interdisciplinary research, we tackle environmental challenges at local, regional, and global scales.

Founded in 2008 and structured into two main departments—Environmental Chemistry and Geosciences—IDAEA was recognized as a "Severo Ochoa" Center of Excellence in 2020, underscoring our scientific leadership and global impact.

We offer a diverse and inclusive environment where no discrimination against disability, gender, nationality, religion or sexual orientation will occur during the selection process.

How to apply?

Those interested may email their **CV** and **motivation letter** to **Patricia Córdoba Sola** at patricia.cordoba@idaea.csic.es, adding PhD position to the email subject.

Deadline: 15 November 2025