

17/02/2020



# ESR10: PhD Student Position at ETH Zurich within EU MSCA-ITN-ETN NewFrac

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Where to apply

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Application Deadline: 31/05/2020 00:00 - Europe/Brussels

Contact Details

**Where to send your application.**

**COMPANY**

Eidgenoessische Technische Hochschule (ETH) Zurich

**WEBSITE**

<https://www.newfrac.eu/application-form>

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Hiring/Funding Organisation/Institute

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**ORGANISATION/COMPANY**

Eidgenoessische Technische Hochschule  
(ETH) Zurich

**COUNTRY**

Switzerland

**DEPARTMENT**

Eidgenoessische Technische Hochschule  
(ETH) Zurich

**CITY**

Zurich

**ORGANISATION TYPE**

Higher Education Institute

**WEBSITE**

<https://ethz.ch/en.html>

**ORGANISATION/COMPANY**

Eidgenoessische Technische Hochschule (ETH) Zurich

**LOCATION**

Switzerland › Zurich

**RESEARCH FIELD**

Engineering › Materials engineering  
Engineering › Mechanical engineering

**TYPE OF CONTRACT**

Temporary

**RESEARCHER PROFILE**

First Stage Researcher (R1)

**JOB STATUS**

Full-time

**APPLICATION DEADLINE**

31/05/2020 00:00 - Europe/Brussels

**HOURS PER WEEK**

41

**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 Innovative Training Network "**NEWFRAC**" ([www.newfrac.eu](http://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 project 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 **ETH Zurich** in **Zurich, Switzerland**:

### **ESR 10: PF modeling of fracture in the human femur**

**Objectives:** *ESR-10 will work at the development, implementation and testing of a PF model for fracture of anisotropic biological tissues, with specific reference to the human bone, especially to the proximal part of the femur. First, ESR-10 will develop a suitable energy functional to account for anisotropic effects and for asymmetry between tension and compression, investigating the mathematical properties of different options and carrying out both homogeneous and localization analyses. ESR-10 will thus develop the macroscopic anisotropic PF model, carry out the theoretical analysis and numerical implementation phases, and test the model on simple geometries before extending it to the geometry of the proximal part of the femur. Subsequently, ESR-10 will work in cooperation with ESR-8 to formulate a scale transition procedure between the microscale, where ESR-8 will have developed local fracture initiation criteria based on FFM, and the macroscale, where crack propagation will be described. Again, in cooperation with ESR-8 ESR-10 will carry out numerical simulations of the experiments performed by ESR-8 to validate the developed tools. For more information about this position please go to <https://www.newfrac.eu/phd-positions/esr10>*

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](http://www.newfrac.eu)

### ADDITIONAL INFORMATION

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### Benefits

A full-time fixed-term contract is offered. Marie Curie ITNs 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/application-form>

## REQUIREMENTS

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### 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 starting date
- Excellent undergraduated and Master's degree grades
- High level of written and spoken English

- Teamwork ability

## Specific Requirements

- Previous experience in the development and application of Finite Element Method and at least one programming language will be appreciate

# Map Information



Job Work Location



Personal Assistance locations

## WORK LOCATION(S)

1 position(s) available at  
 Eidgenoessische Technische  
 Hochschule (ETH) Zurich  
 Switzerland  
 Zurich  
 Rämistrasse 101

EURAXESS offer ID: 493552

## Disclaimer:

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