NTNU

Kunnskap for en bedre verden

Jobbnorge-ID: 148255
Søknadsfrist: Avsluttet
Nettside:
Omfang:
Varighet:

Postdoctor in material models for 3D printed structures (SO IV-41/18)

Description
A two-year Postdoctoral position is available at the Department of Marine Technology, NTNU, focusing on material models for 3D printed marine structures.

3D Printing, also referred to as Additive Manufacturing (AM), is a rapidly growing technology with the potential to change the way of production in various engineering disciplines, including marine applications. The advantages are, among others, rapid manufacturing of new designs for prototypes and the realization of almost arbitrarily complex geometries, which cannot be manufactured by traditional production methods. One of the most common 3D printing technologies is Fused Deposition Modeling (FDM), where a thermoplastic filament is liquefied and deposited layer-wise on the built platform. Due to this production process, the produced material is highly inhomogeneous and anisotropic with characteristics that are determined by various parameters of the printing process. Appropriate material models considering the mesostructure of the printed material are essential for a reliable design of such structures for engineering applications.

The aim of this work is to elaborate constitutive models for FDM printed structures which can be used to predict their mechanical behavior in the elastic and inelastic regime. The research shall be based on modeling the characteristic mesostructures and referring them to macroscopic constitutive models through a multiscale approach. The work will include experimental work with FDM 3D printers and mechanical testing of printed specimens to determine the basic mechanical properties, the development of constitutive models based on the experimental results, and their implementation into numerical models like finite element or isogeometric analysis. The developed models will be verified by comparing simulation and experiments on more complex parts, and will be applied to the design and printing of marine structures. The target application is 3D printing of marine propellers.

The research work takes place in the Marine Structures group at the Department of Marine Technology and there will be the possibility to collaborate with the Department of Mechanical and Industrial Engineering and Sintef Ocean.

Qualifications
Applicants must hold a PhD (or equivalent) degree in marine, civil, or mechanical engineering, materials science, or similar. Candidates should have a very good knowledge in structural and solid mechanics and in finite element analysis. Experience with 3D printing and experimental mechanical testing are of advantage.

Excellent English skills, spoken and written, are required. Applicants from non-English-speaking countries outside Europe must document English skills by an approved test. Approved tests are TOEFL, IELTS, Cambridge Certificate in Advanced English (CAE) or Cambridge Certificate of Proficiency in English (CPE).

Conditions
Postdoctoral candidates are remunerated in code 1352, and are normally remunerated at gross from NOK 485,700 per annum before tax. There will be a 2% deduction to the Norwegian Public Service Pension Fund from gross wage.

The appointment of the Postdoctoral fellows will be made according to Norwegian guidelines for universities and university colleges and to the general regulations regarding university employees.

The Postdoctoral fellowship is awarded for 2 years.

For further information, please contact Associate Professor Josef Kiendl (josef.kiendl@ntnu.no);
tel. +47 73 59 55 89

The engagement is to be made in accordance with the regulations in force concerning State Employees and Civil Servants. The positions adhere to the Norwegian Government's policy of balanced ethnicity, age and gender. Persons with immigrant background are encouraged to apply. NTNU´s objective is to increase the number of females in scientific positions. Female applicants are therefore encouraged to apply.

The application
The application must contain information of educational background and work experience. Certified copies of academic diplomas and certificates, copies of transcripts and two reference letters should be enclosed. Applications with CV, grade transcripts and other enclosures should be submitted via this webpage at www.jobbnorge.no. **Mark the application with SO IV-41/18.**

Application deadline is March 9th, 2018.

According to the new Freedom of Information Act, information concerning the applicant may be made public even if the applicant has requested not to be included in the list of applicants.

Tilleggsinformasjon

Arbeidssted: