Recruitment for Postdoctoral Fellow
(Fixed-term researcher)

1. Available positions

Scientist about 25 persons
(The number might be changed without notice.)

2. Recruitment field

-*Computational science*
-*Advanced science research*
-*Nuclear science and engineering*
-*Nuclear safety research*
-*Quantum beam science*
-*Fusion research and development*
-*Advanced nuclear system research and development*
-*Geological i*solation research and development
-Other related research fields
For more information, see “Recruitment Field for Postdoctoral Fellow of JAEA [PDF]”.

3. Qualification requirements

(1) Having a PhD degree related to recruitment field (at the time of assignment)
(2) Having a PhD obtained after April 1, 2007

4. Starting date of employment

April 1, 2015 (in principle)

5. Terms of employment

(1) Salary
450,000 yen/month (as of April 1, 2014) including social insurance and tax
(2) Allowance
Commutation allowance, Housing allowance, etc.
(3) Holidays
Weekend (Saturday and Sunday), National holidays, Year-end and new-year holidays, Paid holidays

6. Contract

Period of employment is from April 1 2015 to March 31 2016 (in principle).

Employment contract can be extended up to a total duration of three years, depending upon the annual review of your research progress.

* If you are a fixed-term employee of JAEA at present, the extension of employment contract will be limited to five years in total from the original recruitment.

Should you achieve outstanding results during your fixed-term employment, you could be offered a position as permanent staff.

7. Necessary documents and application procedures

(1) Application form (Form 1-1, Form 1-2, Form2-1, Form2-2, Form3, Form4)
Download from here: [PDF], [WORD]

(2) Certificate of graduation, certificate of completion of courses (for bachelor, master and PhD respectively)

(3) Transcripts (for bachelor, master and PhD respectively)

(4) Certificate of PhD (who has a PhD)
or Certification for expected completion of PhD course (who is in PhD course)

※If it is difficult to submit the original, send copies and inform us of the reason.

※Incomplete applications may not be accepted.

※Write the application form on a word processor.

8. Address for submission of application

Personnel Section
Personnel Department
Japan Atomic Energy Agency
4-49, Muramatsu, Tokai-mura Naka-gun, Ibaraki-ken 319-1184, Japan
(Mark in red “Application documents for Postdoctoral Fellow” on the envelope.)

9. Deadline for submission of application

Properly completed forms and all the necessary documents mentioned above must be received no later than July 25, 2014.

10. Document examination

Applicants will be screened by the document examination. The result of the document examination will be notified to the applicants in writing.
Note that application documents will not be returned.

11. Recruitment examination

(1) Examination of research achievements (oral presentation using PowerPoint file and Q&A)

(2) Oral examination / interview

12. Result of recruitment examination

The result of recruitment examination will be notified to the applicants in writing by the end of October.

13. Travel expenses

We will refund your travel expenses for the recruitment examination according to the JAEA's administrative rules.

We can only bear the actual travel cost in Japan.

Detailed information will be provided to the candidates.

14. Points to note

(1) Applicants who pass the document examination are supposed to submit medical certificate taken within 6 months (including height, weight, eyesight, urinalysis, chest X-ray).

(2) Candidates without Japanese Nationality are required to obtain a necessary visa status to work in Japan by the date of adoption.

15. Contact persons

Mr. Jin Kawahara
Personnel Section
Personnel Department
Japan Atomic Energy Agency
4-49, Muramatsu, Tokai-mura Naka-gun, Ibaraki-ken 319-1184, Japan
Tel: +81-29-282-1122
Fax: +81-29-283-4701
E-mail: jinji-saiyo@jaea.go.jp

16. Dealing with personal information

We will use personal information only for the screening process. It will also be used for employment management for those employed. The information of the rejected applicants will be disposed a year after the submission.

# Recruitment Field for Postdoctoral Fellow of JAEA

| No. | Department | Theme | Location | The person in charge | Section | Tel | E-mail | Summary | Radiation Worker/ Non-Radiation Worker |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Center for Computational Science & e-Systems | Research and development work of simulation technique in the field of seismic engineering | Kashiwa | Akemi NISHIDA | Computer Science Research and Development Office | +81-4-7135-2368 | nishida.akemi@jaea.go.jp | The safety of nuclear power plants will be studied, in the light of advanced computational science, by considering the following issues<br>・efficient algorithm of a large scale structural analysis or vibration analysis for an entire nuclear facility,<br>・efficient and effective analysis technique of a large volume of data generated from the simulator, and<br>・reliability enhancement of seismic risk assessment of a nuclear facility. | Non-Radiation Worker |
| 2 | Integrated Support Center for Nuclear Nonproliferation and Nuclear Security | Research study on nuclear security issues | Tokai (Nuclear science research institute) | Kazunori SUDA | Policy Research Office | +81-29-282-5902 | suda.kazunori@jaea.go.jp | In the third Nuclear Security Summit in Hague, there was substantial discussion about minimization of surplus HEU and Pu, ensuring nuclear security of radioactive sources, strengthened international nuclear security architecture from legal perspective. In this study, survey and analysis on nuclear security and nonproliferation policy in the world, technical efforts, strengthened role of the IAEA and other international initiatives, and development of international framework such as the legal instruments in the near future will be performed in this field. And appropriate nuclear security and non-proliferation measures on nuclear fuel cycle will be discussed.<br>In addition, Postdoctoral Fellow is expected to research and analyze the recent international developments on the peaceful use of nuclear energy and nuclear non-proliferation. | Non-Radiation Worker |
| 3 | Oarai Research and Development Center | Research on correlative evaluation of the mechanical properties and microstrutures of nuclear materials | Oarai | Toshihiko INOUE | Materials Monitoring Section | +81-29-267-7832 | inoue.toshihiko@jaea.go.jp | It is necessary to correlate the strength characteristics and microstructural features in order to understand the effect of neutron irradiation on the changes in mechanical and microstructural properties of nuclear materials. In this study, we will carry out a strength properties evaluation examination and microstructural observation using neutron-irradiated materials, and perform an experimental evaluation about a strength characteristic and the correlation of the microstructure and improve the knowledge about nuclear core and structural materials. | Radiation Worker |
| 4 | Nuclear Safety Research Center | Study on the methodology of the structural integrity assessment for nuclear reactor components | Tokai (Nuclear science research institute) | Yinsheng LI | Structural Integrity Research Group | +81-29-282-6457 | li.yinsheng@jaea.go.jp | Because of the ageing degradation due to long term operation for Japanese nuclear power plants, developing the methodologies of structural integrity assessments for the reactor components concerning neutron irradiation, stress corrosion cracking and so on is of great importance. In this theme, researches on the deterministic approaches such as weld residual stress evaluation, crack propagation evaluation under large scale yielding condition, fracture evaluation concerning the crack or thinning for nuclear components are conducted on the basis of numerical simulation, material testing, and fracture testing and so on. In addition, probabilistic fracture mechanics analysis codes concerning ageing degradation of nuclear components are developed on the basis of the knowledge obtained from simulation and testing. | Non-Radiation Worker |
| 5 | Nuclear Safety Research Center | Study on the degradation behavior and physical property changes of fuel under severe accident conditions. | Tokai (Nuclear science research institute) | Masaki AMAYA | Fuel Safety Research Group | +81-29-282-5028 | amaya.masaki@jaea.go.jp | In the Fukushima dai-ichi NPP accident, it is considered that the melting of reactor core occurred. It is likely that the starting condition of core melting strongly depends on the accident progression process: the effects of melting of UO2 fuel pellet, eutectic reactions between cladding and fuel pellet, cladding oxidation, etc. These factors lead large uncertainty on the estimation of the accident progression. In this study, fuel irradiation tests will be performed by using the Nuclear Safety Research Reactor (NSRR), and the data and information concerning the starting condition of fuel melt will be obtained. The results obtained will contribute toward the improvement of the estimation of fuel behavior under severe accidents. | Non-Radiation Worker |
| 6 | Nuclear Safety Research Center | Research on Source Term Evaluation for a Severe Accident | Tokai (Nuclear science research institute) | Yu MARUYAMA | Severe Accident Analysis Research Group | +81-29-282-5486 | maruyama.yu@jaea.go.jp | A series of analysis is carried out for the evaluation of source term in representative severe accident sequences with integral severe accident analysis code "THALES2" and iodine chemistry analysis code "KICHE", in which chemical forms of radioactive iodine and cesium are taken into account. In addition, a study is made for the optimization of operational procedures and conditions for severe accident management measures such as a filtered containment venting system. | Non-Radiation Worker |
| 7 | Nuclear Safety Research Center | Study on the behaviors of oxidation and embrittlement and physical property changes of fuel cladding under severe accident conditions. | Tokai (Nuclear science research institute) | Masaki AMAYA | Fuel Safety Research Group | +81-29-282-5028 | amaya.masaki@jaea.go.jp | The nitrogen gas injected into the containment vessel may mix with the steam generated in the reactor pressure vessel under a loss-of-coolant condition. In such atmosphere of steam-nitrogen mixture gas, it is probable that the reactions different from those in steam environment occur to fuel cladding. In order to understand how phenomena proceed from loss-of-coolant condition to severe accident, it is important to know the effect of atmosphere on the oxidation and embrittlement of cladding. However, the information has not been sufficiently obtained concerning the behaviors of oxidation and embrittlement of cladding in steam containing nitrogen. In this study, the effects of atmosphere on the behaviors of oxidation and embrittlement of cladding will be investigated. By the measurement and evaluation of the physical properties of the claddings oxidized in various atmosphere conditions, the information which is needed for the improvement of a fuel behavior analysis code for loss-of-coolant-accident will be obtained. | Non-Radiation Worker |
| 8 | Nuclear Safety Research Center | Study on criticality evaluation and control of damaged and melted fuel after severe accidents | Tokai (Nuclear science research institute) | Kotaro TONOIKE | Criticality Safety Research Group | +81-29-282-3762 | tonoike.kotaro@jaea.go.jp | It is important to establish both the cooling and the criticality control of fuel debris after the severe accident, such as the Fukushima Daiichi accident, where large amount of fuel is damaged and melts. It is hard, however, to control the condition of fuel debris and the coolant flow path, which leads the difficulty in securing the subcritical condition. Thus, the evaluation of re-criticality risk is necessary. In this research, critical mass, kinetic parameters, etc. of fuel debris will be obtained by computation, and critical experiments to validate the computation will be studied as well. | Radiation Worker |
| 9 | Nuclear Safety Research Center | Study on release and transport behavior of radioactive materials in reprocessing plant under severe accident conditions | Tokai (Nuclear science research institute) | Hitoshi ABE | Fuel cycle safety research group | +81-29-282-6672 | abe.hitoshi@jaea,go,jp | Since high active liquid waste boiling and exsiccation and organic solvent fire in cell were newly defined as severe accidents in fuel reprocessing plant, establishment of method for evaluating effect on the public dose and effectiveness of countermeasures for the accidents becomes an urgent problem. Acquiring data of release, transport and confinement of radioactive materials under the accident conditions and establishing evaluation method with high applicability are purpose of this study. | Non-Radiation Worker |

