



TRUSS

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TRUSS (Training in Reducing Uncertainty in Structural Safety) is a Marie Skłodowska-Curie Innovative Training Network funded by the European Union under the Horizon 2020 Programme. TRUSS is structured into taught modules combined with original and impactful research supported by secondments that will give the successful candidates significant insights and exposure to research and innovation in both academia and industry.

EARLY STAGE RESEARCHER VACANCY:

ESR 1



Project Title:

RELIABILITY OF CONCRETE STRUCTURES REINFORCED WITH BRAIDED FRP

Host

University College Dublin (UCD)

Address

School of Civil, Structural and Environmental Engineering; UCD, Newstead, Belfield, Dublin 4

Country

Ireland

Main Supervisor

Dr. Ciaran McNally

Background

Considerable research has been conducted in recent years into the *reliability of reinforced concrete structures* subjected to time dependent changes in resistance and loading. The use of braided Fiber Reinforced Polymer (FRP) rebar offers potential performance benefits as they are not subjected to the corrosion issues that frequently add uncertainty to reliability calculations. However *the structural safety associated with this composite material is still not fully understood*. FRP is an inherently brittle material, a feature that fundamentally changes the approach required in assessing reliability of structures manufactured using FRP rebar. **TRUSS will propose models that will allow reducing the uncertainty associated to the response of Braided FRP.** Experimental testing programmes at UCD (scanning electron microscopy and X-ray Photoelectron Spectroscopy, etc.) planned in collaboration with *Burgmann Packings* will be utilised by the ESR to develop reliability models that will determine structural safety.

Objectives

The objective is to investigate the influence of FRP on structural reliability and develop tools to quantify the robustness of this material. This will be achieved through experimental testing to determine the influence of deterioration mechanisms (e.g. freeze-thaw action) on



the interaction between the FRP and the concrete. This will be supported by advanced analytical techniques such as scanning electron microscopy and X-ray Photoelectron Spectroscopy to characterise the interactions at the concrete-rebar interface.

Expected Results

Reliability models to assess safety of structures manufactured using FRP rebar.

Secondment

This position involves a secondment of some months to *Burgmann Packings*. *Burgmann* will provide the ESR with experience in the design and manufacture of braided composites that will be key for the reliability assessment of their performance.

Specific Requirements

- At the date of closure of appointments, candidates must have obtained, or finalize within 3 months, a 4-yr Bachelor or a Masters degree in a relevant engineering discipline.
- We are looking for candidates with a strong motivation to pursue a career in engineering and an open mind for new approaches and a lot of team spirit. Creativity and level of independence will be considered.
- Solid written and oral communication skills in English are prerequisites of any successful application.

Eligibility Criteria

- Researchers can be of any nationality and age.
- All recruited researchers **must be Early-Stage Researchers (ESRs)**. A ESR shall, at the time of recruitment by the host organisation, **be in the first four years of their research careers** and not yet have been awarded a doctoral degree. The four years start to count **from the date when a researcher obtained the degree which would formally entitle him/her to embark on a doctorate**.
- Researchers are required to undertake transnational **mobility** (i.e. move from one country to another) when taking up their appointment. One general rule applies to the appointment of researchers: **At the time of recruitment by the host beneficiary, researchers must not have resided or carried out their main activity (work, studies, etc.) in the country of their host beneficiary for more than 12 months in the 3 years immediately prior to the reference date. Note that the *mobility* rule applies to the beneficiary where the researcher is recruited, and not to beneficiaries to which the researcher is sent or seconded.**
- For all recruitments, the eligibility and mobility of the researcher will be determined at the time of their (first) recruitment in the project. The status of the researcher will not evolve over the life-time of a contract.

Salary and Working Conditions

- Each position is for a period of 36 months. These positions will be available from August/September, 2015. The Marie Skłodowska-Curie programme offers highly competitive and attractive salary and working conditions. Exact salary will be confirmed



upon appointment. It consists of a living allowance (= 37320 euro/year [the Marie Skłodowska-Curie rules apply a correction factor to this amount to allow for the cost of living in different countries]) + a monthly mobility allowance (= 600 to 1100 euro/month depending on the family situation).

- Furthermore, PhD tuition fees for the ESR are covered and the research project is aimed at defending a thesis and obtaining a PhD degree. In addition to their individual scientific projects, all positions will benefit from further continuing training, which includes internships and secondments (All ESRs will be seconded at least once during this period at another partner site), a variety of training modules as well as transferable skills courses, active participation in workshops and conferences, and exposure to large enterprises, SMEs and Universities from different European countries involved in TRUSS.

Application Procedure

- (1) Check you meet **Eligibility criteria** and **Specific requirements for the ESR position** project/s you are applying for.
- (2) Prepare the following **application documents** (in English):
 - a. **A curriculum vitae**, including contact details, education (at University level and other), work experience, prizes/awards, language skills, etc... (max. 2 pages). The CV should reflect a representative array of achievements and qualifications appropriate to the post for which application is being made.
 - b. **Official academic record** of undertaken courses & grades for Bachelor (and Master if required in specific criteria) degree.
 - c. **A motivational letter** in which the applicant describes his or her motivation to pursue postgraduate studies and to conduct the research project/s applied for. Mention the ESR project number or numbers (in the latter indicate order of preference if any) on your motivational letter and the subject of the email.
 - d. **A reference letter.**
- (3) Email your application documents as attached files to: trussitn@ucd.ie **before the 1st May 2015 deadline** and mention the ESR project number/s you are applying for in the subject line.
- (4) The documents provided will be used to select the best candidates. Successful candidates will be informed **before 29th May 2015.**

For more information on a position with TRUSS, please check
www.trussitn.eu/vacancies or email trussitn@ucd.ie