Recruitment Field for Postdoctoral Fellow of JAEA 2021

(*) http://www.jaea.go.jp/english/about/locationmap.html

№	Theme	Department	Section	Location (*)	ContactPerson	Summary	Radiation Worker/ Non-Radiation Worker	Field (for reference)
J1	Development of phase change models taking account of physical properties in multi-phase CFD simulations	Center for Computational Science and e-Systems (CCSE)	Computer Science Reseach and Development Office	Kashiwa, Chiba	Naoyuki Onodera 【Tel】+81-80-9435-1286 【E-mail】 onodera.naoyuki[at]jaea.go.jp	CCSE promotes the development of nuclear thermal hydraulic CFD simulations based on the Navier-Stokes equation, and conducts simulations studies on the safety evaluation of BWRs and the melt relocation behavior in severe accidents. In these simulations, phase changes such as boiling and condensation of fluids, and melting and solidification of materials are of critical importance, and improved physics models taking account of their physical properties are essential. The candidate is expected to address the improvement of nuclear thermal hydraulic CFD simulations by conducting simulations studies on supercomputers at JAEA.	Non-Radiation Worker	Physics Mechanics Applied Physics Applied Chemistry Computer and Information
J2	R&D of big-data analytics and simulation modeling utilizing machine learning	Center for Computational Science and e-Systems (CCSE)	Simulation Technology Research and Development Office	Kashiwa, Chiba	Mitsuhiro Itakura 【Tel】+81-80-9668-6997 【E-mail】 itakura.mitsuhiro[at]jaea.go.jp	Center for Computational Science and e-Systems (CCSE) is conducting R&D in nuclear engineering to extract high-level information and new knowledge from various data obtained by experiments and observations, utilizing machine-learning techniques. In addition, CCSE is also conducting R&D to develop fast surrogate model for atomistic simulations and fluid dynamics ones through machine-learning of their simulation results. Applicant is supposed to select themes from above mentioned R&D's in terms of applications of machine-learning techniques and conduct research on them. Applicant is also supposed to communicate with researchers of JAEA and other institutes closely to share data from experiment and observations as well as research problems and issues in simulation studies.	Non-Radiation Worker	Computer and Information Physics Material Geo and Environemtal Sciences Mechanics
J3	Study on adsorbtion of FP to the structural material in a reactor and elucidation of desorption mechanism	Sector of Fukushima Research and Development Collaborative Laboratoies for Advanced Decommissioning (CLADS) (https://clads.jaea.go.jp/jp/)	Accident Progression Evaluation Division Radionuclide Behavior Analysis Groups	Tokai, Ibaraki	Kunihisa Nakajima 【E-mail】 nakajima.kunihisa[at]jaea.go.jp	It is essential for Fukushima Daiichi Nuclear Power Station to develop technical method to evaluate long-term distribution changes in fission products (FPs) such as cesium and strontium. In this study, we clarify the stability of physicochemical properties and water-soluble etc...regarding adsorbed FP by chemical reaction on the surface of structural material of various steels and concreat etc...and build the model for long-term distribution change evaluation. We examine on adhesion and chemical reaction of FP to various materials under accident conditions using simulated FP and investigate the characteristics from detailed analysis including synchrotron radiations. We analyse a long-term distribution evaluation method under developing separately in cooperation with group members and verify the constructed model and setting experiment conditions.	Non-Radiation Worker	Chemistry Radiation Material Chemical Engineering
J4	Study on development of remote, direct, and rapid analysis methods for fuel debris using advanced laser spectroscopy	Sector of Fukushima Research and Development Collaborative Laboratoies for Advanced Decommissioning (CLADS) (https://clads.jaea.go.jp/jp/)	Remote System and Sensing Techlonogy Division Remote Analytical Technology Groups	Tokai, Ibaraki or Tomioka, Fukushima	Ikuo Wakaida 【E-mail】 wakaida.ikuo[at]jaea.go.jp	By making full use of development of Ultra-small microchip laser and tunable semiconductor laser and also utilizing various excitation/spectroscopy such as laser ablation, laser induced emission spectroscopy (LIBS), resonance absorption spectroscopy, resonance fluorescence spectroscopy and resonance ionization spectroscopy etc... and the method combined them and combined technology with remote control technology, we develope the advanced laser spectroscopy which can be analyzed elements, isotopes, states of fuel debris and contaminated waste, etc. in real-time, remote and contactless and attempt to establish innovative analytical technology base in the decommssioning process such as grasping the remaining situation after fuel deburis retrieval, transportation, retrieval and investigation of deburis on site.	Non-Radiation Worker	Measurements and Instruments Applied Physics Applied Chemistry Physics Electricityand Electronics
J5	Study on presenting method and creation of 3D model using image	Sector of Fukushima Research and Development Collaborative Laboratoies for Advanced Decommissioning (CLADS) (https://clads.jaea.go.jp/jp/)	Remote System and Sensing Techlonogy Division 3D Imagimg Technology Development Group	Naraha, Fukushima or Tomioka, Fukushima	Kuniaki Kawabata 【E-mail】 kawabata.kuniaki[at]jaea.go.jp	In order to contribute decommissioning of Fukushima Daiichi Nuclear Power Station, especially, information gathering work by remote control device on site, our group is developing 3D information generation system of working environment which enable rapidly respond to changes of site and 3D recovering method based on the image. In this theme, for the operators, we are researching method of presenting and rewriting the information responding to the changes of the site and generating the 3D model in real time under the constraint of the decommissioning environment.	Non-Radiation Worker	Mechanics Robotics Measurements and Instruments Mechanics