# Recruitment Field for Postdoctoral Fellow of JAEA

| No. | Department | Theme | Location | The person in charge | Section | Tel | E-mail | Summary | Radiation Worker/ Non-Radiation Worker |
|---|---|---|---|---|---|---|---|---|---|
| 10 | Nuclear Safety Research Center | Experimental and analytical study on thermohydraulic safety of the light water reactor | Tokai (Nuclear science research institute) | Taisuke YONOMOTO | Thermohydraulic Safety Research Group | +81-29-282-5263 | yonomoto.taisuke@jaea.go.jp | This experimental and analytical research focuses on thermo-hydraulic phenomena occurring in the reactor and the containment of the nuclear power plant during an accident before and after core damage. For the experimental study, two-phase flow and/or heat transfer are investigated using a high-pressure reactor simulation test facility or a small-scale test device that is exiting or will be built for this research. The development of the two-phase flow measurement technique is also an important topic for this research. By using the data obtained from the experiments, prediction models are validated and improved in order to be used in lumped parameter codes such as RELAP5 and MELCOR, or the CFD codes. A specific research topic will be selected considering the request by the applicant. | Non-Radiation Worker |
| 11 | Nuclear Safety Research Center | Reseach on Dose Estimation in Treatment and Disposal of Contaminated Materials due to the Accident at the Fukushima Nuclear Power Plan | Tokai (Nuclear science research institute) | Seiji TAKEDA | Environmental Safety Research Group | +81-29-282-6170 | takeda.seiji@jaea.go.jp | In order to contribute to recovery of contaminated environment both in and around Fukushima, it is necessary to check the safety of workers and the public with treatment and disposal of contaminated materials based on dose estimation.<br>In this research, considering various situations such as reuse of contaminated materials, explolation of contaminated area and disposal, we will develop an intergrated safety assessment methods (scenario, model, code and parameter) and apply them for a concret situation for the recovery. | Non-Radiation Worker |
| 12 | Nuclear Safety Research Center | Evaluation of degradation mechanism of nuclear reactor structural materials under irradiation environment | Tokai (Nuclear science research institute) | Yutaka NISHIYAMA | Materials and Water Chemistry Research Group | +81-29-282-5044 | nishiyama.yutaka93@jaea.go.jp | The structural materials subjected to neutron irradiation changes for the mechanical properties, stress and corrosive conditions of structural materials. The combined change causes the degradation for reactor-core structural materials. The evaluation in terms of those irradiation-induced features is necessarily for assuring the structural integrity of aged LWRs.<br>In this study, the irradiation effect on the individual changes in mechanical properties such as crack growth, microstructure of ferritic and austenitic stainless steel and water chemistry are investigated by using a post-irradiation test facility. The in-situ experiments are also performed in the Japan Materials Testing Reactor (JMTR) to obtain extensive knowledge on the irradiation-induced material degradation. | Radiation Worker |
| 13 | Nuclear Safety Research Center | Experimental Research on Safety Assessment of Storage and Disposal of Radioactive Waste | Tokai (Nuclear science research institute) | Tetsuji YAMAGUCHI | Waste Safety Research Group | +81-29-282-6001 | yamaguchi.tetsuji@jaea.go.jp | Safety assessment of storage and disposal of radioactive wastes requires quantitative analysis of long-term alteration of barrier materials used in storage and disposal systems. This study investigates long-term alteration behavior such as corrosion, dissolution and alteration of metals and buffer materials focusing on primary factors such as adjacent barrier materials, groundwater composition, geology, colloids, microbes, air-borne salts, temperature, humidity and radiolysis. The goal is to obtain scientific basis for models evaluating changes in the barrier functions and for systematically establishing datasets. | Radiation Worker |
| 14 | Advanced Science Research Center | Actinide basic science | Tokai (Nuclear science research institute) | Yuichiro NAGAME | - | +81-29-282-5416 | nagame.yuichiro@jaea.go.jp | Studies advanced nuclear sciences related to interface reaction field chemistry and condensed matter chemistry of actinide elements. Investigates status and complex chemistry of actinide elements in water solution, and their chemical behavior at the interface. Conducts diverse research into electronic properties involving 5f of actinide element using various spectroscopic methods. | Radiation Worker |
| 15 | Advanced Science Research Center | Energy materials science | Tokai (Nuclear science research institute) | Yuichiro NAGAME | - | +81-29-282-5416 | nagame.yuichiro@jaea.go.jp | Searches for new energy material property functions produced by spin-orbital interaction and novel materials development. Develops new thermoelectric materials using spinmotive force with subject of heavy elements in which significant spin-orbital interaction is expected to be observed. Curries out characteristic evaluation of new materials using advanced beam technology including muons at J-PARC. | Radiation Worker |
| 16 | Advanced Science Research Center | Advanced nuclear related sceince | Tokai (Nuclear science research institute) | Yuichiro NAGAME | - | +81-29-282-5416 | nagame.yuichiro@jaea.go.jp | Conducts advanced nuclear science research including actinide basic science, energy material science and frontier nuclear science aiming at extending existing knowledge into prospective nuclear science. | Radiation Worker |
| 17 | Nuclear Science and Engineering Center | Research for mechanism of radiation/corrosion damage of reactor structural materials | Tokai (Nuclear science research institute) | Yoshiyuki KAJI | Research Group for Radiation Materials Engineering,Fuels and Materials Engineering Unit | +81-29-282-6162 | kaji.yoshiyuki@jaea.go.jp | The objective of this study is to evaluate the long-term structural integrity of reactor structural materials in radiation/corrosive environment due to utilization of light water reactors effectively and safely.We are looking for one Post Doctoral researcher, who investigate the mechanism for radiation damage and corrosion damage in high temperature water by experimental procedures using the leading-edge equipments and facilities in JAEA. | Radiation Worker |
| 18 | Nuclear Science and Engineering Center | Study on dissolved state of actinide ions in neutral solutions | Tokai (Nuclear science research institute) | Yoshihiro KITATSUJI | Research Group for Radiochemistry,Nuclear Chemistry Unit | +81-29-282-5537 | kitatsuji.yoshihiro@jaea.go.jp | The aim of this theme is to elucidate the reaction of actinides in the solution and to develop new high sensitive analysis methods for actinides based on spectroscopic and electrochemical aproach. The chemical behaviors of actinide ions in aqueous solutions around neutral pH have been draw attraction and interest, because the chemistry under these conditions provide very important knowledge for disposal science in nuclear engineering. The goal of this theme also includes elucidating the interaction on coexisting chemical species such as counter ions and ligands and their aggregates. Dissolved state, elementary and combined reactions of complex formation, redox, aggregation, etc. will be studied by spectroscopic and electrochemical methods. | Radiation Worker |
| 19 | Nuclear Science and Engineering Center | Research and development on radiation dose assessment for public exposure in contaminated environment with radioactive material | Tokai (Nuclear science research institute) | Fumiaki TAKAHASHI | Research group for radiation protection, Environment and Radiation Sciences Unit | +81-29-284-3754 | takahashi.fumiaki@jaea.go.jp | A study is made on radiation dose assessments for public exposure from radioactive material that is released into environment due to a nuclear accident. We will utilize numerical analysis techniques to simulate transport of radiations (e.g. gamma-rays) emitted from radioactive materials deposited in inhabitant areas and to estimate radiation doses. The research focuses on analyses for influences of deposition condition of radioactive material in environment, human body size and life styles of public on dose assessments. | Non-Radiation Worker |

