MINES PARISTECH, CENTRE DES MATERIAUX, CNRS UMR 7633

Call for Application for Tenure Track Assistant Professor

Metallurgy

The Centre des Matériaux is located in Evry (35 km south from Paris) and is a research laboratory of Mines Paris Tech in association with CNRS (UMR 7633). It employs about 200 persons including 29 staff researchers, 50 technicians and engineers, 86 PhD students and 14 post-docs. Research fields include microstructural characterization, mechanical testing and numerical simulations in mechanics, metallurgy and physical chemistry. The offer corresponds to a 3 years tenure track position (assistant professor) possibly leading to a permanent position.

Profile

The profile of the candidate applying for this open position must correspond to either Mechanical Metallurgy or Metallurgy and Processes. In both cases, the candidate will be part of a research team, where he/she will participate in the supervision of doctoral students while developing its own research area. He/she will be involved in project writing in response to call for proposals and contract execution with industry or other national and international partners. He/she will participate in teaching at Mines ParisTech. The position is available to researchers graduated from a university or “grande école”, with a PhD in Materials Science. A postdoctoral research experience in a distinct laboratory than his/her PhD’s one and preferably in a foreign academic institution will be highly appreciated.

Mechanical Metallurgy profile

The field of activities of the research team focuses mainly on the development and behavior of high temperature metal alloys (steels, nickel alloys, aluminum, titanium...).The candidate must demonstrate a solid background (under and post graduated level) in Materials Science. He/she should also demonstrate a post-doctoral experience in the field of metallic alloys (development, optimization, microstructures, behavior ...).

- The candidate must be competent and autonomous – i.e. capable of making observations, analysis or testing and exploit these research results for the progress of studies; skilled for education and training of PhD students and technicians - in several of the experimental techniques outlined below.
- Analyses of microstructures
- SEM and EBSD;
- X-ray diffraction techniques in crystal orientation (Laue), phase analysis ("powder"), and measurement of residual stress techniques
- TEM: using conventional techniques of phase analysis by electron diffraction and imaging and analysis techniques of precipitation and dislocation microstructures.
- Mechanical tests:
- Either creep / relaxation temperature type tests;

- Either cyclic temperature type tests.

Expertise in specific fields of physical metallurgy such as equilibrium phase diagrams, diffusion theory and dislocation theory will be particularly welcome.

Metallurgy and Processes profile

The candidate will be part of the SIP team "Surfaces, Interfaces, Process" (40 people including 23 PhDs). His task will be to develop and pursue research activities carried on by the team in the field of innovative material development. The aim of SIP is the control of application properties of a material, component or assembly by a control of the microstructure through process parameters or appropriate heat treatments. This development requires the consideration of phenomena and mechanisms involved in or out of equilibrium such as rapid heating and solidification, diffusion-reaction, transport-flow-deformation…

These activities are carried out with state-of-the-art equipments of leading-edge technologies: laser additive manufacturing, brazing and diffusion welding assembly, reactive or conventional sintering plasma spraying in controlled atmosphere, "cold-spray" projection, tape casting, co- rolling, solidification… The field of repair is also addressed by techniques such as diffusion-brazing and diffusion brazing reloading on new material such as brittle intermetallics. Subtractive manufacturing by metal cutting machining is also addressed in SIP by the study of metallurgical anomalies, their detection in machining and their impact on the service lifetime of the parts. The properties considered are mechanical, thermo-physical and/or functional.

This position is aimed at a researcher who asserted sensitivity for elaboration and materials processing. The candidate should have strong knowledge in physics, thermal physics, chemistry and process engineering. Experience in thermo-kinetic modeling in relationship with material transformation is highly desirable.

Teaching

The incumbent will actively participate in the teaching of under-graduates (“second cycle” - Civil Engineers) and post-graduates (“troisième cycle”) devoted to metallurgy.
In the “second cycle”, he will participate in the current strong development of training by "projects" in the course "Materials for Engineering" (compulsory modules) (see http://mms2.ensmp.fr/mat_paris/mat_paris.php). This training, organized in collaboration with our colleagues at CEMEF (Mines-ParisTech Sophia-Antipolis), is supposed to evolve in a near future as a result of new synergies between institutions gathered in PSL*.
In the “troisième cycle”, he will participate in metallurgy courses for which the Materials Center is involved. (Research masters, specialized master COMADIS) through tutorial classes and / or trainee supervision
The candidate will actively participate with other faculty members of the Center for Materials, to reflections on the renewal of metallurgy training in the Ile-de-France as at national level and will be involved in the actions that will follow . A strong motivation in this area is highly desirable.

APPLICATION DOSSIER

The dossier of the candidate including:

- a detailed curriculum vitae
- a list of studies and publications
- a letter explaining his/her motivation and proposed scientific project
- letters of recommendation from personalities in the scientific or industrial sectors

should be sent by May 31 2013 to the Centre des Matériaux de l'Ecole des Mines de Paris, UMR CNRS 7633, B.P. 87 - 91003 EVRY CEDEX France (for the attention of Mr. J. BESSON) and/or by e-mail : candidat@mat.ensmp.fr