J6	Study on feasibility and effectiveness evaluation for severe accident countermeasures	Sector of Nuclear Safety Research and Emergency Preparedness Nuclear Safety Research Center	Severe Accident Research Group	Tokai, Ibaraki	Tomoyuki Sugiyama 【Tel】+81-29-282-5253 【E-mail】 sugiyama.tomoyuki[at]jaea.go.jp	This research aims at development of analysis models and tools to improve evaluation techniques of severe accident countermeasures. One of the following tasks or that related to the tasks is carried out. - Source term analysis of severe accidents, such as Fukushima daiichi NPS accident, using the SA analysis code THALES2/KICHE. - Analysis of fluid dynamic and thermal behaviors of core melt in containment vessel using the mechanistic FCI code JASMINE. - Analysis of thermal-hydraulic and deflagration/detonation behaviors of hydrogen in containment vessel or reactor building using the open CFD code OpenFOAM.	Non-Radiation Worker	Physics Chemistry Mechanics Geo and Environemtal Sciences Other
J7	Research on Criticality Safety/Management of Damaged- or Molten-Fuel formed by Severe Accidents	Sector of Nuclear Safety Research and Emergency Preparedness Nuclear Safety Research Center	Criticality Safety Research Group	Tokai, Ibaraki	Kotaro Tonoike 【Tel】+81-29-282-5834 【E-mail】 tonoike.kotaro[at]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 difficult, however, to control the situation 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	Physics Computer and Information□ Applied Physics Other

Recruitment Field for Postdoctoral Fellow of JAEA 2021

№	Theme	Department	Section	Location (*)	ContactPerson	Summary	Radiation Worker/ Non-Radiation Worker	Field (for reference)
J8	Study on methodology of accident consequence analysis and its application to the protection of people living in affected areas after a Nuclear Accident	Sector of Nuclear Safety Research and Emergency Preparedness Nuclear Safety Research Center	Risk Analysis Research Group	Tokai, Ibaraki	Shogo Takahara 【Tel】+81-29-282-6139 【E-mail】 takahara.shogo[at]jaea.go.jp	The aim of this study is to develop the assessment methods of consequences due to a Nuclear Accident, and also application to the protection of people living in affected areas after the accident. To achieve this aim, one of the following tasks or other related tasks will be made: ①Development of accident consequence assessement methods including radiation dose assessement and social-econical impacts analysis; ②Development of calculation codes which are implemented latest methods related to consequence assessments, and of a level 3 PRA code OSCAAR; ③Optimization of nuclear emergency preparedness by using a level 3PRA code OSCAAR.	Non-Radiation Worker	Physics Geo and Environemtal Sciences Chemistry Mathematics Radiation Other
J9	Study on the methodology of the structural integrity assessment for nuclear reactor components	Sector of Nuclear Safety Research and Emergency Preparedness Nuclear Safety Research Center	Structural Integrity Research Group	Tokai, Ibaraki	Yinsheng Li 【Tel】+81-29-282-6457 【E-mail】li.yinsheng[at]jaea.go.jp	Due to the long term operation of some domestic nuclear power plants, the occurrence of the earthquakes beyond the designed seismic ground motion, and the publishment of the impact assessment guide to evaluate the influence of projectiles colliding with nuclear facilities in new regulatory standards, developing the methodologies of structural integrity assessments for the building , reactor components, and piping concerning seismic and impact loadings and age related degradation mechanisms such as neutron irradiation embrittlement, stress corrosion cracking and so on is of great importance. In this theme, one of the following related researches will be conducted. - Advanced seismic safety assessment research including development of three-dimensional evaluation models of nuclear facility buildings, components and piping systems, and numerical simulation considering nonlinear mechanical properties, - Research and development on impact assessment methods for buildings and internal components due to projectile collision, - Advanced structural integrity assessment research for important nuclear components, such as failure estimation, crack propagation or weld residual stress evaluation, on the basis of numerical simulation, material testing, and fracture testing and so on.	Non-Radiation Worker	Mechanics Architectural and CivilEngineering Material Physics Applied Physics Measurements and Instruments Computer and Information
J10	Study on Material Degradation Evaluation for Nuclear Rector Components	Sector of Nuclear Safety Research and Emergency Preparedness Nuclear Safety Research Center	Material evaluation research group	Tokai, Ibaraki	Jinya Katsuyama 【Tel】+81-29-282-5044 【E-mail】 katsuyama.jinya[at]jaea.go.jp	In order to ensure the structural integrity of safety-related components in the light water reactors during long-term operation, the confirmation of conservativness and continuous improvement of the structural integrity assessment methods should be performed based on the latest knowledge on the material degradation mechanisms and assessment methods. In this study, for investigating the effects of peculiar environments to the reactors such as neutron irradiation, high temperature and pressureized water on the material deterioration, and improving the structural integrity assessment method based on fracture mechanics for reactore pressure vessels or core internals , we will perform the emperical investigatoins on microsturcture and fracture toughness of irradiated materials, initiation and propagation of the stress corrosion cracking in high temperature and pressure water environments, and the analytical investigations based on the finite element analysis using a local approach or parameters related to strain constraint effects on cracked components.	Radiation Worker	Mechanics Material Measurements and Instruments Computer and Information
