



Dear reader,

As we wrap up the first year of the REDHy project, we are proud to share that we have successfully reached our first major milestone. This achievement marks a significant step forward in our efforts to develop green hydrogen production, and we are pleased with the progress we've made so far.

As the year draws to a close, we want to take a moment to extend our warmest wishes to all of you. May your holiday season be filled with joy, and may the new year bring happiness, health, and success. We look forward to achieving even greater milestones in 2025 and sharing them with you.

Thank you for your continued support, and here's to a bright future ahead!

We wish you a Merry Christmas, and a Happy New Year!

Events



CNR at AEM2024

The Consiglio Nazionale delle Ricerche (CNR) was present at AEM 2024 and represented the REDHy project.

AEM 2024 is a premier conference series (22nd edition) on advanced energy materials, held from October 9-11, 2024, in London.

The objective of this premier conference is to bring together scientists, academics, industry experts, and students to exchange and advance their knowledge and groundbreaking ideas for future energy applications.

CNRS at GDR Redox 2024

We were excited to share that at the recent annual meeting of the GDR Redox—a collaborative network of French laboratories focused on Redox Flow technologies—our REDHy partner, CNRS, participated in the event.

Speaker: Matthieu Etienne

Title: "Redox Flow Systems and Hydrogen"

During his presentation, Matthieu presented key findings from their bioconversion research involving hydrogen, offering valuable insights into applications that extend beyond the scope of the REDHy project. This provided a great opportunity to explore innovative work in the field and discuss the potential impact of these discoveries on future technologies.

Upcoming events

- REDHy's Third General Assembly (GA) meeting, 12 February 2025
- Aqueous Organic Redox Flow Batteries (AORFB), 24 April 2025
- European Fuel Cell Forum (EFCF), 1-4 July 2025

