

Postdoctoral Position in Mesoscale Fluid Simulations and
Experimental Validation for Energy Systems
University of Southern Denmark

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Job Title Postdoctoral Position in Mesoscale Fluid Simulations and Experimental Validation for Energy Systems

Department The Centre for Industrial Mechanics, part of the Institute of Mechanical and Electrical Engineering

<https://www.sdu.dk/en/forskning/cim>

Institution University of Southern Denmark

Sønderborg, , Denmark

Date Nov. 18, 2025

Posted

Application Jan. 15, 2025

Deadline

Position Mar. 1, 2026

Start Date

Job Post-Doc

Categories

Academic Industrial & Systems Engineering

Field(s)

Engineering Mechanics

Mechanical Engineering

Mechatronics

Energy Technology

Engineering - Other

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**Job
Description**

Location: SDU Sønderborg, Faculty of Engineering

The Centre for Industrial Mechanics, part of the Institute of Mechanical and Electrical Engineering, University of Southern Denmark (SDU), invites applications for one or more 2-year postdoc positions within Mesoscale Fluid Simulations and Experimental Validation for Energy Systems. The positions are open from March 1, 2026, and the specific start date will be agreed with the successful candidates.

About the Position

Join the SDU Energy Systems Group at the Centre for Industrial Mechanics (CIM) for a 2-year postdoc focused on combining advanced mesoscale fluid simulations such as CFD, Lattice Boltzmann Method (LBM), Pore Network Modelling (PNM), and Molecular Dynamics (MD) with microfluidic experiments. The research targets gas bubble and droplet phenomena relevant to energy conversion, storage, and CO₂ sequestration. You'll have the freedom to shape your research within our interdisciplinary and international environment.

Your Role

- Develop and apply simulation methods for multiphase and interfacial transport in porous media (e.g., electrodes, membranes, geological formations)
- Design, set up, and conduct experiments for model validation and discovery
- Integrate computational and experimental results to advance mechanistic understanding and predictive modelling
- Collaborate with academic and industrial partners
- Mentor and supervise students (PhD, MSc, BSc) on related research questions
- Publish research results in peer-reviewed journals and present at international conferences
- Contribute to research funding applications and assist with teaching activities as relevant

The project encourages you to define subtopics and develop independent research directions, benefiting from a supportive environment.

Your Profile

- You have a PhD in engineering, computational science, physics or related field
- You bring expertise in at least one of the following:

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- You have experience with open-source simulation software (e.g. OpenFOAM, Palabos, OpenLB, OpenPNM, LAMMPS, or equivalent) and/or experimental design and data analysis
- You demonstrate strong teamwork, communication, and independent research skills
- You are proficient in English (spoken and written)
- multiscale fluid simulation methods (CFD, LBM, PNM, MD)
- scientific programming (Python, C++, git)
- microfluidic experimentation

Why Join SDU Sønderborg?

The SDU Energy Systems Group at CIM is a dynamic, recently established research group within the Institute of Mechanical and Electrical Engineering (IME). As part of a young and growing team and institute, you will help shaping research, education, and innovation in engineering science.

You will have access to state-of-the-art computing and lab facilities, and benefit from strong academic and industrial networks across Denmark and Europe. CIM is based at SDU's scenic Sønderborg campus in the Alsion building directly at the waterfront. All study programs are taught in English, and more than half of our students and staff are international, creating an inspiring environment.

SDU maintains close ties to industry in Sønderborg, Southern Denmark, and Northern Germany, offering direct exposure to real-world challenges and opportunities for cross-sectoral research collaborations. This position offers you the chance to develop your own research ideas, contribute to the growth of the group and institute, and advance your career in a supportive, international setting.

In short, you will benefit from:

- Access to state-of-the-art computing and lab facilities
- A dynamic, international research environment in a scenic campus setting
- Close ties to industry and opportunities for cross-sectoral collaboration
- Support for developing your own research ideas and career

Contact information

For further information, please contact Associate Professor Martin Lautenschläger (mlaut@sdu.dk; phone: + 45 65 50 79 86) or Associate Professor Lars Duggen (duggen@sdu.dk) and visit www.sdu.dk/en/ime.

If you experience technical problems, please contact hcm-support@sdu.dk.

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Application procedure

Applicants are advised to read the [SDU information on how to apply](#).

Assessment of the candidates is based on the application material, and an application must include:

- Motivated application.
- Curriculum Vitae.
- Master's and PhD degree certificates or equivalent (copy of original/official English translation).
- Complete list of publications.
- Publications most relevant to the position.
- Summary and documentation of experience in teaching, if relevant to the position.
- A research statement may be included.
- References/reference letters may also be included.
- A statement/documentation of other qualifications relevant to the position may also be included.

All documents must be in English and PDF format. CPR number (civil registration no.) must be crossed out. All PDF-files must be unlocked and allow binding and may not be password protected.

SUBMISSION GUIDE: Motivated application shall be uploaded under 'Cover letter' (max. 5 MB), Curriculum Vitae shall be uploaded under 'Resume' (max 5 MB). All other documents shall be uploaded under 'Miscellaneous documents' (max 10 files of max 50 MB per file).

The application deadline is January 15, 2026, at 11.59 PM/23.59 (CET/CEST)

Assessment and selection process

Applications will be assessed by an assessment committee. Shortlisting may be applied, and only shortlisted candidates will receive a written assessment. [Read about shortlisting at SDU](#). Interviews and tests may be part of the overall evaluation. Read about the [Assessment and selection process](#).

Conditions of employment

Appointment as postdoc is temporary for an initial 2-year period, and the preferred start date is from March 1, 2026, but is negotiable, also depending on the application process for work- and residence permit. Extension may be possible depending on available funding.

Employment as a postdoc requires scientific qualifications at PhD level at the time of employment. Employment will be in accordance with the collective agreement between the Ministry of Finance and

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the Danish Confederation of Professional Associations for academics in the state with the associated circular on the protocol for the job structure for academic staff at Danish universities and the provisions for postdoc as described herein. [Further information on salary and taxation](#). The person employed in the position may, based on a specific individual managerial evaluation, be exempted from time registration, also known as a “self-organizer”.

The University of Southern Denmark wishes our staff to reflect the surrounding community and therefore encourages everyone, regardless of personal background, to apply for the position. SDU conducts research in critical technologies, which, due to the risk of unwanted knowledge transfer, are subject to a number of security measures. Therefore, based on information from open sources, background checks may be conducted on candidates for the position.

[Further information](#) for international applicants about entering and working in Denmark. You may also visit [WorkinDenmark](#) for additional information.

[Further information](#) about The Faculty of Engineering.

About Us

The University of Southern Denmark was established to create value for and with society. Whether our contributions come in the form of excellent research, innovative solutions, education or learning, we must make a positive difference to society and contribute to a sustainable future. We do this by cultivating talents and creating the best environments for research and learning. It is therefore crucial that SDU retains, develops and recruits talent. At the same time, we need to ensure consistently high quality in all our activities – and we can only do that with the right people. The University’s researchers, lecturers, students, managers and technical/administrative staff are the foundation of our success.

[Read about SDU](#)

Contact Information

Please reference Academickeys in your cover letter when applying for or inquiring about this job announcement.

Contact Martin Lautenschläger
The Centre for Industrial Mechanics, Part of the
Institute of Mechanical and Electrical Engineering

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