J11	Experimental and analytical studies on the fuel behavior under accident conditions of light-water-reactor	Sector of Nuclear Safety Research and Emergency Preparedness Nuclear Safety Research Center	Fuel Safety Research Group	Tokai, Ibaraki	Yutaka Udagawa 【Tel】+81-29-282-6230 【E-mail】 udagawa.yutaka[at]jaea.go.jp	The objective of this study is to develop and/or improve models concerning LWR fuel behavior under accident conditions (including reactivity-initiated accidents, loss-of-coolant accidents, and beyond-desgn-basis conditions) by conducting simulations and associated experiments. Considering recent concerns in safety evaluation, studies ・To evaluate behaviors of high burnup fuels such as the influence fuel cracking, cladding oxidation, cladding hydride absorption, cladding failure, fuel relocation, and fuel release ・To evaluate behaviors of accident torelant fuels ・To evaluate core coolability during and after accidents ・To extend simulation capabilities of existing fuel performance codes by introducing mechanical approaches and/or coupling with thermal-hydraulics codse and neutronics codes, etc. are of particular interest.	Non-Radiation Worker	Material Mechanics Computer and Information Measurements and Instruments Physics Applied Physics
J12	Study on analytical techniques for individual particles containing nuclear materials in environmental samples	Sector of Nuclear Safety Research and Emergency Preparedness Nuclear Safety Research Center	Research Group for Safeguards Analytical Chemisty	Tokai, Ibaraki	Yutaka Miyamoto 【Tel】+81-29-282-5544 【E-mail】 miyamoto.yutaka[at]jaea.go.jp	Analysis of trace amounts of nuclear materials in environmental samples taken at nuclear facilities in the world is performed to reveal nuclear activities, which is important for nuclear safeguards. In this study, analytical techniques for such samples are developed. For example, in order to clarify elemental composition, chemical states and isotopic composition, individual micron-sized particles containing uranium and/or plutonium are measured by using scanning electron microscopy, total-reflection X-ray analysis, micro-Raman spectroscopy and secondary ion mass spectrometry.	Radiation Worker	Chemistry Physics
J13	Study on release and transport behavior of radioactive materials in reprocessing plant under severe accident conditions	Sector of Nuclear Safety Research and Emergency Preparedness Nuclear Safety Research Center	Fuel Cycle Safety Research Group	Tokai, Ibaraki	Hitoshi Abe 【Tel】+81-29-282-6672 【E-mail】abe.hitoshi[at]jaea.go.jp	Newly defined as as severe accidents in fuel reprocessing plant are organic solvent fire in cell as well as boiling and exsiccation of highly-active liquid waste in concentrators. Therefore, establishment of method for evaluating their effect on the public dose and effectiveness of countermeasures for the accidents become an urgent issue. Purposes of this study are 1) acquiring data about release, transport and confinement of radioactive materials under the accident conditions and 2) establishing a simulation code to evaluate the accident evolution with high applicability.	Non-Radiation Worker	Chemistry Chemical Engineering

Recruitment Field for Postdoctoral Fellow of JAEA 2021

№	Theme	Department	Section	Location (*)	ContactPerson	Summary	Radiation Worker/ Non-Radiation Worker	Field (for reference)
J14	Experimental and analytical study on thermohydraulic safety of light water reactor	Sector of Nuclear Safety Research and Emergency Preparedness Nuclear Safety Research Center	Thermohydraulic Safety Research Group	Tokai, Ibaraki	Yasuteru Sibamoto 【Tel】+81-29-282-5263 【E-mail】 sibamoto.yasuteru[at]jaea.go.jp	This research focuses on thermo-hydraulic (TH) phenomena occurring in the reactor and the containment of the nuclear power plant during an accident before and after core damage. The research topics nclude core heat transfer, system response of PWR, and the related two-phase flow and heat transfer phenomena for before core damage, and containment TH as in containment cooling, hydrogen transport, combustion, and aerosol migration for sever accident. The analytical models used for CFD and BE codes are developed to improve evaluation techniques. A specific research topic will be selected considering the request by the applicant.	Non-Radiation Worker	Mechanics Measurements and Instruments Computer and Information
J15	Study on safety assessment of decommissioning of nuclear facilities	Sector of Nuclear Safety Research and Emergency Preparedness Nuclear Safety Research Center	Waste and Environmental Safety Research Group	Tokai, Ibaraki	Taro Shimada 【Tel】+81-29-284-3714 【E-mail】 shimada.taro[at]jaea.go.jp	At each stage of planninig and completion of the decommissioning of nuclear facilties, it is required to assess the exposure dose of public and workers and to confirm them to be satisfied with the dose criteria. IAEA recomendation says that the minimization of radioactive wastes is also required in the decommissioning activities. In addtion, it is necessary to manage a risk depending on the progress of the dismantling activities. In this study, the methodology for the evaluation and the validation of the planning, conducting and the completion of the decommissioning will be sophisticated as follows. - Modelling for optimization of reducing both of radioactive wastes arising and doses for worker and public, and developing the methodology - Development of risk assessment methods during dismantling activities - Development of evalution methods of radioactivity distribution at the site release, and nuclides migration and dose assessment based on the site characterization and the radioactivity distribution	Non-Radiation Worker	Physics Radiation Computer and Information
J16	Physics of Exotic Nuclei	Sector of Nuclear Science Research Advanced Science Research Center	Research Group for Heavy Element Nuclear Science	Tokai, Ibaraki	Katsuhisa Nishio 【Tel】+81-29-282-5454 【E-mail】 nishio.katsuhisa[at]jaea.go.jp	Experimental and theoretical studies of unstable nuclei and superheavy elements will be prompted. The research topics include nucler structure, nuclear reaction, and nuclear fission for nuclei far from the stable isotopes. In experimental programs, JAEA facilities and/or external facilities will be used to produce exotic nuclei. In theory subjects nuclear structure and fission process will be studied by taking advantage of the JAEA supercomputer. (http://asrc.jaea.go.jp/soshiki/gr/HENS-gr/index_e.html)	Radiation Worker	Physics Mathematics Radiation Applied Physics Measurements and Instruments Computer and Information Other
