

06/02/2020



ESR1: PhD Student Position at Universidad de Sevilla within EU MSCA-ITN-ETN NewFrac

Where to apply

Application Deadline: 30/06/2020 17:00 - Europe/Brussels

Contact Details

Where to send your application.

COMPANY

Universidad de Sevilla

WEBSITE

<https://www.newfrac.eu/phd-positions/esr1>

Hiring/Funding Organisation/Institute

ORGANISATION/COMPANY

Universidad de Sevilla

COUNTRY

Spain

DEPARTMENT

Departamento de Mecánica de Medios
Continuos y Teoría de Estructuras

CITY

Sevilla

ORGANISATION TYPE

Higher Education Institute

WEBSITE

<http://www.us.es>

ORGANISATION/COMPANY

Universidad de Sevilla

LOCATION

Spain › Sevilla

RESEARCH FIELD

Engineering › Mechanical engineering

TYPE OF CONTRACT

Temporary

RESEARCHER PROFILE

First Stage Researcher (R1)

JOB STATUS

Full-time

APPLICATION DEADLINE

30/06/2020 17:00 - Europe/Brussels

HOURS PER WEEK

37.5

OFFER STARTING DATE

01/11/2020

**EU RESEARCH FRAMEWORK
PROGRAMME**

H2020 / Marie Skłodowska-Curie
Actions

REFERENCE NUMBER

NEWFRAC

**MARIE CURIE GRANT AGREEMENT
NUMBER**

861061

The Marie Skłodowska-Curie Action Innovative Training Network "**NEWFRAC**" (www.newfrac.eu) is a high-level training of a new generation of creative, entrepreneurial and innovative early-stage researchers (ESRs) through the development and engineering applications of a new modeling

framework focused on the prediction and analysis of multi-field fracture phenomena in heterogeneous engineering systems at different scales. NEWFRAC in its mission of training students capable of solving the current problems of multi-field fracture phenomena in heterogeneous engineering systems, offers **13 PhD positions** for early stage researchers (**ESRs**) distributed in a network of 5 European countries (**France, Germany, Italy, Portugal and Spain**) and 2 countries associated (**Israel and Switzerland**), with the participation of prestigious academic and industrial institutions that will allow researchers to grow and develop their technical skills in a multisectoral environment.

Besides working on their projects at their home institutions, the researchers will participate in network-wide training events like summer schools. Moreover, they will conduct secondments at other network partners combining academic and industrial experiences.

The following position and project is available at **Universidad de Sevilla** in **Sevilla, Spain**:

ESR 1: Total energy minimization with stress conditions for mixed mode fracture in anisotropic heterogeneous materials and structures.

Objectives: *New computational methodologies based on the original formulations of the Coupled Criterion of Finite Fracture Mechanics (w/discontinuous representation of cracks) and Phase Field models of fracture (w/regularized diffused representation of cracks) and the Principle of Minimum Total Energy subject to a Stress Condition will be developed and implemented in a FEM code to provide accurate and reliable predictions for complex mixed mode fracture problems involving simultaneous crack onset, propagation, and interactions with interfaces in anisotropic brittle materials. New optimization procedures will be required, e.g., for CCFFM, a modified staggered scheme aimed at global optimization in the feasible parameter-region given by the stress condition due to the efficiency of its computational implementation. Novel forms of the degradation and local fracture energy functions will be proposed to impose stress conditions in PF. Staggered hybrid CCFFM and PF schemes, providing necessary information to the PF algorithm in terms of suitable boundary/interface conditions or prescribed values for PF damage variable in each time step, will be explored. Validation of the computational tools developed by their application to industrial problems. For more information about this position please go to <https://www.newfrac.eu/phd-positions/esr1>*

Contract signing and incorporation dates are orientative and have yet to be defined. For **more information** about the call and application process visit www.newfrac.eu

The closing date of the call will be on June 30, after this date, the institution will make a first analysis of the candidates to determine that the candidates meet the

requirements proposed by the call. The institution will publish within a maximum period of 15 working days the list of candidates admitted in the selection process. Non-selected candidates can claim objections to the selection process during three next working days after the announcement of the list. Final list of the admitted candidates will be announced within a maximum period of 10 working days.

ADDITIONAL INFORMATION

Benefits

A full-time fixed-term contract is offered. Marie Skłodowska-Curie Actions ITN provide competitive financial support to the ESR including: a competitive monthly living and mobility allowance and salary, coverage of the expenses related to the participation of the ESR in research and training activities (contribution to research-related costs, meetings, conference attendance, training actions, etc.). The recruited researchers will have a regular contract with the same rights and obligations as any other staff member of the institution.

Eligibility criteria

Applicants must at the time of recruitment: **1)** Be in the first four years (full-time equivalent) of their research careers. The four years start to count from the date when a researcher obtained the degree (e.g. Master's degree) which would formally entitle him/her to embark on a doctorate. **2)** Candidates could be of any nationality but have not resided in the host country for more than 12 months in the last 3 years **3)** Have NOT been awarded a doctoral degree.

Selection process

Applicants are evaluated by a selection committee on the basis of past academic performance (grades) and background, scientific relevance and aptitude to research, and any other additional pertinent data submitted in the application (such as scientific publications, if any). The candidates that pass the initial assessment of the applications will be invited for an interview with the selection committee, either in person at the campus, or via standard internet videoconference. Equal opportunities are ensured to all candidates throughout the evaluation process.

Web site for additional job details

<https://www.newfrac.eu/phd-positions/overview>

REQUIREMENTS

Offer Requirements

REQUIRED EDUCATION LEVEL

Engineering: Master Degree or equivalent

REQUIRED LANGUAGES

ENGLISH: Excellent

Skills/Qualifications

- Master's degree in Mechanical/Aeronautical/Civil Engineering/ Physics/ Applied Mathematics, **earned before October 31 2020**
- Excellent undergraduated and Master's degree grades
- High level of written and spoken English
- Teamwork ability

Specific Requirements

- Basic knowledge of Computational Solid Mechanics and Fracture Mechanics
- Knowledge of scripting languages (e.g. Python) would be appreciated
- Basic knowledge of Numerical Mathematics

Map Information



Job Work Location



Personal Assistance locations

WORK LOCATION(S)

1 position(s) available at

Universidad de Sevilla

Spain

Sevilla

Camino de los

Descubrimientos s/n, 41092

EURAXESS offer ID: 489711

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