

PhD scholarship in Smart Materials for Sustainable Indoor Air Quality Management - DTU Sustain

Kgs. Lyngby, Denmark

Job Description

Are you pursuing a career in science and seeking the perfect foundation to achieve your ambitions? The ideal opportunity awaits you. At the Department of Environmental and Resource Engineering, Technical University of Denmark (DTU Sustain), we are seeking a highly motivated PhD student to advance our understanding of using smart materials for sustainable built environment control. In this interdisciplinary project funded by the EU Horizon program, you will have the opportunity to develop and utilize cutting-edge smart materials (e.g., metal-organic frameworks) to design a groundbreaking air-cleaning system that can achieve a substantial 30-50% reduction in associated energy consumption. The new system developed in this project will be tested in different climates across Europe.

You will have the opportunity to join top interdisciplinary scientists from all over the world and make a personal impact in solving some of the most critical challenges in the built environment. The position is also integrated into the Sections of Materials durability and Indoor environment. We offer creative and stimulating working conditions in a dynamic and international research environment, with recently renovated laboratory facilities and state-of-the-art equipment for material preparation, characterization, indoor air quality assessment, and prototype development.

Responsibilities and qualifications

You are enthusiastic and self-motivated, with a background in building technology, thermal engineering, mechanical engineering, material science, or chemical engineering, and a strong interest in smart materials (e.g., MOFs) and innovative building technologies. You are passionate about exploring novel built environment control methods, with a particular focus on how to integrate smart materials into energy-efficient indoor air quality control systems. You are excited by the opportunity to leverage state-of-the-art tools to investigate fundamental questions about pollutant adsorption/desorption in functional materials.

Preferred qualifications include experience in one or more of the following areas:

- Indoor air quality measurements and analysis
- Synthesis and characterization of smart materials
- Numerical simulations (e.g., Computational Fluid Dynamics)
- Thermal performance analysis
- Adsorption/desorption of porous materials

Good English language skills are essential. The main criterion for selection will be the research potential of the applicant, including writing skills.

DTU

You must have a two-year master's degree (120 ECTS points) or a similar degree with an academic level equivalent to a two-year master's degree.

Approval and Enrolment

The scholarship for the PhD degree is subject to academic approval, and the candidate will be enrolled in one of the general degree programmes at DTU

Assessment

The assessment of the candidate will be made by Prof. Menghao Qin and Lei Fang.

We offer

DTU is a leading technical university globally recognized for the excellence of its research, education, innovation and scientific advice. We offer a rewarding and challenging job in an international environment. We strive for academic excellence in an environment characterized by collegial respect and academic freedom tempered by responsibility.

Salary and appointment terms

The appointment will be based on the collective agreement with the Danish Confederation of Professional Associations. The allowance will be agreed upon with the relevant union. The period of employment is 3 years. The average salary is around 36,000 DKK/month.

Further information

Further information may be obtained from Prof. Menghao Qin <u>menqin@dtu.dk</u> You can read more about the research group <u>https://www.staff.dtu.dk/menqin/</u>

Application procedure

Deadline: 15 May 2025 (23:59 Danish time).

The Department of Environmental and Resource Engineering (DTU Sustain) is one of the largest university departments specializing in environmental and resource engineering in Europe. The department conducts research, development & scientific advice and provides educational programs and service to society. We are working to develop new environmentally friendly and sustainable technologies, methods and solutions, and to disseminate this knowledge to society and future generations of engineers. The department has approximately 300 employees from more than 30 nationalities.

Technology for people

DTU develops technology for people. With our international elite research and study programmes, we are helping to create a better world and to solve the global challenges formulated in the UN's 17 Sustainable Development Goals. Hans Christian Ørsted founded DTU in 1829 with a clear mission to develop and create value using science and engineering to benefit society. That mission lives on today. DTU has 13,500 students and 6,000 employees. We work in an international atmosphere and have an inclusive, evolving, and informal working environment. DTU has campuses in all parts of Denmark and in Greenland, and we collaborate with the best universities around the world.