J17	Nuclear chemistry of superheavy elements	Sector of Nuclear Science Research Advanced Science Research Center	Research Group for Heavy Element Nuclear Science	Tokai, Ibaraki	Kazuaki Tsukada 【Tel】+81-29-282-5491 【E-mail】 tsukada.kazuaki[at]jaea.go.jp	The main objective is to understand chemical and atomic properties of superheavy elements (SHEs) placed at the uppermost end of the Periodic Table. This theme will focus on the valence electronic structure of SHEs from the measurements of ionization-energy, electron spin, surface adsorption, ionic radii, redox potentials, molecular formations and so on related to the chemical phenomena of SHEs. The subjects include development of the measuring/analyzing system for the purpose based on an "atom-at-a-time" method. These experiments will be mainly performed at the JAEA Tandem Accelerator Facility. (http://asrc.jaea.go.jp/soshiki/gr/HENS-gr/nc/index-e.htm)	Radiation Worker	Chemistry Radiation Physics Measurements and Instruments Applied Chemistry Other
J18	Reaction mechanism elucidation between radionuclide and varuous solid phase	Sector of Nuclear Science Research Advanced Science Research Center	Research Group for Interfacial Reaction Field Chemistry http://asrc.jaea.go.jp/soshiki/gr/interfacial0/index.html	Tokai, Ibaraki	Naofumi Kozai 【Tel】+81-29-282-6031 【E-mail】 kozai.naofumi[at]jaea.go.jp	To contribute to various problems related to the Fukushima Daiichi nuclear power plant accident, high-level radioactive waste treatment and disposal, and radionuclide migration in environment, basic research and technological development on reaction mechanisms of radionuclides with various solid phases through laboratory experiments and/or theoretical modeling (computer simulation). This study aims to discover and elucidate novel phenomenon and reaction mechanisms. The candidate with challenging spirits for discovery and experience or strong interest on computer modeling is preferable.	Radiation Worker	Geo and Environemtal Sciences Chemistry Biology Material Applied Chemistry
J19	Experimental research for hadron and nuclear physics at J-PARC	Sector of Nuclear Science Research Advanced Science Research Center	Research Group for Hadron Nuclear Physics	Tokai, Ibaraki	Hiroyuki Sako 【Tel】+81-29-284-3828 【E-mail】 sako.hiroyuki[at]jaea.go.jp	The successful candidates will work on hadron nuclear experimental research either at J-PARC Hadron Experimental Facility, J-PARC Heavy-Ion Project (J-PARC-HI), RHIC, LHC, or Belle (II), which are promoted by our group.	Radiation Worker	Physics
J20	Materials physics in heavy element systems	Sector of Nuclear Science Research Advanced Science Research Center	Research Group for Materials Physics for Heavy Element Systems	Tokai, Ibaraki	Shinsaku Kambe 【Tel】+81-29-284-3525 【E-mail】 kambe.shinsaku[at]jaea.go.jp	New electronic states in heavy element systems are investigated experimentally and theoretically. Especially magnetic and superconducting properties at low temperatures in bulk and thin film samples are focused.	Non-Radiation Worker	Physics Geo and Environemtal Sciences Measurements and Instruments

Recruitment Field for Postdoctoral Fellow of JAEA 2021

№	Theme	Department	Section	Location (*)	ContactPerson	Summary	Radiation Worker/ Non-Radiation Worker	Field (for reference)
J21	Study on Spin-current Generation	Sector of Nuclear Science Research Advanced Science Research Center	Research Group for Spin-energy Transformation Science	Tokai, Ibaraki	Michiyasu Mori 【Tel】+81-29-284-3508 【E-mail】 mori.michiyasu[at]jaea.go.jp	A successful candidate will study the spin current generation using various degrees of freedom such as mechanical motions, surface acoustic waves, fluid motions, and rotational motions, nuclear spins, light, and heat. Nanomechanics such as cantilevers and a new spin current detection method using the diamond NV center are also involved. We aim to develop new energy conversion methods such as thermoelectric generation using magnetic materials.	Non-Radiation Worker	Physics Applied Physics Material
J22	Study on Spintronics Materials	Sector of Nuclear Science Research Advanced Science Research Center	Research Group for Spin-energy Transformation Science	Tokai, Ibaraki	Michiyasu Mori 【Tel】+81-29-284-3508 【E-mail】 mori.michiyasu[at]jaea.go.jp	Using various numerical methods such as first-principles calculation, finite element method, and so on, a successful candidate will develop useful materials and devices for spintronics, and apply them to spin thermoelectric generation and radiation-proof devices based on magnetic materials. We aim to improve energy efficiency and safety of nuclear power generation.	Non-Radiation Worker	Physics Applied Physics Computer and Information
J23	Research of Material Science by using Advanced Muon Beam	Sector of Nuclear Science Research Advanced Science Research Center	Research Group for Nanoscale Structure and Function of Advanced Materials (https://asrc.jaea.go.jp/soshiki/gr/Nanoscale-gr/index.html)	Tokai, Ibaraki	Wataru Higemoto 【Tel】+81-29-284-3873 【E-mail】 higemoto.wataru[at]jaea.go.jp	Muon is one of an elemental paeticle and used as a probe of local state inside material. By using muon, which is obatined at J-PARC and other proton accelarator facilities, the candiate advance a material science and develpment of experimental instruments. An experience of muon experiment does not be required.	Radiation Worker	Physics Material Chemistry Measurements and Instruments Applied Physics Applied Chemistry