# Recruitment Field for Postdoctoral Fellow of JAEA

| No. | Department | Theme | Location | The person in charge | Section | Tel | E-mail | Summary | Radiation Worker/ Non-Radiation Worker |
|---|---|---|---|---|---|---|---|---|---|
| 20 | Nuclear Science and Engineering Center | Research on solvent extraction process of minor actinides from high level liquid waste | Tokai (Nuclear science research institute) | Tatsuro MATSUMURA | Research Group for Partitioning and Transmutation Cycle,Partitioning and Transmutation Technology Unit | +81-29-282-6673 | matsumura.tatsuro@jaea.go.jp | In order to reduce the burden of the geological disposal of high level waste (HLW), partitioning and transmutation technology has been investigated. Since minor actinides have high radiotoxity and long half lives, the separation from HLW is very important. The subject of this theme is to develop the recovery and the separation process of minor actinide with the new solvent extraction process from HLW for partitioning and transmutation technology. In this study, the novel extractants will be studied and the new extractor which designed under new concept will be evaluated for the applicability for the separation process. The experiments using minor actinides and high level liquid waste in glove boxes and hot cells will be carried out. | Radiation Worker |
| 21 | Nuclear Science and Engineering Center | Study on Accurate Cross Section Measurement and Evaluation | Tokai (Nuclear science research institute) | Osamu IWAMOTO | Nuclear Data Center,Nuclear Data and Reactor Engineering Unit | +81-29-282-5480 | iwamoto.osamu@jaea.go.jp | Accurate nuclear data are required for development of nuclear transmutation system. Especially, cross sections for minor actinides (MAs) and long-lived fission products (LLFPs) need to be improved since their uncertainties are large. In order to improve accuracy of the cross sections, the assigned post doc fellow is requested to perform one or more topics from ; 1) Neutron cross section evaluations with upgrading of nuclear structure and reaction theories, 2) Capture, fission and total cross-section measurements with neutron-TOF method, 3) Calculation of the detector weighting function in ANNRI installed at BL04/MLF/J-PARC. | Radiation Worker |
| 22 | Nuclear Science and Engineering Center | Study on ADS fuels for MA transmutation | Tokai (Nuclear science research institute) | Hirokazu HAYASHI | Research Group for High Temperature Science on Fuel Materials,Fuels and Materials Engineering Unit | +81-29-282-6633 | hayashi.hirokazu55@jaea.go.jp | We have been carrying out the R&D on minor actinide (MA) bearing U-free fuels and the fuel cycle for transmutation of MA using accelerator driven system (ADS), to mitigate the long-term toxicity of radioactive waste and the burden of final disposal of radioactive waste. Properties of MA bearing fuels will be studied, in order to support the development of MA transmutation fuel cycle. This study will contribute to the R&D on fuel designing, fuel fabrication, irradiation behavior evaluation, and fuel treatment technology. | Radiation Worker |
| 23 | Quantum Beam Science Center | Development of an innovative petawatt ultra-high intensity laser | Kizu (Kansai Photon Science Institute) | Hiromitsu KIRIYAMA | Advanced Beam Technology Unit High Power Laser Science and Technology Research Group | +81-774-71-3329 | kiriyama.hiromitsu@jaea.go.jp | We are investigating the technology of quantum beam generation, such as relativistic particle acceleration, by a petawatt ultra-high inetnsity and its application to medical treatment and industry. For practical use, innovative laser technologies are indispensable in order to realize a high quality and stable quantum beam. We are seeking a postdoctoral fellow to join our unit. The mission is to develop the technologies for laser control in time and space, high damage threshold optics, coherent combination, new laser material such as ceramics, novel system layout and so on. | Radiation Worker |
