



## **Open position for a Permanent Teacher-Researcher** ***Geomechanics and Geotechnics***

**Institution :** MINES ParisTech (École Nationale Supérieure des Mines de Paris)

**Location :** Centre de Géosciences / Geosciences Department  
35, rue Saint Honoré  
77300 Fontainebleau France

MINES ParisTech, one of the major French higher education and research institution, has an opening for a confirmed researcher in the field of *Geomechanics and Geotechnics*. The appointment will be a permanent position. Annual gross salary will be negotiated according to the qualifications and the previous experience of the candidate.

The position offers opportunities for strong collaborations with other industrial and academic R&D groups at European and international level. The successful candidate will take over the responsibility of some of the contractual research projects conducted by the *Engineering geology and geomechanics* team.

### **1. THE GEOSCIENCES DEPARTMENT**

The Geoscience research department of MINES ParisTech focuses on research and teaching activities in the field of applied Earth Sciences. It is located in Fontainebleau, 65 km South of Paris.

Research and training activities cover the various fields in relation to the understanding of mining and management of underground resources (mineral raw material, oil&gas, groundwater, deep underground waste storages, tunnelling and underground space management) in the context of a sustainable development.

The Geoscience department is divided into six research teams which cover most of the applied Earth Sciences fields (geology, geophysics, geostatistics, hydrogeology, hydrochemistry, engineering geology and geomechanics). Research activities are generally multidisciplinary and involve several teams of the department, topics spanning from original and fundamental developments to innovative industrial solutions. The department employs about 40 tenured researchers, 35 technicians and administrative staff, and 40 PhD students.

The department also benefits from experimental facilities dedicated to rock and water characterization (ionic microprobe, SEM, XRD, water chemistry analysis...), to soil and rock mechanical testing, and finally to simulate rock cutting and oil&gas drilling processes.

The Geoscience research department takes also part in the MINES ParisTech graduate school and PhD programs in association with several Paris Universities. Besides, the department offers several professional trainings (6 to 10 months; about 40 trainees per year) in the fields of public administration of mining activities, geostatistics, and technical and economic evaluation of mining projects.

(see <http://www.geosciences.mines-paristech.fr> for more information)

## **2. DESCRIPTION OF THE POSITION**

### **The Engineering Geology and Geomechanics team**

The position concerns the Engineering Geology and Geomechanics team (GIG), one of the six teams of the Department. With 15 permanent teachers-researchers, this team is the most significant team of the Geoscience department. The research activities of the GIG team can be classified into two major fields : management and exploitation of underground resources and spaces; control of geotechnical hazards and risks. The research programme deals with experimental and theoretical modelling of – thermo-hydro-mechanical coupled phenomena in Geotechnics, - evolution, stability and failure of geomaterials, -interaction processes between structures and geomaterials and mechanical behaviour of interfaces (reinforcement of soils and rocks, mechanical behaviour of a drillstring assembly inside boreholes, deep rock drillability, wear process of drilling tools, ...).

### **The position – Research**

The candidate is expected to conduct and manage research and teaching-training tasks, specifically in the field of thermo-hydro-chemio-mechanical coupled processes in geotechnics. This field is essential for the design of civil engineering underground works or gas storage cavities, for the safety analysis of underground storage projects of industrial or radioactive waste, as well as for the exploitation of certain types of oil&gas reservoirs. Most of these research activities need a multidisciplinary approach, and as a result the candidate will have to work closely with other teams of the department (*Hydrological systems and reservoirs* for the analysis of the hydro-mechanical behaviour, *Reactive hydrodynamics* for the chemical coupling...).

The candidate will have to develop partnerships with other research institutions, in France and abroad, and ensure the preparation (including the financing) and the monitoring of the research projects he/she will propose. He/she will actively contribute to the recognition of the team by promoting the research undertaken with the industrial world through participation to scientific events and publications.

### **The position – Teaching**

The candidate will contribute to teaching general and specialized courses within the different programs of the Earth Sciences Department (MINES ParisTech and associated universities Master programs, continuing education, supervision of trainees and PhD students). Depending on the background of the candidate, teaching topics can range from geomechanics, structural analysis, continuum mechanics, finite elements.... The candidate will also be involved in the general organisation of courses and supervise student internships that are generally chosen in close collaboration with industry.

### **Specificities of the candidate**

The candidate should have a very good knowledge of rock and/or soil physics and their behaviour. He/she should prove a strong experience in modelling of the equations which govern mechanical or thermal phenomena, as well as flow in porous media; he/she will show references in terms of software development (or significant contribution to the evolution of existing software). Finally, he/she will be experienced in lab or *in situ* experimental program development and implementation.

At the time of the appointment, the successful candidate must have a doctoral degree in earth

sciences or related subject. As the position implies cooperation with international partners, good knowledge of English language is required. A minimum of 3 years experience in teaching and research is mandatory. A “Habilitation à Diriger des Recherches” diploma would be appreciated.

References in teaching and supervising students are required. The candidate should be able to demonstrate her/his ability to initiate and conduct new research projects with other research institutions, in France and abroad that does require good communication skills.

### **Contacts for additional information about the position**

For additional information about scientific issues :

- Hedi Sellami, [hedi.sellami@mines-paristech.fr](mailto:hedi.sellami@mines-paristech.fr)  
Phone : + 33 (0)1 64 69 47 10

For additional information on administrative issues :

- Isabelle Olzenski, [isabelle.olzenski@mines-paristech.fr](mailto:isabelle.olzenski@mines-paristech.fr)  
Phone : + 33 (0)1 64 69 49 56

## **2. To apply**

**Applications must be submitted by December 31<sup>th</sup>, 2013.**

All applications must include:

- a detailed curriculum vitae;
- a list of publications and recent projects;
- a cover letter indicating presenting the **research project** of the candidate;
- if possible, three recommendation letters. In any case at least the names and contact information of three references.

Applications should be sent via E-mail or by post to:

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