J24	Study on Structure and Property of Nanoscale Materials	Sector of Nuclear Science Research Advanced Science Research Center	Research Group for Nanoscale Structure and Function of Advanced Materials (https://asrc.jaea.go.jp/soshiki/gr/Nanoscale-gr/index.html)	Tokai, Ibaraki	Yuki Fukaya 【Tel】+81-29-282-6582 【E-mail】 fukaya.yuki99[at]jaea.go.jp	The research theme is focused on fabrication and structural investigation of nanoscale materials such as atomic sheets and surface superstructures. By using advanced surface-sensitive techniques, e.g. positron diffraction, electron diffraction, and scanning tunneling microscopy, the atomic configurations and electronic states are investigated, toward further developing novel functional materials having a radiation resistance.	Radiation Worker	Physics Material Chemistry Measurements and Instruments Applied Physics
J25	Theoretical study of many-body quantun systems	Sector of Nuclear Science Research Advanced Science Research Center	Research Group for Advanced Theoretical Physics	Tokai, Ibaraki	Yutaka Utsuno 【Tel】+81-29-282-6901 【E-mail】 utsuno.yutaka[at]jaea.go.jp	We invite candidates who will conduct theoretical researches of many-body quantum physics in quark, hadron, or nuclear physics, and the related areas beyond energy scale. The candidates are encouraged to strengthen links to experimental studies and condensed-matter physics performed in this center, and to carry out interdisciplinary researches.	Non-Radiation Worker	Physics
J26	Research and developments of non-destructive analytical techniques using radiation sources	Sector of Nuclear Science Research Nuclear Science and Engineering Center (https://nsec.jaea.go.jp/en_index.html)	Research Group for Nuclear Sensing, Nuclear and LWR Engineering Division (https://nsec.jaea.go.jp/organization/div1/en_detail3.html)	Tokai, Ibaraki	TOH Yosuke 【Tel】+81-29-282-6211 【E-mail】 toh.yosuke[at]jaea.go.jp	Developments of non-destructive analytical techniques are required in many fields such as nuclear transmutation, nuclear decommission, nuclear security, material science and radiation therapy. In this research, new technologies concerning quantitative analysis and two- or three-dimensional distribution measurement for nuclear materials and radioactive materials will be developed using several radiation sources. Specifically, developments of a prompt gamma-ray analysis and radiation imaging techniques and their applied research will be conducted with Accurate Neutron Nucleus Reaction measurement Instruments (ANNRI) at Materials and Life science experimental Facility (MLF) in Japan Proton Accelerator Complex (J-PARC) and other experimental facilities in JAEA.	Radiation Worker	Physics Applied Physics Radiation Measurements and Instruments Applied Chemistry Other
J27	Computational materials science on radiation effect in structural materials	Sector of Nuclear Science Research Nuclear Science and Engineering Center (https://nsec.jaea.go.jp/en_index.html)	Research Group for Radiation Materials Engineering ,Fuels and Materials Engineering Division(https://nsec.jaea.go.jp/fme/en/group5/group5_index.htm)	Tokai, Ibaraki	TSURU Tomohito 【Tel】+81-29-282-5198 【E-mail】 tsuru.tomohito[at]jaea.go.jp	In this study, macroscopic deformation and fracture mechanisms of nuclear structural materials are explored based on the microscopic defect behavior using computational approach. The candidate should be experienced in at least one of atomistic simulation methods such as first-principles and molecular dynamics combined with artificial neural network potential. Open-minded and positive attitude on various topics is expected in our team.	Non-Radiation Worker	Material Mechanics Applied Physics Computer and Information

Recruitment Field for Postdoctoral Fellow of JAEA 2021

№	Theme	Department	Section	Location (*)	ContactPerson	Summary	Radiation Worker/ Non-Radiation Worker	Field (for reference)
J28	Research on improvement of radiation-resistance in ceramics	Sector of Nuclear Science Research Nuclear Science and Engineering Center (https://nsec.jaea.go.jp/en_index.html)	Research Group for Radiation Materials Engineering ,Fuels and Materials Engineering Division(https://nsec.jaea.go.jp/fme/en/group5/group6_index.htm)	Tokai, Ibaraki	ISHIKAWA Norito 【Tel】+81-29-282-6089 【E-mail】 ishikawa.norito[at]jaea.go.jp	To improve radiation-resistance of ceramics under harsh radiation environment, it is important to identify key processes that determine the radiation resistance of materials. In recent years,comprehensive understanding of radiation damage and recrystallization is found to be the key to maximize radiation-resistance of ceramics. The research on radiation-resistance through irradiation experiments, development of damage characterization methodologies and calculation of key processes that govern the damaging process will be conducted.	Radiation Worker	Material Radiation Physics Measurements and Instruments
J29	Research on treatment, safe disposal and effective application of radioactive waste	Sector of Nuclear Science Research Nuclear Science and Engineering Center (https://nsec.jaea.go.jp/en_index.html)	Research Group for Radiochemistry,Nuclear Chemistry Division(https://nsec.jaea.go.jp/organization/div3/en_detail1.html)	Tokai, Ibaraki	WATANABE Masayuki 【Tel】+81-29-282-5167 【E-mail】 watanabe.masayuki[at]jaea.go.jp	The critical issues on the generated radioactive wastes by the usage of the nuclear materials for medical treatment or power generation are arisen from wide variety of chemical property on radioactive nuclides. In this research project, we are challenging to use the unique chemical property of radioactive nuclides in order to develop the effective separation reagent for the specific radioactive nuclide and/or the safe disposal method by analysis of electronic state or molecular structure in terms of advanced spectroscopic method. Based on the derived fundamental knowledge of radioactive nuclides, we are creating innovative research area such as energy storage system by using radioactive nuclides.	Radiation Worker	Chemistry Material Applied Physics Applied Chemistry Measurements and Instruments
