

## SELECTION OF TEMPORARY STAFF FOR THE JOINT RESEARCH CENTRE

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The Commission is organising a selection procedure to fill one administrator post in the Joint Research Centre (JRC) within the Material Research Unit of the Institute for Transuranium Elements in Karlsruhe.

The Material Research Unit is active in the field of nuclear fuel behaviour modelling.

### GENERAL CONDITIONS

Candidates must satisfy the requirements set out in Article 12 of the Conditions of Employment of Other Servants of the European Union (CEOS)<sup>1</sup>, which include being a national of a Member State of the European Union.

The European Union institutions apply a policy of equal opportunities and accept applications without distinction on the grounds of sex, race, colour, ethnic or social origin, genetic features, language, religion or belief, political or any other opinion, membership of a national minority, property, birth, disability, age or sexual orientation.

### TYPE AND DURATION OF CONTRACT

The successful candidate(s) may be offered a temporary contract under point (d) of Article 2 of the CEOS in accordance with the Commission Decision of 28 April 2004 on a new policy for the engagement and employment of temporary staff<sup>2</sup>. The duration of the contract may not exceed four years, with the possibility of renewal for a maximum of two years.

The duration of the contract will also take account of the relevant provisions in the Commission Decision of 28 April 2004 on the maximum duration of recourse to non-permanent staff (six years over a twelve-year period)<sup>3</sup>.

### PLACE OF EMPLOYMENT

Karlsruhe (DE)

### LEVEL

AD8 (*for specialists*) (as an indication, basic monthly starting salary of €6.299,95 to €6.564,69) (*amounts to be adjusted annually*)<sup>4</sup>

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<sup>1</sup> [http://ec.europa.eu/civil\\_service/docs/toc100\\_en.pdf](http://ec.europa.eu/civil_service/docs/toc100_en.pdf)

<sup>2</sup> [http://europa.eu/epso/apply/today/pdf\\_word\\_temp\\_staff/decision\\_new\\_policy\\_for\\_at\\_en.pdf](http://europa.eu/epso/apply/today/pdf_word_temp_staff/decision_new_policy_for_at_en.pdf)

<sup>3</sup> [http://europa.eu/epso/apply/today/pdf\\_word\\_temp\\_staff/regle\\_des\\_six\\_ans\\_en.pdf](http://europa.eu/epso/apply/today/pdf_word_temp_staff/regle_des_six_ans_en.pdf)

<sup>4</sup> [http://europa.eu/epso/apply/today/pdf\\_word\\_temp\\_staff/decision\\_on\\_classification\\_en.pdf](http://europa.eu/epso/apply/today/pdf_word_temp_staff/decision_on_classification_en.pdf)

## NATURE OF DUTIES

In line with the JRC mission, the aim of the Institute for Transuranium Elements is to provide the scientific foundation for the protection of the European citizen against risks associated with the handling and storage of highly radioactive material. ITU's prime objectives are to serve as a reference centre for basic actinide research, to contribute to an effective safety and safeguards system for the nuclear fuel cycle, and to study technological and medical applications of radionuclides/actinides.

The Materials Research Unit provides scientific support for the development, implementation and monitoring of European policies in the area of nuclear material safeguards. The Unit, with a total of about 30 staff, is participating in several Institutional Actions among which two actions require the development of atomic and meso-scale models of molecules and materials. This so-called multi-scale approach of fuel design is being implemented in many leading nuclear laboratories in the world. Particularly in the USA substantial programmes in this field have been initiated, for example at LANL, LLNL or ORNL. The availability of the next generation of high-performance computing facilities (petaflop or beyond) in these laboratories stimulates innovative and discovery research in the field of nuclear materials by teams of excellence, and DOE has awarded several projects in the frame of the prestigious Energy Frontier Research Centre initiative. Europe is less well advanced in this important field, with activities ongoing in CEA, PSI and ITU (and bundled in the F-BRIDGE project, and exchanging with US laboratories in the OECD working Party on Materials Modelling). CEA and in particular ITU have strong scientifically oriented experimental research programmes on fuel and thus still have the advantage of the added value of the experiment/computation interaction. ITU's investments in new scientific equipment like Transmission Electron Microscopy (TEM), Raman spectroscopy, Nuclear Magnetic Resonance (NMR) spectroscopy and Secondary Ions Mass Spectrometry (SIMS) will strengthen this position because these tools will help probing materials at the atomistic and meso-scale relevant for the computations.

Following JRC's development of a strategy for 2010-2020 with Nuclear safety and The safety of a new generation of reactor technologies - Generation IV - being within the top priority area Nuclear Safety and Security, the JRC-ITU will focus its efforts on investigating properties and performance of materials in all phases of nuclear engineering, including theoretical and modelling aspects.

The successful candidate will have to take a leading role in research and policy support activities in the area of nuclear fuels modelling. The tasks involved will not only include computational simulations of the nuclear fuels at the atomic and meso-scale (using advanced techniques such as electronic structure calculations (DFT), molecular dynamics or kinetic Monte Carlo computations) but also developing a strategic approach to position JRC-ITU as a leading institute in the field of multi-scale modelling and simulation.