| 24 | Quantum Beam Science Center | Study on the application of quantum beams for generating useful microbiological resources | Takasaki | Yutaka OHNO | Ion Beam Mutagenesis Research Group, Medial and Biotechnological Application Unit | +81-27-346-9540 | ohno.yutaka@jaea.go.jp | Our group has engaged in the study on research and development to sophisticate advanced quantum beam technology and to promote its application in a wide variety of fields through creating valuable plant and microorganism resources. In this project, the post-doctoral fellow will contribute to develop the effective quantum beam mutagenesis technology to induce valuable traits in microorganisms and generate basic knowledge on radiation microbiology for creating novel microorganism resources. Knowledge of molecular biology and experience in microbiological breeding and next generation sequencing is desirable, but not necessary if an applicant possesses an enthusiasm. | Radiation Worker |
| 25 | Quantum Beam Science Center | Development of hydrogen storage materials by using synchrotron radiation techniques. | Harima (Kansai Photon Science Institute) | Tetsu WATANUKI | High Pressure Science Group | +81-791-58-2632 | wata@spring8.or.jp | Applicants will develop synchrotron radiation measurement techniques for the purpose of development of high-performance hydrogen storage materials. Our group has recently conducted structural study of metal hydrides in an extremely high-pressure hydrogen environment and high pressure syntheses of new metal hydrides. Technical objectives include development of time resolved x-ray pair distribution function measurements in a hydrogen gas environment and in-situ x-ray diffraction measurements under high pressure and high temperature condition. Applicants will aim to elucidate the problem of the degradation in reversible hydrogen storage capacity of hydrogen storage materials and to synthesize new metal hydrides. | Radiation Worker |
| 26 | Quantum Beam Science Center | Correlation between multiple degrees of freedom in functional materials by quantum beam | Tokai | Shuichi WAKIMOTO | Multi-Degree-of-Freedom Correlation Group | +81-29-284-3832 | wakimoto.shuichi@jaea.go.jp | Multiple degrees of freem inside materials, such as spins, charge, orbital, and lattice, play important role in realizing functional features by correlating with each other. In this research, applicants will work on research of static and dynamical correlations between the multiple degrees of freedom in functional materials, such as superconductors, multiferroics, using neutron and synchrotron radiation facilities in JAEA, and work on necessary developments of qunatum beam technology for this research. | Radiation Worker |
| 27 | Takasaki Advanced Radiation Research Institute | Fundamental studies on high-energy cluster-ion beams for applications | Takasaki | Kazumasa NARUMI | Beam Engineering Section | +81-27-346-9651 | narumi.kazumasa@jaea.go.jp | Vicinage effects are observed in the case that a molecular/cluster ion passes through a solid target. So far, the effects on various collisional phenomena have been reported: for example, charge exchanges, energy losses, secondary-particle emissions and so on; however, physical mechanisms of some of the effects are still open questions. The purpose of the studies is to clarify the origins of the vicinage effects by means of MeV cluster ions or keV-to-MeV C60 ions available at TIARA of JAEA Takasaki. The ion-beam technology using molecular/cluster ions will be parallelly developed for application of swift cluster-ion beams to material development/modification and ion-beam analysis on the basis of knowledge acquired in these studies, e.g. advanced beam measurement techniques, and a micro-beam technique with micro capillaries. A specific assignment will be organized harmonizing the intention of a candidate with our progress in R&D under the third mid-term plan of JAEA. | Radiation Worker |
| 28 | Nuclear Hydrogen and Heat Application Research Center | Research and Development for Improving Performance of Thermo chemical Hydrogen Production Process | Oarai | Shinji KUBO | IS Process Research & Development Group | +81-29-267-1919 (Ext. 3791) | kubo.shinji@jaea.go.jp | Promising next generation heat source such as high temperature gas-cooled reactors can be utilized for thermochmical hydrogen production processes and various heat application system. This study subject aims to improve performances of such hydrogen production process by developing innovative separation methods or chemical reaction techniques. | Non-Radiation Worker |