J30	Study on carbon cycling in terrestrial ecosystems and its interactions with environmental changes, using radioactive and stable carbon isotope analyses	Sector of Nuclear Science Research Nuclear Science and Engineering Center (https://nsec.jaea.go.jp/en_index.html)	Research Group for Environmental Science, Environment and Radiation Sciences Division (https://nsec.jaea.go.jp/organization/div4/en_detail1.html)	Tokai, Ibaraki	KOARASHI Jun 【Tel】+81-29-282-5903 【E-mail】 koarashi.jun[at]jaea.go.jp	There is growing concern that recent rapid changes in climate and environment could have a significant influence on carbon cycling in terrestrial ecosystems and could consequently lead to a positive feedback for global warming. However, the magnitude and timing of this effect remain highly uncertain due to a lack of quantitative understanding of the migration and storage processes of carbon in terrestrial ecosystems (especially forests) and their responses to the changes in environment. In this study, we will conduct field (with different ecosystem properties) and laboratory (under controlled environmental conditions) experiments to quantify the processes and their interactions with changes in environment, using radioactive (14C) and stable carbon isotopes as tracers for carbon cycling in terrestrial ecosystems.	Non-Radiation Worker	Geo and Environemtal Sciences Biology Chemistry Measurements and Instruments
J31	Improvement of the Particle and Heavy Ion Transport code System PHITS	Sector of Nuclear Science Research Nuclear Science and Engineering Center (https://nsec.jaea.go.jp/en_index.html)	Research Group for Radiation Transport Analysis, Environment and Radiation Sciences Division (https://nsec.jaea.go.jp/organization/div4/en_detail2.html)	Tokai, Ibaraki	SATO Tatsuhiko 【Tel】+81-29-282-5803 【E-mail】 sato.tatsuhiko[at]jaea.go.jp	Particle and Heavy Ion Transport code System (PHITS) is a multi-purpose Monte Carlo particle transport simulation code developed in JAEA. This study is dedicated to improving PHITS by implementing new physical, chemical, or biological phenomena that cannot be handled by the current PHITS, and extending its application fields to various research areas. The verification experiments will be also performed for the improved PHITS if necessary. We look forward to innovative proposals from young researchers.	Radiation Worker	Physics Chemistry Biology Computer and Information Material
J32	Neutron scattering study: an architecture and physics of liquid-liquid extraction systems	Sector of Nuclear Science Research Materials Sciences Research Center (https://msrc.jaea.go.jp/)	Hierarchical Structure Research Group	Tokai, Ibaraki	Ryuhei Motokawa 【Tel】+81-29-284-3747 【E-mail】 motokawa.ryuhei[at]jaea.go.jp	Development of a technique for separating metal ion complexes using liquid-liquid extraction (LLE) is one of the important research topics in a treatment of radioactive effluents and a recovery of precious metals. The aim of this study is to contribute to the development on the basis of fundamental aspect, that is, the researcher employs neutron scattering experiments for elucidating the microscopic structure formed by the solutes in LLE systems. For instance, we assume the followings; (i) small-angle neutron scattering study for elucidating the relationship between an ability of the extractants to recognize the specific metal ions and an association of the extractants during LLE and (ii) neutron reflectivity study to understanding a nanoscpic interfacial structure in LLE systems. The researcher is allowed to use a multiplicity of the neutron scattering apparatuses, installed at JRR-3 or J-PARC (MLF). We encourage an enthusiastic young researcher to submit an application regardless of the previous speciality.	Radiation Worker	Chemistry Physics Radiation Measurements and Instruments
J33	Research on deformation of metallic materials with multi-structures using pulsed neutron diffraction method	Sector of Nuclear Science Research J-PARC Center (http://www.j-parc.jp/index-e.html)	Materials and Life Science Division Neutron Science Section	Tokai, Ibaraki	Stefanus Harjo 【Tel】+81-29-284-3266 【E-mail】stefanus.harjo[at]j-parc.jp	In Materials and Life Science Experimental Facility of J-PARC Center, research on various engineering materials has been conducted using a high-resolution, high-intensity time-of-flight neutron diffractometer (TAKUMI). In this theme, we will mainly use TAKUMI to clarify the relationship between the crystallographic microstructural changes during deformation and the mechanical and/or functional properties of advanced steel materials and/or advanced light metal materials having multi-structures and fine grains. In order to achieve this, we want to develop a measurement method to get information involving non-uniform deformation, from the shape condition or temperature information of the surface of the test piece, in a wide temperature range from extremely low temperature to high temperature. Research supports for related research are also required.	Radiation Worker	Material Applied Physics Measurements and Instruments Mechanics
J34	Sophistication of the mercury target for high-power pulsed spallation neutron source	Sector of Nuclear Science Research J-PARC Center (http://www.j-parc.jp/index-e.html)	Materials and Life Science Division Neutron Source Section	Tokai, Ibaraki	Takashi Naoe 【Tel】+81-29-284-3210 【E-mail】takashi.naoe[at]j-parc.jp	At the pulsed spallation neutron source in the Materials and Life science experimental Facility of J-PARC, mercury is employed as a target material and embraced in a multi-walled stainless steel vessels. With a 3-GeV high-intensity pulsed proton beam injection on to the target, pressure waves are generated in the mercury due to the abrupt heat deposition, generating pressure waves in mercury. The pressure waves propagate in mercury, causing severe erosion damage on an inner wall surface of the vessel. A technique of injecting gas microbubbles into the mercury has been adopted to mitigate the pressure waves that causes cavitation. This technique is also expected to reduce cyclic stress to the vessel, leading to prolong fatigue life. Aiming to promote the mitigation of pressure waves, in this theme, evaluation of gas microbubbles behavior in mercury, optimization of the numerical calculation method to estimate the interference effect on pressure waves between the bubbly mercury and the elastic wall of the target vessel made with stainless steel, sophistication of the flow channel structure of the vessel to enhance the effect of pressure wave mitigation will be conducted.	Radiation Worker	Mechanics Measurements and Instruments Material Applied Physics

