POSTDOC POSITION · 3SR LABORATORY

Mechanics of materials and structures: advanced multiscale approaches and/or AI-based approaches

LOCATION	DURATION	START	APPLY BY
3SR Laboratory, Grenoble	12 months	March-April 2027	November 27, 2026

Project summary

This postdoc position offers the opportunity to develop one of the following approaches in mechanics of materials and/or structures, as chosen by the candidate:

(i) **Multiscale mechanics and couplings.** This approach is long-standing at the laboratory, with a strong focus on small spatial and temporal scales (micro-nano) in recent years. We would like to strengthen the experimental/theoretical and/or numerical dialogue **between at least two spatial or temporal scales** of a material, structure or phenomenon, among the scales studied at 3SR (from nm to decametres; from quasi-static to ultra-fast, with characteristic times from 10^{-7} s to 10^{7} s). The phenomena studied may combine mechanics with other relevant physics (thermo-hydro-mechanics, fluid/mechanical couplings, etc.), chemistry and/or biology. **Approaches based on recent and advanced techniques (experimental and/or numerical) will be particularly appreciated.**

(ii) **AI-based approaches in mechanics.** These approaches are new in the laboratory, and we would like to develop interactions between research in mechanics of materials and/or structures (experimental/theoretical and/or numerical) and recent advances in data science and artificial intelligence (neural networks, deep learning, statistical learning, Big Data processing, etc.). For example, AI can be used to reduce the dimensionality of a model and thus speed up computations, and/or to perform data assimilation in order to adapt a model to new operating conditions. **Data science expertise can be provided through collaboration with a partner laboratory proposed by the candidate.**

Host teams and applications

The aim is to give a candidate the opportunity to work on a topic of their choice, in line with one or both themes above (i and/or ii) and with the scientific activities of one of the lab's three research teams. Assignment will depend on the profile and preferences of the person recruited:

- CoMHet team: mechanics and multi-physical couplings of heterogeneous media;
- GeoMechanics team: mechanics of geomaterials and geotechnical structures;
- RV team: risks, vulnerability of structures and mechanical behaviour of materials.

Applications will fall within the major areas of the chosen team and, more generally, of 3SR: civil engineering, environment, energy, transport, defence or health. This offer will enable the successful candidate to develop a scientific research project within 3SR Lab, and thus facilitate his/her application for a permanent CNRS position within the laboratory.

Keywords of the lab

Mechanics of solids, materials and structures; multiscale and multi-physics approaches; **experimental mechanics**: tests on materials and structures under complex loadings and various environments, coupled with 2D/3D imaging (optical, X-ray and/or neutron tomography) and full-field measurements/quantitative image analysis; **theoretical mechanics**: upscaling methods, constitutive laws, enriched continua; **numerical mechanics**: simulation of nano/microstructures using finite elements or volumes, discrete elements, molecular dynamics, probabilistic and multiscale methods (FEM×DEM, MPM×DEM, FE², domain decomposition, etc.).

What the position offers

- A research project **of your own choice**, carried out within one of the three 3SR teams.
- A cutting-edge environment in experimental, theoretical and numerical mechanics, from the nanoscale to full-size structures.
- A **12-month contract starting March-April 2027**; gross salary ≈ **€3,000/month** (before taxes) depending on postdoctoral experience.
- A springboard towards a **permanent CNRS research position** in the laboratory.

Candidate profile

- PhD and solid skills in mechanics of materials and/or structures.
- Between 1 and 2 years (maximum) of experience after the PhD.
- Experience in line with the lab's keywords and/or AI-based approaches will be strongly appreciated.
- **Moral commitment** to apply for a CNRS research fellow position at the end of the postdoc (end of 2027) in order to join 3SR.

Location: 3SR Laboratory (Sols, Solides, Structures, Risques), Université Grenoble Alpes, Grenoble, France — https://3sr.univ-grenoble-alpes.fr/

Application: CV and cover letter **by November 27, 2026** to the 3SR management team: direction@3sr-grenoble.fr