



Job Posting

Recruiting organisation

Elestor BV

Subproject title

Electrodes for hydrogen-iron flow batteries

Starting date

July 1st 2026, or earlier if possible

Salary

The Doctoral Network "SPACER" is financed by the European Union under the framework of the program HORIZON Europe, Marie Skłodowska-Curie Actions. The doctoral candidate will be hired for 36 months under contract by Elestor BV, with a monthly gross salary of approx. € 3.059 - € 3.881 (including mobility allowance, but excluding other allowances that depend on eligibility, e.g. family allowance, special needs allowance).

Background Information

Marie Skłodowska-Curie Doctoral Networks are joint research and training projects funded by the European Union. Funding is provided for doctoral candidates from both inside and outside Europe to carry out individual project work in a European country other than their own. The training network "SPACER" is made up of 21 partners, coordinated by Fraunhofer ICT in Germany. The network will recruit a total of 17 doctoral candidates for project work lasting for 36 months.

SPACER within Elestor aims to develop production and improvement techniques for porous electrodes to multiply the power density ($\times 2$ or more) and energy efficiency of redox flow batteries (RFB). Accomplishing the beforementioned would enable large scale production of a commercially viable improved electrode, allowing affordable and durable long-duration energy storage. The approach is to investigate electrode materials, structures and treatment techniques to render the electrodes optimized to the unique battery chemistries of Elestor. The developed/improved electrodes will be validated in half-cells and full working batteries at an industrial and scaled up battery production level (at TRL 6).

Our objectives

- Multiscale **modelling** to better understand the effect of electrode composition, structure, materials, properties, dimensions and electrolyte flow on the performance of a RFB electrochemical cell.
- **Investigation** of using modifiers, catalysts, or additives that may lead to increased electrode performance or robustness.
- **Prototyping** and developing techniques to acquire the desired structures, properties, dimensions, electrochemical capabilities, and electrolyte flow pattern via various technologies and equipment (for example stereolithographic, 3D printing and textile techniques: tufting, machine-based embroidery techniques or non-interlaced 3D pre-forming).
- Development of **advanced imaging and characterization technologies** (for example, X-ray micro tomography, EPR imaging and spectroscopy) to evaluate and assess the effectiveness of the modifications on electrode composition, structure, morphology, and properties, and therefore allowing validation of the model predictions.
- **Validation, quantification, and evaluation** of the performance and durability improvements of the developed/optimized/modified electrodes used in Elestor's RFBs.

Job Description

The advertised subproject is fully funded by the Marie Skłodowska-Curie European Training Network "SPACER". It will be carried out by one doctoral candidate at Elestor BV, with PhD supervision at TU/e *Department of Chemical Engineering and Chemistry*, over a period of 36 months.

The goal of this doctoral thesis is to investigate and formulate production techniques to develop/modify (new) porous electrodes capable of substantially improving the power density and the energy efficiency of **hydrogen-iron flow batteries**. You'll investigate the influence of composition,



Job Posting

morphology and properties on the performance and durability of Elestor's electrodes.

Specifically, your research will focus on:

- 1) Understanding and elaborating on the factors affecting electrode performance and durability in a of hydrogen-iron electrochemical cell.
- 2) Investigating the mass transport - surface area trade-off to enhance performance.
- 3) Techniques for electrode production and modifications.
- 4) Coatings, catalysts and treatments.

Once there is measured proof of improved robustness and performance in hydrogen-iron flow battery cells, the optimized electrodes will be prepared using a scalable mass electrode production process with reduced energy consumption to reduce cost.

Benefits

You'll have the opportunity to work as part of an international, interdisciplinary team of 17 doctoral candidates, based at universities and industrial firms throughout Europe. You'll be supported by two mentors within the SPACER project, and will have multiple opportunities to participate in professional and personal development training. Through your work you'll gain a unique skill-set at the interface between modelling and prototyping of electrode materials, including characterization of electrodes using spectroscopical and electrochemical techniques at different levels from micro-scale to macro-scale.

You're expected to finish the project with a PhD thesis and to disseminate the results through patents, publications in peer-reviewed journals and presentations at international conferences.

As one of the most innovative companies in The Netherlands, Elestor offers exciting and competitive career opportunities with plenty of scope for both personal and professional development! Elestor is an **equal opportunities** employer: We believe diversity aids creativity and innovation, so whatever your race, colour, nationality, national or ethnic origin, sex, gender, marital status, religion, age, sexual orientation or disability, you are welcome to join our ranks. We actively promote inclusion and we abhor discrimination. We treat all our employees, contractors, workers, job applicants, suppliers, clients and everyone else with respect. Elestor offers

an open, action-oriented and exciting working environment in a diverse and international team of highly skilled professionals. The company has a flat management structure and offers many opportunities to excel and grow. Terms of employment include participation in a **Stock Appreciation Rights** (SAR) program. When we succeed, we all benefit. Especially in caring for what we share the most: a healthy planet.

Requirements

Qualifications/experience

- In accordance with the European Union's funding rules for doctoral networks, applicants must NOT yet have a PhD.
- **Master's degree** in Materials Science, Chemical Engineering, Chemistry, Physics or a related discipline.
- Experienced and interested in working in a **laboratory**. Familiarity with instrumental analytical techniques in electrochemistry, surface chemistry and chemistry.
- Knowledge about fuel cell, electrolyser and/or **flow battery** systems.
- Self-motivation, well-structured **working style** as well as ability to contribute effectively to the team.
- Good networking skills. Next to working with the Elestor team, you're given the opportunity to work as part of an international, interdisciplinary team of in total 17 doctoral candidates, based at universities and companies throughout Europe. Using your **'people skills'**, you can build a highly valuable professional network in a short amount of time. We're looking for a candidate with team spirit and the ability to help create and extend this pan-European network.
- An **entrepreneurial** mindset with the attitude of self-reliance. This is an in-company PhD position, with a clear aim to bring the new technology to the market soonest. So if you aim to put science and its findings for an effective use in an industrial environment, this is the right PhD opportunity for you!
- The ideal candidate is eager to learn and thrives effortlessly in the Elestor culture (with a positive mindset, agility, and proactiveness). You possess technical **creativity**, curiosity, and a drive to investigate, translate and implement best practices and solutions from other (non-)established industries.
- Excellent written and oral **communication** skills in English are a prerequisite.
- You're given the opportunity to **work abroad** at



Job Posting

two of our project partners during planned secondments at Fraunhofer ICT for one month, and at Prague University of Chemistry and Technology for two months.

Mobility:

You must not have resided or carried out your main activity (work, studies etc.) in The Netherlands for more than 12 months in the past 3 years.

How to apply

Please send your application by e-mail to **hrm@elestor.com**, quoting the reference SPACER-DC4-ELE. Your application should include:

- a motivation letter.
- a curriculum vitae (including contact details of at least two references).
- a list of BSc and MSc courses and grades.

We look forward to receiving your application and will screen it as soon as possible.

Application deadline: The vacancy will remain open until the position is filled.