Recruitment Field for Postdoctoral Fellow of JAEA 2021

№	Theme	Department	Section	Location (*)	ContactPerson	Summary	Radiation Worker/ Non-Radiation Worker	Field (for reference)
J35	Research and development for increasing beam power and stability of the J-PARC accelerator system	Sector of Nuclear Science Research J-PARC Center (http://www.j-parc.jp/index-e.html)	Accelerator Division Accelerator Section II	Tokai, Ibaraki	Kazami Yamamoto 【Tel】+81-29-284-3095 【E-mail】kazami[at]post.j-parc.jp	Research and development activities are carryied out for realizing stable 1-MW beam power operation in the J-PARC proton accelerators. Beam loss reduction is one of the main issues with such a high power beam in the accelerators. A stable and long lifetime operation of accelerator components are also important issues. The candidate will research one or more topics for beam loss reduction in the J-PARC 3GeV rapid cycling synchrotron. Themes are the beam diagnostics and research of the beam loss source, improvement of accelerator components to establish stability, and development of control system to precisely manipurate the components and the beam.	Radiation Worker	Physics Radiation Electricity and Electronics Applied Physics
J36	Research and development for evaluation method of multiple-damage mechanism induced in the neutron source target vessel by high-power proton beam	Sector of Nuclear Science Research J-PARC Center (http://www.j-parc.jp/index-e.html)	Materials and Life Science Division Neutron Source Section	Tokai, Ibaraki	Eiichi Wakai 【Tel】:+81-29-284-3745 【E-mail】 wakai.eiichi[at]jaea.go.jp	This study subject is mainly to upgrade evaluation methods of multiple damage mechanism by statistical analysis and some of the related basic experiments for the neutron-source target vessel used under high-power proton beam. The vessel will be damaged by several factors such as Giga-cycle fatigue, radiation damage, cavitation induced by pulsed beams, and mercury-liquid metal embrittlement. It is important to develop the lifetime evaluation method of the instrument by considering these synergistic effects under referring the latest evaluation technique adopted in the nuclear materials science and mechanical engineering fields. It will be also performed for advancement of the damage mechanism evaluation method which is based on probabilistic and statistical analytical techniques such as the Weibull distribution or Gumbel distribution.	Radiation Worker	Material Mechanics Measurements and Instruments
J37	Research on functional materials using time-of-flight inelastic and quasielastic neutron scattering with a chopper spectrometer	Sector of Nuclear Science Research J-PARC Center (http://www.j-parc.jp/index-e.html)	Materials and Life Science Division Neutron Science Section	Tokai, Ibaraki	Seiko Ohira-Kawamura 【Tel】+81-29-284-4562 【E-mail】seiko.kawamura[at]j-parc.jp	At the Materials and Life Science Experimental Facility (MLF) in J-PARC, inelastic and quasielastic neutron scattering experiments on various functional materials have been carried out at chopper spectromemters on a pulsed neutron source. Cold-neutron disk-chopper spectrometer, AMATERAS, is an instrument dedicated to research on dynamics such as phonon and magnetic excitation in hard matter and atomic/molecular motion in functional materials. We will promote the research on the dynamical phenomena using time-of-flight inelastic/quasielastic neutron scattering technique at AMATERAS. Research supports for related research are also required.	Radiation Worker	Material Mechanics Measurements and Instruments
J38	Upgrade study of the spallation neutron source at J-PARC	Sector of Nuclear Science Research J-PARC Center (http://www.j-parc.jp/index-e.html)	Materials and Life Science Division Neutron Source Section	Tokai, Ibaraki	Masahide HARADA 【Tel】+81-29-282-6217 【E-mail】 harada.masahide[at]jaea.go.jp	At the spallation neutron source at J-PARC, which has been operated for more than 10 years, useful knowledges have been obtained from the operation experiences. Based on those knowladges, upgrade study of the spallation neutron source for long life operation will be performed such as the developement of boron-based neutron-absorber for high neutronic performance, low activation and long life, and improvement of radioactivity estimation for high-radiactive material of source components and its storage and transport casks.	Radiation Worker	Chemistry Radiation Material Applied Physics Measurements and Instruments Computer and Information
J39	Structure and dynamics of surface/interface of softmatters	Sector of Nuclear Science Research J-PARC Center (http://www.j-parc.jp/index-e.html)	Materials and Life Science Division Neutron Science Section	Tokai, Ibaraki	Hiroyuki Aoki 【Tel】+81-29-284-3333 【E-mail】hiroyuki.aoki[at]j-parc.jp	The various properties at the surface and interface of softmatters such as polymer materials are different from those in the bulk state. This research project investigates the origin of the surface/interface-specific properties of softmatters by neutron techniques. The strucutre and dynamics at the surface and interfaces is examined by neutron scattering/reflectometry methods using labeled samples prepared in the deuteration laboratoty in MLF, J-PARC. Research supports for related research are also required.	Radiation Worker	Chemistry Material Applied Physics Applied Chemistry
