

Expression of Interest

Contact Person/Scientist in Charge

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- **Universidad de Alicante**

Department / Institute / Centre

- **Name of institution:** Civil Engineering Department. Research Group in Structure Essay, Simulation and Modelling (GRESMES)
- **Address:** Carretera Alicante - San Vicente
- **Province:** Alicante

Research Area

- Information Science and Engineering (ENG)

Brief description of the institution:

The University of Alicante (UA) was created in 1979. Today it educates and trains more than 36.000 students -2.500 of them are international students - and offers more than 80 undergraduate and 96 postgraduate programmes: consequently, it is proportionally one of the fastest growing universities in Spain. The UA houses 227 research groups in Social and Legal Sciences, Experimental Sciences, Technological Sciences, Human Sciences, Education and Health Sciences and 15 Research Institutes (Water & Environment, Materials, Electrochemistry, Biodiversity, Chemical Processes and Organic Synthesis, and Modern Languages, among others). Thus, the UA employs over 2.400 researchers/ professors and has a complex management /administration structure of 1.300 people, which involves an annual budget of 175 million Euros.

UA is a young and dynamic university with vast experience in implementing EU funded projects in different programmes and areas, with presence in more than 60 countries worldwide. In the last 10 years, UA has successfully acted as coordinator of many Tempus, Alfa, Edulink projects involving Third Countries and Lifelong Learning and Framework Programme (FP, DG Research) Projects. Moreover, the participation in FP has been increasing in the last years, taking part in 25 5th FP, 26 6th FP, 45 7th FP projects (13 of them coordinated by UA), and 6 in H2020. It is worth underlining the big effort performed by UA in order to meet the commitment with the principles set out in the European Charter for Researchers and in the Code of Conduct for the Recruitment of Researcher.

Brief description of the Centre/Research Group:

The Department of Civil Engineering (<https://dic.ua.es/en/web/general-information.html>) is part of the School of Engineering. Currently, the department is divided into the following Areas: Construction Engineering, Electrical Engineering, Hydraulic Engineering, Geotechnical Engineering, Infrastructure and Transport Engineering and Continuum Mechanics and Theory of Structures. The number of academics involved in research and teaching activities is higher than 100.

The Civil Engineering Research Laboratories (<https://dic.ua.es/en/web/spaces/civil-engineering-laboratories.html>) has been financed through FEDER programs. The infrastructure has additional laboratories of Transport Engineering, Construction Materials, Durability, Structural and Soil Engineering. There are also a number of common facilities for all of them as wet chambers with computer controlled environments; Furnace-Room with 1 m³ capacity and up to 1000°C able to simulate programmed heating curves.

The central laboratory has 300 m² with a 50 kN crane bridge and a reaction slab of 100 m². On this strong floor, it is possible to anchor specimens to be tested with high versatility due to the anchor point's matrix of 1x1 m with a capacity of 500 kN per anchor point in tension and/or compression. On this Central Laboratory, there are two high capacity porticos with hydraulic servo actuators of 700 kN and 2500 kN. The 2500 kN structure allows testing specimens up to 5 m in height against vertical tensile and compression loads, while the 700 kN has the possibility to introduce vertical or horizontal loads with a height of between 1 and 5 m, with a free light of 5 m. Hydraulic actuators control this equipment so that their positioning in height from height 0.5 m up to 5 m in height is made fully automated. The Research Group in Structure Essay, Simulation and Modelling (GRESMES) (<https://blogs.ua.es/gresmes/investigacion/>) is composed by 17 PhD academics with collaboration in several European and Spanish projects in the areas of structural engineering, retrofitting structures, historical constructions, earthquake and dynamic engineering and safety/security for construction works.

[https://cvnet.cpd.ua.es/curriculum-breve/grp/en/grupo-de-ensayo-simulacion-y-modelizacion-de-estructuras-\(gresmes\)/553#capacidades](https://cvnet.cpd.ua.es/curriculum-breve/grp/en/grupo-de-ensayo-simulacion-y-modelizacion-de-estructuras-(gresmes)/553#capacidades)

Project description:

Numerical and experimental study of the behaviour of MASONRY elements retrofitted with TEXTILE Reinforced MORTAR after EXPOSURE to high TEMPERATURE (MASTERMOXT). Despite TRM (Textile Reinforced Mortars) have been proven useful for the seismic reinforcement of masonry structures, it is not practically used in Spain.

Also, there are only a few real experiences in Europe. However, this research group has already studied this reinforcement technique during previous projects. In the development of these projects, fire resistance of TRM reinforcement was pointed out as one of the main drawbacks for the widespread use of this technique. TRM includes usually polymeric components, whose mechanical properties and stability is highly temperature dependent.

The scientific references available today are still scarce regarding the behaviour of TRM and masonry reinforced structures after high-temperature exposure. This research project is based on the hypothesis that TRM is capable of improving the mechanical behaviour of masonry walls at ambient temperature, avoiding the different behaviour of bricks and mortar to obtain a uniform tensile strength of the structure, especially under cyclic loading (e.g. seismic actions). The main objective of this project is the assessment of the loss of efficiency of TRM reinforcement applied on masonry walls after high-temperature exposure, even testing its resistance to seismic loads.

Applications

- 1) An outline of the proposed research project including a short literature review (max. 4 pages)
- 2) A copy of the most recent CV, containing names and contacts of at least two references
- 3) A letter of interest explaining the candidate's motivation to be involved with GRESMES

Please submit these documents to sivorra@ua.es by no later than **September 1, 2019**.

Please indicate "Call: MARIE SKŁODOWSKA-CURIE INDIVIDUAL FELLOWSHIPS 2019" in the subject line of the email.