

PHD POSITION FULL TIME “AGGREGATE INTERLOCK BEHAVIOUR AND MODELLING OF CONCRETES STRUCTURES WITH RECYCLED AGGREGATES”(M/F/X)

URBAN AND ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURE

START DATE: SEPTEMBER 2024 (AT THE LATEST)

The University of Liège is the biggest French-speaking public university in Belgium. It employs more than 5,700 staff members across four campuses, including 3,600 active teachers and researchers in all fields of the human and social sciences, science and technology, and health sciences. It hosts nearly 27,000 students of 123 different nationalities in one of the most multicultural and dynamic cities in Europe, less than an hour from Brussels and Cologne, two hours from Paris, and three hours from London and Amsterdam.

Actively involved in the social and environmental transition, ULiège supports students to fulfil their roles as responsible citizens (training in sustainable development, Green Office, etc.) and promotes ethical, multidisciplinary and open research. ULiège is committed to the region in which it operates and contributes towards local socio-economic development. It has developed numerous partnerships, notably with the university hospital. International and united, it participates in the [European University of Post-Industrial Cities, UNIC](#) initiative and has one of the most extensive collaborative networks in the world.

ULiège offers attractive career prospects [in a high-quality working environment](#), promoting well-being, diversity and equality of opportunity. Since 2011, ULiège has been proud to display the European [Human resources strategy for researchers](#) (HRS4R) label, which reflects its commitment to open, transparent and merit-based procedures. In addition, it recognises the quality and diversity of research in line with the recommendations of the [Coalition for Advancing Research Assessment](#) (CoARA). ULiège encourages its academic staff to travel internationally and welcomes international researchers through its EURAXESS centre.

ABOUT THE RESEARCH PROJECT

Behaviour of aggregate entanglement and modelling of concrete structures with recycled aggregates.

The full recovery of mineral construction and demolition waste as recycled raw materials for concrete production is a societal goal that is still pending and difficult to achieve due to high durability and mechanical strength requirements. In this context, concrete waste recovery routes will include advanced applications of recycled aggregates. However, these aggregates affect the performance of concrete structures, as they have an impact on important load resistance mechanisms, such as the interlocking of aggregates in the cracks of elements subjected to shear. We are looking for a motivated PhD student who is able to work with research teams at ULiège.

JOB DESCRIPTION

We are looking for a motivated PhD student who is able to work with research teams at ULiège.

This person will be responsible for carrying out laboratory experiments under monotonic and cyclic/fatigue loading with advanced measurements carried out at ULiège. The results will be used to develop models of aggregate entanglement on the meso and macro scales. Kinematic and numerical modelling will also be developed to study the effect of recycled aggregates on shear-critical reinforced concrete elements. The research will be carried out in collaboration with 3 other PhD students working on non-structural aspects related to recycled aggregates.

SPECIFIC DUTIES & ACTIVITIES

- ▶ This PhD work will therefore focus on developing rational mechanical models to capture the behaviour of aggregate nesting in concrete containing recycled aggregates.
- ▶ Produce an estimate of the volume destined for demolition and therefore of the volume of materials available, with a view to drawing up an action and development plan for the construction and demolition waste recycling industry....

YOUR PROFILE

- **REQUIRED SKILLS :**
 - ▶ MASTER'S DEGREE IN CIVIL ENGINEERING/MECHANICS
- **DESIRABLE SKILLS:**
 - ▶ EXCELLENT WRITTEN AND VERBAL COMMUNICATION SKILLS IN FRENCH
 - ▶ GOOD WRITTEN AND VERBAL COMMUNICATION SKILLS IN ENGLISH
- **SOFT SKILLS:**
 - ▶ TEAM SPIRIT
 - ▶ AUTONOMOUS
 - ▶ ORGANISATIONAL SKILLS

TERMS OF EMPLOYMENT

- ▶ Type of contract: PhD researcher
- ▶ Working time : Full time
- ▶ Length of contract : 4 years
- ▶ Start date: September 2024 (at the latest)

OUR OFFER

Salary and grade depend on the level of experience. On the basis of a complete file, the ULiège Human Resources Administration can estimate the gross monthly salary.

Full reimbursement of home/work journeys made by public transport and access to a range of [specific training courses](#) for researchers are possible.

WORK ENVIRONMENT

The candidate will benefit from a dynamic working environment, with stimulating scientific support, state-of-the-art laboratory facilities and advanced computer modelling tools on the Sart Tilman campus.

HOW TO APPLY

Applications (covering letter and detailed CV) should be sent to Professor Boyan Mihaylov at the following address: Boyan.mihaylov@uliege.be

In the CV, please include the names and contacts of at least two people who can be contacted to provide letters of reference.

SELECTION PROCEDURE

Selected candidates will be invited to an interview in English at the University of Liège or via Teams.

Our institutional policy is based on diversity and equal opportunities. We select candidates based on their qualities, regardless of their age, sexual orientation, origin, beliefs, disability, or nationality.

CONTACT DETAILS

For further information on the nature of the tasks or the procedure: Professor Boyan Mihaylov
E-mail Boyan.mihaylov@uliege.be (☎ +32 4 3669497)

Release date: 03/22/2024

Privacy policy

Personal data collected following your application will be processed by the ArGEnCo/Urban and Environmental Engineering's Department/Research Unit (School of Engineering) of the University of Liege for the sole purpose of recruitment.

The data will be processed within the framework of pre-contractual measures (art. 6-1, b. of the General Data Protection Regulation) and kept for up to 9 months after the publication of the vacancy. Your personal data will not be passed on to any third parties.

In accordance with the provisions of the GDPR (EU 2016/679), you may exercise your data protection rights (right of access, rectification, erasure, restriction, and portability) by contacting ULiège Data Protection Officer (dpo@uliege.be - Mr. Data Protection Officer, Bât. B9 Cellule "GDPR", Quartier Village 3, Boulevard de Colonster 2, 4000 Liège, Belgium). You may also lodge a complaint with the Data Protection Authority (<https://www.autoriteprotectiondonnees.be>, contact@apd-gba.be).