The simulations should support the experimental studies on nuclear fuels on topics like the effects of radiation, interaction between fission products and fuel phases, grain boundary/surface effects, or thermodynamics. It will contribute to the basic understanding of the behaviour of advanced nuclear fuels.

The main duties are:

- Development of the in-house expertise in atomistic modelling of nuclear fuels as member of a small team for computational simulations, in close collaboration with staff involved in the experimental studies.
- Study of electron correlation effects and relativistic interactions
- Contribution to European projects on modelling of nuclear materials (e.g. F-BRIDGE) and interaction with partners from these projects.
- Presentation of the results of the work in articles in international peer-reviewed journals and at international conferences.

## **QUALIFICATIONS**

A level of education which corresponds to a completed cycle of university studies attested by a diploma in the field of chemistry, physics, material science when the normal period of university education is four years or more,

or

A level of education which corresponds to completed cycle of university studies attested by a diploma in the field of chemistry, physics, material science and appropriate professional experience of at least one year when the normal period of university education is at least three years. This professional experience will be part of the diploma and will not be taken into account in the required number of years of professional experience.

## **EXPERIENCE**

By the deadline for submission of applications, and in addition to the qualifications required above, candidates must have at least 10 years of full time professional experience gained after obtaining the diploma required for admission to the selection procedure. The professional experience must have been gained after obtaining the diploma required for admission to the selection procedure in a field related to the nature of the duties described under the corresponding heading.

The candidates should have a background in computational materials science. They should possess the relevant experience to be able to link computational techniques and experimental studies on actinide molecules and materials to explore the fundamental aspects of the behaviour of the 5f electrons in molecules and compounds.

Creativity, teamwork, as well as the capability to work independently are also important.

## **LANGUAGES**

Under point (e) of Article 12(2) of the CEOS candidates must have a thorough knowledge of one of the European Union languages and a satisfactory knowledge of another of the Union languages.

To meet the needs of the service, a good knowledge of English is essential.

## CONDUCT OF THE PROCEDURE

There will be three separate, successive stages of the procedure:

### 1. Pre-selection

The selection committee, composed in accordance with Article 2(c) of the Commission Decision of 28 April 2004 on a new policy for the engagement and employment of temporary staff<sup>5</sup>, will carry out a pre-selection based on the qualifications and professional experience described in the application form and motivation letter.

### 2. Admission

The pre-selected candidates must provide the official supporting documents confirming the information given in their application form, i.e.:

- copy of a document proving citizenship (identity card or passport);
- copy of the diploma(s) or certificate(s) of the required level of education;
- employment certificates proving the length of professional experience. These documents must clearly show the start and end date and continuity of each of the periods of professional experience to be counted for this selection procedure. For this purpose candidates should ideally produce employment certificates from their former employers and current employer. Failing this, copies of the following documents, for example, will be accepted: employment contracts, accompanied by the first and last pay slips and the final monthly pay slip for each intermediate year in the case of a contract of more than one year, official letters or acts of appointment, accompanied by the final salary slip, employment records, tax declarations.

Final acceptance of the application is subject to presentation of the requisite supporting documents. If these documents are not received by the deadline stipulated, the application will be deemed void.

If candidates are in any doubt about the nature or validity of the documents to be presented they should contact the secretary of the selection committee at least ten working days before the deadline expires, via the functional mailbox at the following address: *JRC-ITU01-TA@EC.EUROPA.EU*. The aim is to enable them to produce a complete and acceptable dossier by the deadline.

Successful candidates who are to be offered a job will, at a later date, be required to produce the originals of all the requisite documents for the purpose of certification.

### 3. Selection

Candidates who have successfully completed the admission stage will be invited for an interview in order to be assessed and compared objectively and impartially on the basis of their qualifications, professional experience and knowledge of languages, as set out in this notice.

The list of aptitude will be valid maximum two years. The validity of the list may be extended.

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<sup>5</sup> [http://europa.eu/epso/apply/today/pdf\\_word\\_temp\\_staff/decision\\_new\\_policy\\_for\\_at\\_en.pdf](http://europa.eu/epso/apply/today/pdf_word_temp_staff/decision_new_policy_for_at_en.pdf)

## APPLICATIONS

Completed applications (in English, French or German), accompanied by a motivation letter must be sent to the following address:

Functional mailbox

*JRC-ITU01-TA@EC.EUROPA.EU*

Candidates are requested to send their applications in a single e-mail in .zip or .pdf format in order not to overload the functional mailbox. The Commission reserves the right to put in place a computer tool that will automatically remove all messages of more than 1 MB.

Candidates should use the same functional mailbox for all correspondence with the selection committee and for any request for information.

**The closing date for the submission of applications is 23/04/2012.**

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For your information, please note that the Commission has launched an internal database to collect spontaneous applications. If you are interested in being considered for other selection procedures (including for other types of contracts) you may submit your curriculum vitae via "EU CV Online": [http://www.ec.europa.eu/civil\\_service/job/cvonline/index\\_en.htm](http://www.ec.europa.eu/civil_service/job/cvonline/index_en.htm).