Fully funded post-doctoral position in fracture of complex materials

Are you interested in architected materials, their mechanics and physics and you want to contribute to the development of the area that would combine fracture mechanics with statistical and condensed matter physics?

Then the Department of Mechanical and Production Engineering at Aarhus University, Denmark, invites you to apply for a 2 year post-doctoral position from February 1st, 2026 or as soon as possible thereafter.

Job description

You will be contributing to the further establishment of a research direction that links mechanics and fracture mechanics with concepts from statistical physics and condensed matter theories to address the problem of fracture in complex materials.

You will be working with experimental model systems and numerical simulations of materials that exhibit microstructural disorder, with the aim of uncovering how microstructure geometry fluctuations, heterogeneity, and collective behavior influence damage initiation and crack propagation.

The position will focus on aspects of fracture processes, stochastic material behavior, and the development of physics-based models that can bridge the gap between continuum mechanics descriptions and disorder-driven statistical phenomena.

You will be involved in designing and carrying out fracture experiments, developing theoretical framework, and analyzing failure mechanisms with the help of numerical models.
These activities will be in close collaboration with researchers in mechanics of materials, applied physics, and materials science, creating an interdisciplinary environment where advances in fundamental understanding of fracture can directly inspire the design of new architected and disordered materials with enhanced toughness and reliability.

Your profile

Applicants should hold a PhD in mechanics of materials, physics, materials science, applied mathematics, or a closely related discipline.

The project focuses on failure and fracture phenomena. Knowledge of condensed matter or statistical physics, as well as modelling frameworks for disorder and property fluctuations will be considered and can compensate for limited prior experience in fracture mechanics.

You should be motivated to learn new theories and to integrate them with experimental or computational methods for studying the failure of complex and heterogeneous materials.

You have demonstrated the ability to publish in high-quality international journals and to present your research at leading conferences. You are an effective collaborator within interdisciplinary teams and comfortable engaging with partners across mechanics, physics, and materials science.

Proficient written and oral communication skills in English are required, along with the ability to convey complex ideas clearly to both technical and non-technical audiences.

On a personal level, you are curious and motivated, while being open and collegial. You thrive in a collaborative research environment, take initiative in developing your ideas, and are committed to advancing both fundamental understanding and applied solutions in the fracture of complex materials.

Who we are

The Department of Mechanical and Production Engineering is part of the Faculty of Technical Sciences, Aarhus University and includes research in solid and fluid mechanics, mechanics of materials, robotics and automation, dynamics and structural mechanics, additive and subtractive manufacturing processes, production engineering and mechanical design.

The Department currently employs ca. 25 full-time scientific staff, plus ca. 40 PhD students and Postdocs. In addition to staff, the Department hosts ca. 900 Bachelor and

Application Deadline:
14 November 2025

Institute/Faculty:
Department of Mechanical and Production Engineering

Faculty:
Faculty of Technical Sciences

Academic contact person:
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Vacant positions:
1

Number of months:
24

Hours per week:
37

Expected date of accession:
01/02/2026

Master students, who contribute to an international research environment where English is the preferred language in the laboratory, at meetings and at seminars.

The Department works in teams and therefore effective organizational skills, clear and open communication, proficiency in mentoring, supervising, and teaching are important qualities needed to contribute effectively to the development of the Department. In addition, the Department has a culture that is based on openness, inclusion and equality. Contributing to the Department strategy and working environment is viewed as important.

The Department offers

- a well-developed research infrastructure, laboratories and access to shared equipment
- an exciting interdisciplinary environment with many national, international and industrial collaborators
- a research climate encouraging lively, open and critical discussion within and across different fields of research
- a work environment with close working relationships, networking and social activities
- a workplace characterised by professionalism, equality and a healthy work-life balance.

Place of work and area of employment

The place of work is the Department of Mechanical and Production Engineering, Katrinebjergvej 89F, 8200 Aarhus N, and the area of employment is Aarhus University with related departments.

Contact information

For further information, please contact: Assoc. Prof. Michal K. Budzik, +45 4189 3217, mibu@mpe.au.dk.

Deadline

Applications must be received no later than November 14th 2025.

Application procedure

Shortlisting is used. This means that after the deadline for applications – and with the assistance from the assessment committee chairman, and the appointment committee if necessary, – the head of department selects the candidates to be evaluated. All applicants will be notified whether or not their applications have been sent to an expert assessment committee for evaluation. The selected applicants will be informed about the composition of the committee, and each applicant is given the opportunity to comment on the part of the assessment that concerns him/her self. Once the recruitment process is completed a final letter of rejection is sent to the deselected applicants.

Letter of reference

If you want a referee to upload a letter of reference on your behalf, please state the referee's contact information when you submit your application. We strongly recommend that you make an agreement with the person in question before you enter the referee's contact information, and that you ensure that the referee has enough time to write the letter of reference before the application deadline.
Unfortunately, it is not possible to ensure that letters of reference received after the application deadline will be taken into consideration.

If you wish to add a referee **after** you have submitted your application, you must send this person's details (name, job title, place of work, and email address) as well as the name of the position you have applied for to: HR.Nattech@au.dk

Formalities and salary range

Technical Sciences refers to the Ministerial Order on the Appointment of Academic Staff at Danish Universities under the Danish Ministry of Science, Technology and Innovation.

The application must be in English and include a curriculum vitae, degree certificate, a complete list of publications, a statement of future research plans and information about research activities, teaching portfolio and verified information on previous teaching experience (if any). Guidelines for applicants can be found here.

Appointment shall be in accordance with the collective labour agreement between the Danish Ministry of Taxation and the Danish Confederation of Professional Associations. Further information on qualification requirements and job content may be found in the Memorandum on Job Structure for Academic Staff at Danish Universities.

Salary depends on seniority as agreed between the Danish Ministry of Taxation and the Confederation of Professional Associations.

Aarhus University's ambition is to be an attractive and inspiring workplace for all and to foster a culture in which each individual has opportunities to thrive, achieve and develop. We view equality and diversity as assets, and we welcome all applicants.

Research activities will be evaluated in relation to actual research time. Thus, we encourage applicants to specify periods of leave without research activities, in order to be able to subtract these periods from the span of the scientific career during the evaluation of scientific productivity.

Aarhus University offers a broad variety of services for international researchers and accompanying families, including relocation service and career counselling to expat partners. Read more here. Please find more information about entering and working in Denmark here.

Aarhus University also offers a Junior Researcher Development Programme targeted at career development for postdocs at AU. You can read more about it here.

The application must be submitted via Aarhus University's recruitment system, which can be accessed under the job advertisement on Aarhus University's website.

Aarhus University

Aarhus University is an academically diverse and research-intensive university with a strong commitment to high-quality research and education and the development of society nationally and globally. The university offers an inspiring research and teaching environment to its 38,000 students (FTEs) and 8,300 employees, and has an annual revenues of EUR 935 million. Learn more at www.international.au.dk/