# Recruitment Field for Postdoctoral Fellow of JAEA

| No. | Department | Theme | Location | The person in charge | Section | Tel | E-mail | Summary | Radiation Worker/ Non-Radiation Worker |
|---|---|---|---|---|---|---|---|---|---|
| 29 | Nuclear Hydrogen and Heat Application Research Center | Research and Development of Advanced High Temperature Gas-cooled Reactor System | Oarai | Tetsuo NISHIHARA | HTGR Design Group | +81-29-266-7897 | nishihara.tetsuo@jaea.go.jp | High Temperature Gas-cooled Reactor (HTGR) is expected to be a new energy source for hydrogen production and high efficiency power generation because of its high temperature heat supply capability. HTGR has inherent safety characteristics so that it can maintain safety in case of loss of power or coolant. The scope of this research is to develop the HTGR from the viewpoint of energy sustainability, wide applicability, economics, and to propose innovate HTGR systems. | Non-Radiation Worker |
| 30 | J-PARC Center | Study on dynamics of structurally disordered materials by using quasi-elastic and inelastic neutron spectrometers in J-PARC | J-PARC | Yukinobu KAWAKITA | Neutron Science Section | +81-29-284-3888 | yukinobu.kawakita@j-parc.jp | JAEA installs neutron spectrometers at Materials & Life Science Facility at J-PARC to carry out investigations on materials and life science. The successful candidate will be engaged in material science studies including structurally disordered materials by using neutron instruments (BL02 and the others) at MLF, J-PARC. The candidate is also expected to take part in taking care of user program in his/her related science fields. | Radiation Worker |
| 31 | J-PARC Center | Research and development for increasing beam power and stability of the J-PARC 3GeV synchrotron | J-PARC | Michikazu KINSHO | Accelerator Section II | +81-29-284-3172 | kinsho.michikazu@jaea.go.jp | Research and development is performing for realizing 1-MW beam power operation in the J-PARC proton accelerators. Beam loss reduction is the main issue for stable operation with such a high power beam in a proton accelerator. A stable and long lifetime operation of each accelerator component is also another important issue.<br>The candidate will research for to treate of loss beam as well as to develop of a high performance beam diagnosis system to reduce beam loss in the J-PARC 3GeV rapid cycling synchrotron (RCS). Beam simulation for instability of intense proton beam will also be performed to realize further stable operation of the RCS. | Radiation Worker |
| 32 | J-PARC Center | Material science study by using pulsed-neutron spectrometers in J-PARC | J-PARC | Seiko KAWAMURA | Neutron Science Section | +81-29-284-3830 | seiko.kawamura@j-parc.jp | JAEA installs neutron spectrometers at the Materials and Life Science Experimental Facility in J-PARC. The successful candidate will be engaged in material science studies including magnetism by using the neutron spectrometers (BL14 and the others) in MLF, J-PARC. The candidate is also expected to take part in taking care of the user program in his/her related science fields. | Radiation Worker |
| 33 | J-PARC Center | Development of dynamic gas bearing supercritical hydrogen | J-PARC | Hideki TATSUMOTO | Neutron Source Section | +81-29-284-3742 | tatsumoto.hideki@jaea.go.jp | At the J-PARC spallation neutron source, supercritical cryogenic hydrogen (20 K and 1.5 MPa) is used as a moderator material in order to provide a pulsed neutron beam with the higher neutronic performance. A centrifugal pump with dynamic gas bearing was developed to circulate the supercritical cryogenic hydrogen with a large flow rate and remove the nuclear heating of a kW-order. However, we have an issue that the flange, where bearings and O-ring seal exist and the temperature should be kept at room temperature, is extremely cooled by the cryogenic supercritical hydrogen due to its excellent cooling properties, unlike the case of the supercritical helium. In order to achieve the long-term stable operation for the 1-MW proton beam operation, we numerically and experimentally clarify the excess cooling phenomenon happening in the pump and have to improve it as soon as possible. | Radiation Worker |
| 34 | Advanced Fast Reactor Cycle System Research and Development Center | Study on long-term strength evaluation for fast reactor structural materials | Oarai | Takashi WAKAI | Structural Mechanics and Materials Evaluation Technology Development Group | +81-29-267-4141 | wakai.takashi@jaea.go.jp | The long design life is expected in future sodium cooled fast reactors. It may not be reasonable to predict the long-term strength up to 60 years only based on available material test data. Therefore, the practical application of the safety margin assessment after the startup is discussed. In this study, life assessment technique should be developed for fast reactor structural materials based on the metallurgical information, variation of mechanical properties, short-term test results and/or the material properties which can be obtained in relatively short-term. Further, thermo-dynamic approach is also expected. | Non-radiation Worker |
| 35 | Advanced Fast Reactor Cycle System Research and Development Center | Study on the multi-phase flow in core disruptive accident in fast reactor | Oarai | Yoshiharu TOBITA | Reactor Safety Evaluation Technology Development Group | +81-29-266-2471 | tobita.yoshiharu@jaea.go.jp | In this study, the development of thermo-hydraulic model of multi-phase flow in core disruptive accident and validation of the model by existing in- and out-of-pile experiments will be done.<br>The assessment of core disruptive accident of fast reactor, the analysis of complex multi-phase flow which consists of molten fuel and steel, solid fuel, fission produce gas and coolant. In this study, the development of thermo-hydraulic model and its implementation in numerical analysis code will be executed based on the investigation on the thermo-hydraulic phenomena in such multi-phase flow. The validation of the model will be also performed using the knowledge of existing experiments. | Non-radiation Worker |
| 36 | Advanced Fast Reactor Cycle System Research and Development Center | Modeling of irradiation behavior of mixed-oxide fuel pellets | Oarai | Tomoyuki UWABA | Fast Reactor Fuels and Materials Development Group | +81-29-267-4141 (Ext.6447) | uwaba.tomoyuki@jaea.go.jp | The objective of the research is to investigate integrity of mixed-oxide (MOX) fuel pellet pins by developing models to analyze irradiation performance of the fuel pellets. The models include those for analysing fission product behavior such as swelling, gas release and JOG (Joint-Oxide-Gain) , redistribution of minor actinides and chemical interaction between fuel and cladding. These models are to be incorporated into the fuel pin performance code "CEDAR" to achieve the above objective. | Radiation Worker |
| 37 | Tono Geoscience Center | Research on dadiometric dating using high-accuracy mass spectrometery | Tono | Koji UMEDA | Neotectonics Research Group | +81-572-53-0211 | umeda.koji@jaea.go.jp | In order to evaluate geosphere stability for long-term isolation of radioactive waste, we recruit a postdoctoral fellow who can demonstrate his/her ability for radiometric dating using noble gas mass spectrometery and/or accelerator mass spectrometry . Applicants are required to have sufficient background in mass spectrometric analysis. | Non-Radiation Worker |