News

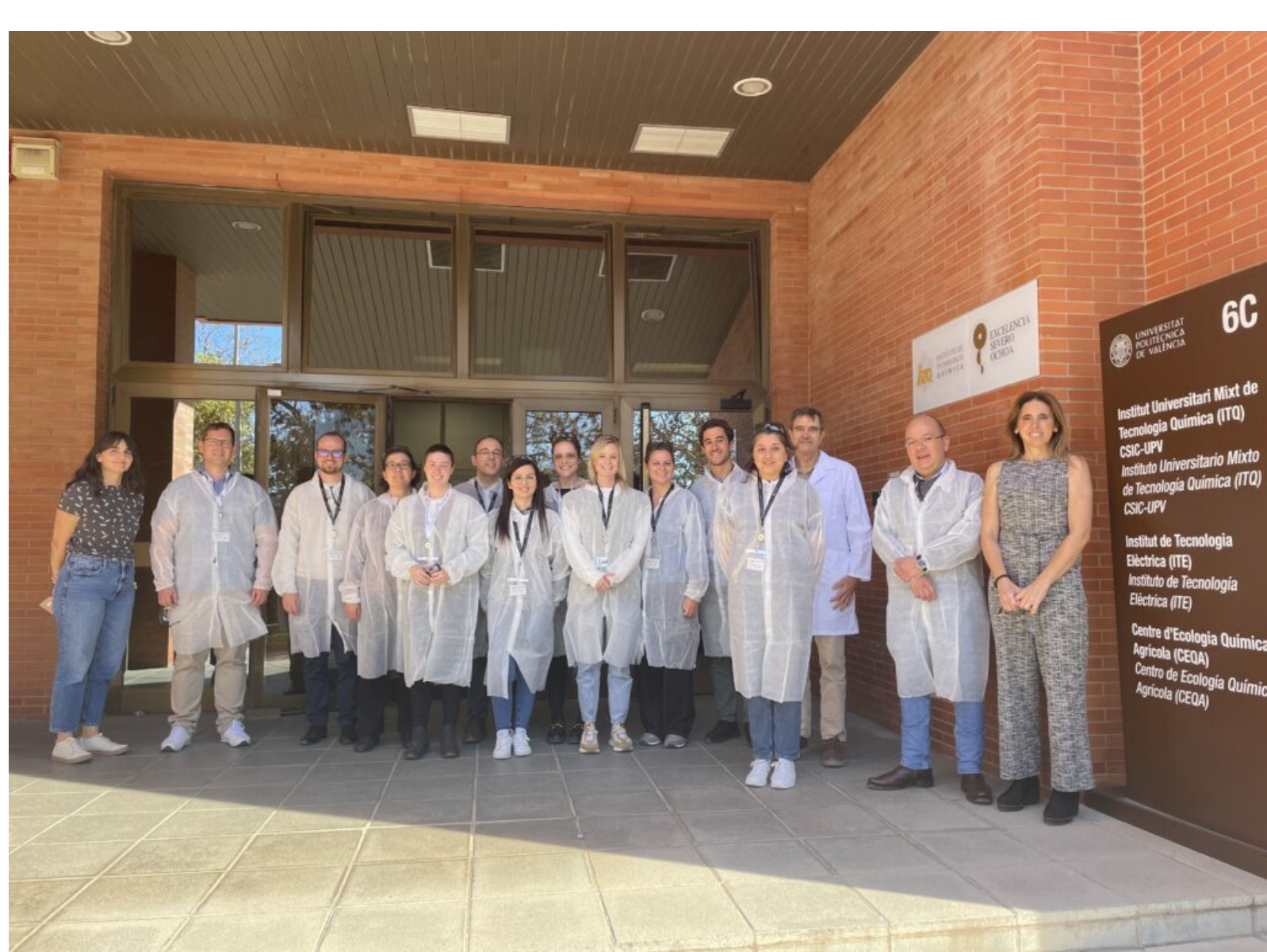


First milestone achieved!

We are pleased to announce the achievement of Milestone 1 (MS1) within the REDHy project. This milestone represents a key step in advancing the science of redox-mediated water electrolysis by predicting the optimal mediators for each family of compounds. Conducted under Work Package 2 (WP2), the milestone leverages cutting-edge computational methods to enhance hydrogen evolution (HER) and oxygen evolution (OER) reactions.

Theoretical calculations were performed to estimate the redox potentials of diverse mediator families, including substituted viologens and naphtho-/anthraquinones. Ab initio simulations and advanced solvation models assessed how structural modifications influence reduction potentials and electron distribution. Initial predictions were validated against existing literature to ensure accuracy, while further refinements were aligned with experimental scaling factors.

These insights pave the way for synthesizing highly efficient mediators tailored for specific roles in the REDHy system, bringing us closer to achieving economic, critical raw material-free, and highly efficient green hydrogen production.



Second General Assembly meeting in Valencia

On October 17-18, the REDHy consortium gathered in Valencia for its second face-to-face meeting, hosted by the Universitat Politècnica de València (UPV). This two-day event featured a full day of work package (WP) updates, two workshop sessions, and a tour of the ITQ lab.

The meeting kicked off with an overview of project management by [DLR](#), followed by an in-depth presentation from [UPV](#) on the progress of WP2, Redox Mediators. [CENMAT](#) then provided an update on WP3, covering the bipolar membrane. After a brief coffee break, the day continued with a presentation from [CNRS](#) on WP4, which focuses on electrode design and optimization. [IDN](#) (WP7) led an engaging workshop on LCA methodology and data collection, offering valuable insights to all participants.

[CNR](#) presented WP5, highlighting the development and validation of the Single Cell REDHy prototype. [UNR](#) closed the first day with an update on WP8, focused on dissemination and communication, including a short session dedicated to showcasing the project's communication materials (e.g., the website, LinkedIn) and outlining next steps for further dissemination and exploitation.

That evening, during a working dinner, strategic discussions about the project's future direction took place.

Read all about the second day [here](#).

Get to know Stefania Siracusano from CNR-ITAE



Stefania Siracusano is a senior researcher at CNR ITAE.

What was your original motivation to become a researcher?

"My motivation to become a researcher arises from my curiosity and desire to understand what happens around me. I've always been attracted by complex questions and find answers. I enjoy working with other people and sharing our knowledge."

What is your (main) research area today?

"The research activity is focused on the development of innovative energy conversion systems, in particular on electrochemical energy conversion technologies through water electrolysis processes powered by renewable sources (production of renewable hydrogen)."

What is the main focus of your team in REDHy?

"Develop the proof concept of a novel water electrolysis technology based on a highly performing, stable and efficient single cell based on redox mediators with external heterogeneous catalysts for O₂ and H₂ evolution; validate durable high yielding electrochemical processes using bipolar membranes, redox mediators and advanced high surface area electrodes all based on non-critical raw materials."

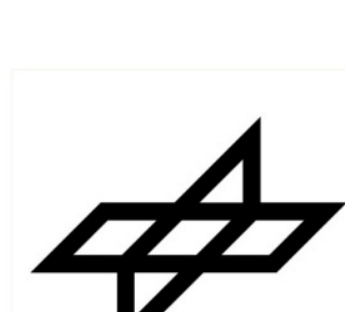
Could you describe your favourite moment/satisfaction when working for the project and - more in general - for your organisation?

"Design and development of the Redhy prototype but also validation of the components."

How do you expect REDHy results will affect your organisation and the energy storage sector?

"Develop new technology for green hydrogen production."

REDHy Partners

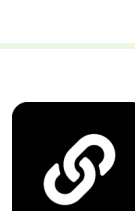


Acknowledgement & Disclaimer

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