Job Posting

Recruiting organisation

Fureho AB, Gothenburg, Sweden

Subproject title

Multiphysics coupled model of noobed electrodes

Starting date

1st April 2026 (or earlier if preferred)

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 Fureho AB, with a monthly gross salary of approx. 3628 € (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. Additionally, within the present subproject, 12-18 months will be carried out at Chalmers University of Technology at the end of the previous period, to complete the PhD studies.

SPACER aims to develop new architectures for porous electrodes to improve the power density and energy efficiency of redox flow batteries (RFB), enabling affordable and durable long-duration energy storage. The approach is to use hierarchical structures, i.e. complex material layers that can be optimized to specific battery chemistries and flow phenomena from the microscale up. The developed technologies will be validated in half-cells and full working batteries at industrial partners at TRL 6.

Our objectives

- Multiscale **modelling** to better understand RFB behavior and identify optimal hierarchical shaped pore- and electrode-structure to encounter optimum electrolyte as well as electrical flow.
- **Prototyping** of the identified structures via stereolithographic, 3D printing and textile techniques like tufting, machine-based embroidery techniques or non-interlaced 3D pre-forming.
- Development of **advanced imaging and characterization technologies** (X-ray micro tomography, EPR imaging and spectroscopy) to evaluate performance of electrodes and to map electrolyte chemical composition in micrometer resolution, allowing validation of the model predictions.
- **Validation and evaluation** of the RFBs with optimized hierarchical electrodes.

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 Fureho AB (PhD supervision at Chalmers University of Technology), over a period of 36 months. Additionally, 12-18 months will be carried out at the end of the previous period, to complete the PhD studies at Chalmers University of Technology.

Future RFBs electrodes must be designed to effectively remove excessive heat generated during operations, while maintaining effective mass transport and reaction characteristics within the microstructure. The successful doctoral candidate (DC) will develop a microscopic model for heat transport and reaction in redox flow batteries electrodes. The DC will use pore-scale direct numerical simulations (based on the lattice-Boltzmann method) to enable the precise quantification of heat transport within noobed electrode microstructures, to then extract macroscopic thermal parameters that measure the electrodes thermal performance.

The position will be open at Fureho AB, an

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advanced materials start-up operating primarily in the field advanced composite materials based in Gothenburg, Sweden. Fureho specialises in designing and manufacturing advanced 3D reinforcements for application-specific end-uses. 3D fabrics are of relevance to RFB electrodes as the offer novel possibilities to tailor, particularly the through-thickness direction, characteristics.

The PhD supervision will be held at Fluid Dynamic division of Mechanical and Maritime Science department, Chalmers University of Technology. The research at the Division covers turbulent flow (both compressible and incompressible), multiphase flows, aero-acoustics and turbomachines. Our tools include both computations and experiments. The research covers a wide range of topics. In some research projects the smallest turbulent scales are studied whereas in others the function of a complete gas turbine is analyzed and modelled. The Division of Fluid Dynamics is part of Chalmers Sustainable Transport Initiative, Chalmers eScience Initiative and Chalmers Energy Initiative.

Main responsibilities:

* Research via state of the art computational tools
* Writing scientific articles
* Involved in scientifically excellent environment and initiatives
* Participating and presenting at international conferences
* Generate new scientific knowledge

Benefits

The recruited researcher will have the opportunity to work as part of an international, interdisciplinary team of 17 doctoral candidates, based at universities and industrial firms throughout Europe. She/he will be supported by two mentors within the SPACER project, and will have multiple opportunities to participate in professional and personal development training. Through her/his work she/he will 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.

She/he is expected to finish the project with a PhD thesis and to disseminate the results through patents (if applicable), publications in peer-reviewed journals and presentations at international conferences.

The recruited researcher will also have the additional benefit of significant knowledge gains in the field of engineering advanced textile materials and their fields of applications to broaden the scope of her/his future industrial relevance.

Requirements

Qualifications/experience

- In accordance with the European Union's funding rules for doctoral networks, applicants must NOT yet have a PhD
- To qualify as a PhD student, you must have a master's level degree corresponding to at least 240 higher education credits in a relevant field.
- Msc in Mechanical Eng., Hydraulic/Civil Engineering, Chemical Eng., Physics, Math, Eng., Aeronautics or any corresponding Msc.
- Knowledge of fluid mechanics.
- Experience with programming.
- The position requires sound verbal and written communication skills in English

Experience with C/Fortran and Linux operative systems is considered positively

Mobility

The applicant must not have resided or carried out her/ his main activity (work, studies etc.) in Sweden for more than 12 months in the past 3 years.

How to apply

The application should be written in English and be attached as PDF-files, as below. To reach the application form use the link:

https://www.chalmers.se/en/about-chalmers/work-with-us/vacancies/?rmpage=job&rmjob=14209

Maximum size for each file is 40 MB. Please note that the system does not support Zip files.

1) CV: (Please name the document: CV, Family name)

- CV
- Other, for example previous employments or leadership qualifications and positions of trust.
- Two references that we can contact.

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2) Personal letter: (Please name the document as: Personal letter, Family name)

1-3 pages where you:
- Introduce yourself
- Describe your previous experience of relevance for the position (e.g. education, thesis work and, if applicable, any other research activities)
- Describe your future goals and future research focus

3) Other documents:

- Copies of bachelor and/or master's thesis.
- Attested copies and transcripts of completed education, grades and other certificates, e.g. TOEFL test results.

Contact at Fureho AB: Prarthanaa Khokar, CEO & Co-Founder, pk@fureho.com

Contact at Chalmers: Dario Maggiolo, Senior Researcher, Mechanics and Maritime Sciences, maggiolo@chalmers.se

Application deadline: 24th October 2025