# Recruitment Field for Postdoctoral Fellow of JAEA

| No. | Department | Theme | Location | The person in charge | Section | Tel | E-mail | Summary | Radiation Worker/ Non-Radiation Worker |
|---|---|---|---|---|---|---|---|---|---|
| 38 | Tono Geoscience Center | Research on mass transport in deep geological environment | Tono | Katsuhiro HAMA | Crystalline Environment Research Group | +81-572-66-2244 | hama.katsuhiro@jaea.go.jp | To understand the long-term behavior of the elements in deep geological environment, detailed evaluation of the content, distribution and isotopic composition of major and minor elements of both in the sedimentary rocks and in the granitic rocks should be carried out.<br>Researcher can use rock samples obtained from the borehole investigation, also groundwater samples collected from existing boreholes.<br>Researchers are required to have an adequate experience in the isotope analysis including radiochemical analysis.<br>Regarding the radiochemical analysis, researchers should be able to carry out it in their own laboratory in the domestic university. | Non-Radiation Worker |
| 39 | Horonobe Underground Research Center | Long-term assessment of disturbances caused by engineering materials used in underground research laboratory | Horonobe | Masashi NAKAYAMA | Disposal Engineering Technology Group | +81-1632-5-2022 | nakayama.masashi@jaea.go.jp | In repository of high-level radioactive wastes, engineering materials, such as grout material, spray concrete, and a rock bolt, are used in the phases of construction, operation, and closure besides an engineering barrier system. A part of such materials are left after repository closing. Hear, experiment, analysis and evaluation are carried out through the use of underground research laboratory for the purpose of evaluating the long-term influence of the geological disposal by such engineering materials. | Non-Radiation Worker |
| 40 | Naka Fusion Institute | Research of the optimization for plasma discharge control in JT-60SA | Naka | Makoto MATSUKAWA | JT-60 Power Supply and Control Group | +81-29-270-7420 | matsukawa.makoto@jaea.go.j | JT-60SA is the largest tokamak device in the world when its operation started, and it is utilized as the satellite tokamak of the international thermo nuclear experimental reactor ITER. Therefore a lot of advanced plasma experiments such as steady-state high-beta plasmas are being planned, but the establishment of reliable plasma discharge control technique is necessary for their realization. For example, the compatibility of minimizing AC losses in superconducting magnets and optimizing plasma initiation property, plasma vertical positional instability and suppressing transient unbalance current among thyristor converters, optimum role separation of in-vessel fast plasma position control coil and superconducting magnets, and the development of most suitable control method for motor-generator to prevent the commutation failure of thyristor converter. In the actual work, close communication with EU researchers is necessary. | Non-Radiation Worker |
| 41 | Naka Fusion Institute | Research of the development of the integrated code for the study of the heat and particle transport of burning plasma | Naka | Shunsuke IDE | Advanced Plasma Modeling Group | +81-29-270-7350 | ide.shunsuke@jaea.go.jp | For the evaluation of plasma and study of operation scenario in JT-60SA, ITER and DEMO, development of the analysis code which evaluates heat and particle transport self consistently is required. Validation of the code is indispensable for its development. In this thema, validation of the simulation resluts using the code with tokamak experiment data such as JT-60U is are to be carried out. Moreover, comparison with valious tarnsport model and codes (especially gyro kinetic and/or gyro fluid codes, such as GS2, GLF23 and TGLF) is to be carried out. These will serve to improvement of the code, experimental data analysis and performance evaluation and operation scenario development in future tokamak devices. | Non-Radiation Worker |
| 42 | Rokkasho Fusion Institute | System design study of fusion DEMO reactor | Aomori | Kenji TOBITA | Fusion Reactor Design Group | +81-175-71-6670 | tobita.kenji30@jaea.go.jp | JAEA currently conducts fusion DEMO conceptual design study in collaboration with European Union under the Broader Approach Activities. Fusion Reactor Design Group recruits potential candidates who will be engaged in system and components design study, and safety research on a fusion DEMO reactor that is foreseeable as a continuation of existing tokamak develoment programs such as ITER and JT-60SA. The successful candidate is expected to significantly contribute to system design study including plasma equilibrium, stability, instrumentation and control, torus configuration, plant facilities and safety. | Non-Radiation Worker |
| 43 | Rokkasho Fusion Institute | R&D on mechanical property - microstructure correlation in reduced activation ferritic/martensitic steel toward DEMO blanket design | Aomori | Hiroyasu TANIGAWA | Structural Materials Development Group | +81-175-71-6645 | tanigawa.hiroyasu@jaea.go.jp | Reduced activation ferritic/martensitic steel is the first candidate structural material for DEMO blanket structural material, and various R&D are underway. It is recognized as the key technology to evaluate the mechanical property changes under 14MeV fusion neutron irradiation with regard to the loading mode in DEMO blanket. In order to predict those with high accuracy, the clear understanding on microstructures and correlation with mechanical property is essential. In this theme, loading mode in DEMO blanket will be analyzed firstly, and R&D on microstructure based mechanistic understandings on mechanical properties and its changes under fusion environments will be conducted. | Non-Radiation Worker |
| 44 | Rokkasho Fusion Institute | Integrity assessment of fusion blanket | Aomori | Takanori HIROSE | Blanket Technology Group | +81-29-270-7516 | hirose.takanori@jaea.go.jp | Major duty is development of breeding blankets for fusion reactor, including but not limited to the following topical areas:<br>* Integrity assessment of fusion blanket (analytical and experimental approaches).<br>* Analysis of structural and thermal loads and combinations acting on fusion blanket.<br>* Design verification (thermal, structural and nuclear).<br>* Assessment on tritium production and recovery.<br>* Assessment of chemical compatibility of structural and functional materials (Li ceramics, Be) in blanket environment. | Radiation Worker |
| 45 | Applied Laser Technology Institute | Research on improvement of computational science simulation models for in a laser cutting process | Tsuruga | Toshiharu MURAMATSU | Applied Laser Technology Development Office | +81-770-21-5050 | muramatsu.toshiharu@jaea.go.jp | Japan Atomic Energy Agency (JAEA) is performing research and development on cutting technologies for a decommissioning process of aging nuclear power plants including the Fukushima Daiichi's reactors using a higher power laser light .<br>The post doctral fellow is expected to work on the improvement of the computational science simulation code SPLICE, which is designed to deal with gas-liquid-solid consolidated incompressible viscous flows with a phase change process, to tune various laser irradiation conditions. Then he or she should validate quantivetatively the improved code based on laser cutting experiments. | Non-Radiation Worker |
| 46 | Center for Computational Science & e-Systems | Environmental Impact Assessment for Contaminated Water Leakage and Development of Numerical Simulation Framework | Kashiwa | Masahiko MACHIDA | Simulation Technology Research and Development Office | +81-4-7135-2349 | machida.masahiko@jaea.go.jp | In order to assess the enviromental influences brought about by the contamination water leakage from Fukushima Daiich Nuclear Power Stations (1F), the applicant perform numerical simulations of tranportation of radionuclides inside and outside the 1F harbor area. In addition, the applicant develops numerical simulation techniques to accelarate the simulation code including the parallelization and establish the simulation framework. | Non-Radiation Worker |

