Redox-Mediated economic, critical raw material free, low capex and highly efficient green hydrogen production technology

Dear reader,

Welcome to the third edition of our newsletter!

The past few months have been quite productive for the REDHy project. We have successfully achieved several key milestones and made significant strides in advancing our work. Additionally, we had the opportunity to showcase our project and results at various conferences, delivering presentations and representing REDHy at DLR's own booth at Hannover Messe 2025. We also contributed to workshops, further engaging with the hydrogen community. Moreover, we've been busy organizing our own online webinar!

In this packed edition, you'll find more details on these exciting developments. We also feature exclusive partner interviews, giving you the chance to get to know the REDHy team even better.

With summer well underway, we wish you a relaxing and enjoyable holiday season.

Kind regards,

The REDHy team

Save the date

We are pleased to invite you to the first webinar of the REDHy project, titled "Electrolysis and Redox Flow Batteries: Combining the Two Worlds."

Register here

Join us online on **November 25th, 2025, at 10:00 AM** for an insightful session covering the cutting-edge principles behind redox flow batteries and their integration with electrolysis for the production of hydrogen and oxygen. The webinar will delve into the basic principles of redox flow batteries, mediator-assisted electrolysis, and the crucial role of catalysts and membranes in optimizing system performance. Our experts will also share the latest research on electrochemical methods to improve efficiency and functionality. Don't miss out on this opportunity to be part of the conversation shaping the future of sustainable energy!

Register now to secure your spot. The agenda and speakers will be announced soon.

News

Optimising GO Ink Printing for Advanced 3D-Printed Electrodes in the REDHY Electrolyser

The LCPME group from CNRS leads WP4 with the goal of optimising the REDHY electrolyser by refining the electrode design for enhanced fluidic management. The objective is to develop electrodes that can handle high current densities while balancing performance and durability.

Taking things to the next level, we are incorporating 3D-printed electrodes featuring engineered flow paths and optimized porous structures. These innovations are designed to improve the electrolyser's efficiency and longevity. The video showcases the power of Direct Ink Writing (DIW) technology, modified from a standard FDM printer. Watch as the logo is printed using customized graphene oxide (GO) ink, highlighting the versatility of DIW for advanced material deposition.

Read the full news item here.

Results

Milestones

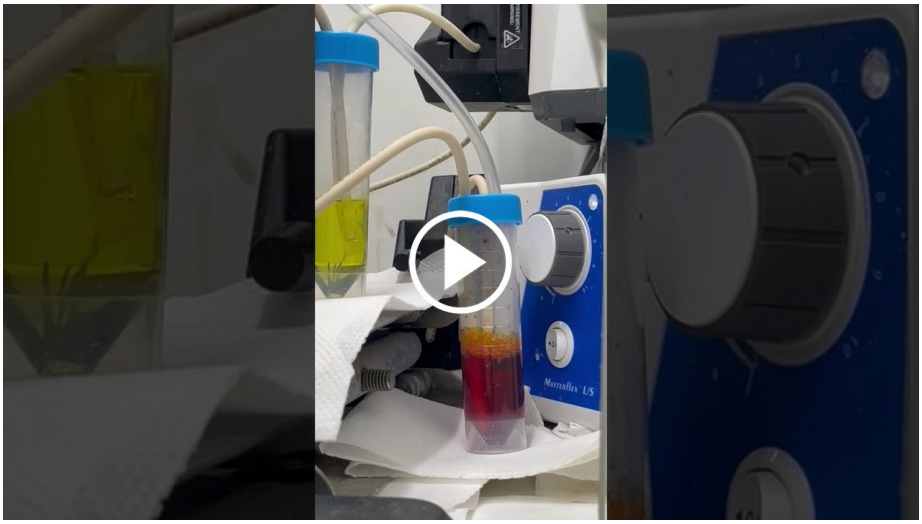
The REDHy project has achieved new milestones. Read more about it on our website.

- Breakthrough in Redox Mediators for Enhanced Electrolysis Efficiency
- PEM and PEI Validation
- Heterogeneous Catalysts Validation: see video below demonstrating the redox couple conversion and water splitting.

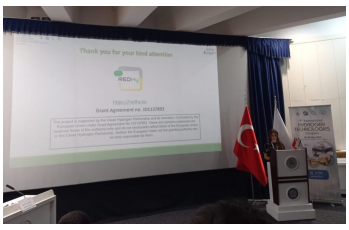
Deliverables

The following deliverables are now available to read on our website:

- D3.1 Fluorine-free PEM and PEI
- D5.1 Heterogeneous catalysts development
- D8.3 Updated plan for exploitation



Events



CNR showcases innovative catalyst research at IHTEC 2025

At the 9th International Hydrogen Technologies Congress (IHTEC-2025) - held from May 25 to 28 in Izmir, Türkiye, the National Research Council of Italy (CNR) presented their research from the REDHy project, focused on advancing green hydrogen production technologies.

You can find the recap of the event here.

Hydrogen in Focus: DLR at HANNOVER MESSE 2025
HANNOVER MESSE 2025, held from March 31 to April 4, continues to lead the way in showcasing industrial transformation and sustainable technologies. This year's spotlight on green hydrogen underlines its growing importance as a clean alternative to fossil fuels.

You can find the recap of the event here.

AORFB 2025
The first international workshop on aqueous organic redox flow batteries (AORFB 2025) was held successfully on April 24 and 25, 2025, in Paris. It brought together more than 100 participants, discussing new chemistries and optimization/future of redox active materials. Topics addressed were very relevant for the challenges that are being faced within REDHY. Our partner CNRS, represented by Mathieu Etienne, was part of the organizing committee

You can find the recap of the workshop here.

Interviews with REDHY partners

CEN mat

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Get to know Julien Fage from CENMAT
With a decade of experience as a polymer chemist, Julien Fage specializes in custom performance polymers and holds a PhD from Darmstadt University. Since 2021, he has been working at CENmat, where he collaborates with his team to develop polyelectrolytes for AEM and PEM water electrolysis.

More broadly, CENmat is a vertically integrated water electrolyzer company focused on the climate era. Its sustainable, scalable, highly efficient, and low-cost water electrolysis technologies enable the production of economical and truly green hydrogen.

What was your original motivation to become a researcher/project manager?
“Already as a kid, I could spend hours trying to understand how things around me worked and how they could be improved. When I discovered chemistry, it was love at first sight. I wanted to work on something relevant to today’s challenges, and contributing to the green hydrogen field became an obvious choice.”

You can find the full interview here.

Get to know German Sastre from UPV
German Sastre is Research Scientist at Instituto de Tecnología Quimica. He studied Physics and Chemistry at the University of Valencia where he graduated in Chemistry in 1990 and later completed a PhD in Chemistry. He did a postdoc at Davy-Faraday Research Laboratory (London) in the group of Prof. Richard Catlow. His scientific background includes physical chemistry, catalysis, quantum chemistry, atomistic methods, programming languajes, operating systems, and parallel computing.

What was your original motivation to become a researcher/project manager?
"When I was 14 years old, as Christmas gift (typically known in Spain as ‘Reyes Magos’) I requested a game of chemistry and a microscope. I was afraid to tell my classmates just in case they would mock at me. By then I had already read a biography of Isaac Newton and a book narrating the mathematical and scientific achievements of the Greek philosophers."

You can find the full interview here.

REDHy partners

Acknowledgement & Disclaimer

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