



# MSCA Postdoctoral Fellowships 2026

Attractive Research opportunities  
in Extremadura -Spain-



European  
Commission



Marie Skłodowska-Curie Actions  
Research Fellowship Programme

*Freedom of scientific research / Internationalization / Prestige / Economic resources*



## EXPRESSION OF INTEREST - SUPERVISOR

### Supervisor Profile:

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**Name and Surname:** Moheddine WEHBIE

**Position:** Senior Researcher / Hydrometallurgy & Circular Economy

**Department/Unit/Centre:** Iberian Energy Storage Research Center (CIAE), Spain

**a)** Describe your qualifications and experience. Provide information regarding your level of experience on the research topic proposed and your track record of work (e.g., papers, projects, main international collaborations, patent etc.), highlighting which scientific, technical and soft skills you will transfer to the candidate during the implementation of the research project.

I am a senior researcher with 12+ years of experience in hydrometallurgy, critical metals recovery, and circular economy processes, focused on translating laboratory research into scalable industrial solutions.

My expertise covers the full hydrometallurgical chain, including leaching, solvent extraction, selective precipitation, ion exchange, electrowinning, and electrorefining, applied to complex secondary resources such as WEEE (batteries, catalysts, and energy systems...)

My research is centered on circular recovery of critical and precious metals (Au, Ag, Pt, Ir, Co, Ni, Li, REEs) with increasing focus on energy transition technologies, particularly lithium-ion batteries and PEM electrolyzers.

At CIAE, I lead research on critical raw material recovery from energy storage and hydrogen systems, including Pt and Ir recovery from PEM electrolyser components. My work integrates hydrometallurgical flowsheet design, selective separation, and process scale-up, with emphasis on robustness, safety, and industrial transferability.

I have authored 16 peer-reviewed publications in journals including Hydrometallurgy, ACS Applied Materials & Interfaces, Waste Management, and Dalton Transactions, Resources Conservation and Recycling, covering:

- Selective extraction and recovery of strategic metals,
- Solvent extraction and separation chemistry,
- Recycling of electronic and energy materials.
- Circular Economy

I am also co-inventor of two international patents on selective metal recovery processes, demonstrating strong innovation and technology transfer capacity.

### Skills transferred to the candidate

The candidate will be trained in:

- Hydrometallurgical design for multi-metal recovery systems (Ir, Pt, Co, Ni, Li),
- PEM electrolyser and MEA recycling strategies,
- Solvent extraction and purification processes,
- Interpretation of materials degradation and analytical data (ICP, SEM-EDX, XRD, ...),
- Circular economy design for energy systems,
- Scientific publication and EU research dissemination.
- Collaboration with academic and industrial actors around Europe

b) Show your level of experience in supervising/training students and researchers, especially at advanced levels (i.e., PhD and postdoctoral researchers).

I have supervised and mentored researchers at multiple levels, including junior researchers (a postdoc, a PhD, and a master student), in both academic environment.

My supervision experience includes leadership of:

- laboratory teams in hydrometallurgical process development,
- industrially oriented recycling and circular economy projects,
- European collaborative research activities in metals recovery and energy systems.

At CIAE and in previous roles (PSL/Chimie ParisTech, Avignon University), I have overseen experimental programs in battery recycling, precious metal recovery, and process optimization, surfactants, ensuring scientific rigor, safety, and reproducibility.

## **What we offer (Research support):**

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### Research facilities:

The candidate will join a highly interdisciplinary environment focused on hydrometallurgy, energy materials recycling, and circular economy technologies, with strong orientation toward industrial transfer and EU collaboration.

Access will be provided to:

- hydrometallurgical leaching, separation, and purification laboratories,
- solvent extraction and metal recovery systems,
- analytical platforms (ICP-AES, SEM-EDX, XRD, FTIR, NMR, chromatography),
- battery and PEM electrolyser material processing facilities.
- Ir/Pt oxidation state analysis,
- degradation mechanism studies in MEAs,
- structural evolution of catalyst layers and ionomers.

### Networking possibilities & external relations:

The project is embedded in European networks in:

- hydrogen and PEM electrolyser technologies,
- critical raw materials and circular economy initiatives,
- battery and WEEE recycling industries,
- synchrotron-based materials science collaborations (ESRF).

## **Project idea/position (scientific requirements, topic, discipline):**

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Scientific discipline: Hydrometallurgy / Electrochemical Materials Recycling / Circular Economy / Energy Systems Engineering

This project aims to develop a closed-loop circular recycling framework for Membrane Electrode Assemblies (MEAs) in Proton Exchange Membrane (PEM) water electrolyzers.

The focus is on:

- recovery of Iridium (Ir) and Platinum (Pt) catalysts,
- recovery and reconditioning of Nafion ionomer systems,
- mechanistic understanding of degradation in end-of-life MEAs
- development of non-destructive delamination and separation strategies,
- purification and resynthesis of recovered metals and functional polymers,
- refabrication and validation of MEAs demonstrating closed-loop circularity.

The expected outcome is a validated industrial-relevant circular lifecycle model for PEM electrolyzers, reducing dependence on critical raw materials and enabling sustainable hydrogen production technologies.