



# Job Posting

## Recruiting organisation

Chalmers University of Technology, Gothenburg, Sweden

## Subproject title

Microscale Lattice Boltzmann modelling of 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 Chalmers University of Technology, 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 Chalmers University of Technology, over a period of 36 months. For Additionally, 12-18 months will be carried out at the end of the previous period, to complete the PhD studies.

The performance of RFBs electrodes strongly depends on effectively mixing and delivering the reacting species to the active sites within the porous structures. The successful doctoral candidate (DC) will develop a microscopic model for mass transport and reaction in redox flow batteries electrodes. Within this project the DC will use pore-scale direct numerical simulations (based on the lattice-Boltzmann method) to enable the precise quantification of mass transport within electrode microstructures, reconstructed via X-ray computer tomography.

The position will be open at the Fluid Dynamic division of Mechanical and Maritime Science department. The research at the Division covers turbulent flow (both compressible and



## Job Posting

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.

Chalmers provides a cultivating and inspiring working environment in the coastal city of Gothenburg. At Chalmers, the DCs have a great opportunity to influence their work – how they work, what they do and when. We have generous annual leave rules to allow DCs to recharge their batteries, the opportunity to work remotely and good arrangements for parents, among other benefits. It is important for us that you have a good work/life balance.

Read more at:

<https://www.chalmers.se/en/about-chalmers/work-with-us/chalmers-as-an-employer/benefits-and-conditions/>

Chalmers aims to actively improve our gender balance. We work broadly with equality projects, for example the GENIE Initiative on gender equality for excellence. Equality and diversity are substantial foundations in all activities at Chalmers.

### 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=14206>

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



## Job Posting

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.

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

**Application deadline:** 24<sup>th</sup> October 2025