# Recruitment Field for Postdoctoral Fellow of JAEA

| No. | Department | Theme | Location | The person in charge | Section | Tel | E-mail | Summary | Radiation Worker/ Non-Radiation Worker |
|---|---|---|---|---|---|---|---|---|---|
| 47 | Center for Computational Science & e-Systems | Research and Development on the computational analysis of environmental monitoring data | Kashiwa | Hiroshi TAKEMIYA | Computer Science Research and Development Office | +81-4-7135-2373 | takemiya.hiroshi@jaea.go.jp | Hundred millions of environmental monitoring data will be analyzed to check the temporal change of the distribution of radioactive nuclides released from Fukushima Daiichi Nuclear Power Plants. Moreover, research work on computational analysis technique for big observational data as well as on large scale visualization technique will be conducted. | Non-Radiation Worker |
| 48 | Oarai Research and Development Center | Corrosion behavior of various nuclear metals and alloys during interim or long term storage | Oarai | Masaki INOUE | Materials Monitoring Section | +81-29-267-7832 | inoue.masaki@jaea.go.jp | Corrosion behavior of metals and alloys from spent nuclear fuel pins/rods and structural materials used in sodium cooled and water cooled reactors will be investigated to evaluate their structural integrity during interim or long term storage. The materials will include, for example, low alloy steels, ferritic and austenitic stainless steels, zirconium alloys and aluminum alloys. Unirradiated materials are also important to understand fundamental aspects. Chemical environments are anticipated to be dry and/or wet(aqueous) conditions. Corrosion properties will be characterized by means of immersion tests, electrochemical tests, optical microscopy, scanning electron microscopy and so on. | Radiation Worker |
| 49 | Nuclear Science and Engineering Center | Improvement of prediction method of radioactive material release to the environment under severe accident conditions | Oarai | Masahiko OHSAKA | Research Group for Damaged Core Behavior,Fundamental Decommissioning Technology Development Unit | +81-29-267-4141 | ohsaka.masahiko@jaea.go.jp | This study investigates the fission product (FP) chemistry, including effects of atmosphere, moisture and chemical reaction with structural materials on the FP release and transport behavior, under severe accident conditions. Results are used to improve prediction methods of radioactive material release to the environment. The postdoctoral fellow designs and constructs experimental devices for the simulation of FP release and transport behavior, performs chemical speciation of cesium and iodine compounds by means of various analytical techniques with ICP-MS, XRD and XPS, and analyzes obtained data for modeling with the aid of several calculational methods, such as chemical equilibrium calculation, ab initio calculation, and thermal-hydraulics calculation. | Non-Radiation Worker |
| 50 | Nuclear Science and Engineering Center | Purification and environmental recovery of water and soil contaminated by radioactive materials | Tokai (Nuclear science research institute) | Hirochika NAGANAWA | Research Group for Green Chemistry,Nuclear Chemistry Unit | +81-29-282-6615 | naganawa.hirochika@jaea.go.jp | The purpose of this research is purification of water containing radioactive materials and removal and migration control of radioactive materials from contaminated soil. For contaminated water, we conduct basic studies about a new extraction method having simple, low-cost, and highly-efficient aspects "emulsion flow method" and a new extractant of DGAA ligand for Sr and TRU extraction. For contaminated soil, we carry out studies to establish basic technologies for removal and migration control of radioactive materials using soil-surface treatments with "polyion complex and clay method" etc. and blocking of Cs transition routes by utilizing Cs absorbents. | Radiation Worker |
| 51 | Quantum Beam Science Center | Development of imaging system for radiocesium dynamics in living plants | Takasaki | Naoki KAWACHI | Radiotracer Imaging Group, Medial and Biotechnological Application Unit | +81-27-346-9524 | kawachi.naoki@jaea.go.jp | In this theme, development of imaging systems is planned for quantitative analysis of radiocesium dynamics in plants. Based on the existing imaging apparatuses (e.g. pin-hole gamma camera and Compton camera), further developments are required in construction of indoor experimental systems, methods of image reconstruction, and techniques of data processing and analysis. The goal of this project is contribution to scientific understanding of the reality and evaluation of practical technologies against the environmental pollution by the nuclear accident. Applicants must have experience in radiation detection and skills of radiation instrumentation and scientific programing, and will also be expected to challenge application researches in the biological field. | Radiation Worker |