

PhD Studentship: REcycling of waste geomaterials and their application as primary constituents for high-level CONstructions (RECON)

Application deadline: 5th July 2021

Start date: Beginning of the 21/22 academic year.

Duration of the funding: 4 years

We are looking for an enthusiastic and highly motivated PhD student with proven interest and background in geomechanics and/or construction materials fields. This is an exciting opportunity to be part of a joint PhD research supported by the [EUTOPIA PhD Cotutelle programme](#). The PhD study will be carried out at the CY Cergy Paris Université (CY) in France and the University of Warwick (UoW) in the UK. The doctoral student will spend half of the PhD in CY and half of the PhD in UoW. The PhD project will be jointly supervised by Elhem Ghorbel (elhem.ghorbel@cyu.fr) in CY, and Mohammad Rezaia (m.rezania@warwick.ac.uk) in UoW.

The project:

Construction wastes, including waste from mining and excavation activities, are materials disposed from construction sites or used on the sites for other than the intended purposes. The rapid growth in the infrastructure sector has led to generation of a large amount of construction waste all over the world and environmental issues have raised concerns about the final destination of these materials. Recent estimates put construction wastes, also referred to as “geowaste”, at 35% of all wastes generated by economic activities in the European Union. The aim of this PhD research is to develop and verify practical solutions to utilise geowastes as reliable constituents in construction materials used for high-level applications, with a focus on cementitious materials and stabilised rammed earth materials. Micro, meso and element level tests will be carried out for full characterisation of the physical, chemical, mechanical and transport properties, and the data will be used for the development of a numerical model that can reproduce the experimental observations for modelling purposes. The two project institutes are currently undertaking a large multi-disciplinary project related to investigating the behaviour of coal mining spoils and their recycling and upcycling. The doctoral student will benefit from working closely with industry partners on the project.

Eligibility:

- The applicant should have a 1st class (or high 2:1) honours degree in civil engineering or related subjects of mechanical/chemical engineering with relevant experimental experience. Also, the applicant must have a master of science (MSc) degree with distinction or equivalent, in a relevant field (i.e., geotechnics, construction materials, or mechanics of materials and structures).
- The applicant should be able to demonstrate a strong background in advanced laboratory testing of geo/materials. Since the student will be working in interdisciplinary and international environment, the ability to work in a team and strong communication and writing skills in English are essential. Working experience in numerical analysis, particularly proficiency in a programming language (e.g., Fortran) is highly desirable.

Funding:

- The studentship is open to EU, UK, and international applicants.
- The home institution is CY and the host institution is UoW. The PhD student will receive an allowance for accommodation and subsistence of 1750€ net per month (before income tax) and an annual research/travel allowance of 3000€. They will pay annual tuition fees of 380€ at CY and will be exempt of tuition fees at UoW.

How to apply:

Interested candidates who meet the above qualifications should send their initial application document, by 5th July 2021, via email to Mohammad Rezaia at UoW (m.rezania@warwick.ac.uk), citing the reference “PHD2021-CYUOW” in the subject line. The application document must include 1) a detailed academic CV, 2) a letter of motivation stating how your interests and experience relate to the project, 3) scanned copies of the Bachelor’s and Master’s degree certificates and academic transcripts, and 4) (if available) scanned copies of reference letters, all compiled in a single PDF file. Shortlisted candidates will be contacted for an interview, if you have not heard back by the end of July, you should assume your application was unsuccessful.