J40	Development and application of advanced technology for pulse neutron scattering experiments.	Sector of Nuclear Science Research J-PARC Center (http://www.j-parc.jp/index-e.html)	Materials and Life Science Division Technology Development Section	Tokai, Ibaraki	Takayuki Oku 【Tel】+81-29-284-3196 【E-mail】takayuki.oku[at]j-parc.jp	New sample preparation techniques, sample environment instruments, and a portable polarized neutron device are being developed in order to increase the efficacy and diversity of pulsed neutrons at the Materials and Life Science Division of J-PARC. The applicant is expected to conduct one of the following subjects. On the sample preparation techniques, the applicant is to develop sample deuteration techniques for polymers and biological samples, and perform related leading-edge neutron scattering researches. On the sample environment instrumentation, the applicant is to develop a 30 T-class pulsed magnet and high-field sample environment system, and perform related leading-edge neutron scattering researches. On the portable polarized neutron devices, the applicant is to develop a variety of polarized neutron devices for cross-section measurement, neutron diffraction, and inelastic neutron scattering, etc, and perform related leading-edge neutron scattering researches. Research supports for related research are also required.	Radiation Worker	Physics Chemistry Biology Material Applied Physics Applied Chemistry
J41	Development of Neutron Devices at Materials and Life Science Facility of J-PARC	Sector of Nuclear Science Research J-PARC Center (http://www.j-parc.jp/index-e.html)	Materials and Life Science Division Neutron Instrumentation Section	Tokai, Ibaraki	Kaoru Sakasai 【Tel】+81-29-284-3519 【E-mail】 sakasai.kaoru[at]jaea.go.jp	One of the works of our neutron instrumentation section focuses on development of neutron devices such as neutron detectors and neutron supermirror used at Materials and Life Science Facility (MLF) of J-PARC. As for neutron detector development, , reflecting 10-years operation at the MLF, scintillator based or gas-based neutron detector developed at JAEA should be upgraded for various neutron science at the MLF. As for neutron supermirror development, polarizing supermirror for magnetic structure investigation of thin film should be developed by using magnetic multilayers. The successful applicant will participate in the development and upgrading of such neutron devices.	Radiation Worker	Radiation Measurements and Instruments Electricity and Electronics Physics

Recruitment Field for Postdoctoral Fellow of JAEA 2021

№	Theme	Department	Section	Location (*)	ContactPerson	Summary	Radiation Worker/ Non-Radiation Worker	Field (for reference)
J42	Research and development on measurement of nuclear data and proton beam diagnostic for accelerator driven nuclear transmutation system	Sector of Nuclear Science Research J-PARC Center (http://www.j-parc.jp/index-e.html)	Nuclear Transmutation Division Facility and Application Development Section (http://j-parc.jp/Transmutation/ja/ads-j.html)	Tokai, Ibaraki	Shin-ichiro Meigo 【Tel】+81-29-284-3207 【E-mail】 meigo.shinichiro[at]jaea.go.jp	We are planning an irradiation facility with a high-intensity proton beam to obtain irradiation data for materials used in accelerator driven nuclear transmutation systems (ADS) such as beam window materials. We are also pursuing research and development in the fields of measurement of nuclear data including nuclide production cross section with protons in the GeV energy region to improve calculation codes and nuclear data used in design of the irradiation facility and ADS, and monitoring techniques of high-intensity proton beams. This theme will cover the nuclear data measurement and the development of beam monitoring techniques mentioned above.	Radiation Worker	Physics Radiation Material
J43	R&Ds on Probabilistic Risk Assessment (PRA) methodology for SFR	Sector of Fast Reactor and Advanced Reactor Research and Development Reactor Systems Design Department	FR Safety Design Group	Oarai, Ibaraki	Hidemasa YAMANO 【Tel】+81-29-267-1919(ex.6421) 【E-mail】 yamano.hidemasa[at]jaea.go.jp	For the risk-informed approach for global safety design standards, this study contributes to the development of methodology and reactor application of Level 1 - 3 Probablistic Risk Assesment (PRA) including significant external hazards for sodium-cooled fast reactors (SFRs) through international corperation. As part of this study, participating in the Japan-U.S. verstile test reactor (VTR) corperation priject, we are planning to conduct collaborative evaluation of reliability parameters and peer review for the VTR PRA analysis. This will contribute to enhance the SFR PRA methodology in Japan via safety evaluation including PRA and numerical analysis on international corperation. This study also includs the development of SFR level-3 PRA methodology with a possible SFR specific physical model after analysing Light Water Reactor level-3 PRA methodology. Note that scope of this theme can be reviced with request of applicant.	Non-Radiation Worker	Physics Chemistry Geo and Environemtal Sciences Radiation Mechanics Applied Physics Computer and Information
J44	Research and development of microbial effects on radionuclide migration in subsurface environments	Sector of Nuclear Fuel, Decommissioning and Waste Management Technology Development Nuclear Backend Technology Center	Radionuclide Migration Research Group Department of Geological Disposal Research	Tokai, Ibaraki	Yuki Amano 【Tel】+81-29-282-1133(67509) 【E-mail】 amano.yuki[at]jaea.go.jp	Understanding geochemical conditions and mass transport in subsurface environments. Exploration and understanding of microbial metabolic function in subsurface environments. Understanding geochemical processes of water-rock-microbes interaction in subsurface environments. Understanding microbial effects on geochemical conditons and mass transport in subsurface environments.	Non-Radiation Worker	Applied Chemistry Geo and Environemtal Sciences Biology
J45	R&D on establishment of mid-and-long-term behavior estimation method for a cementitious solidified product	Sector of Nuclear Fuel, Decommissioning and Waste Management Technology Development Nuclear Backend Technology Center	Waste Processing Technology Section Decommissioning Technology Department	Tokai, Ibaraki	Takeshi Osugi 【Tel】+81-29-282-1133(ext.65701) 【E-mail】 ohsugi.takeshi[at]jaea.go.jp	This R&D attempts to verify and establish a mid-and-long-term behavior estimation method for a hundred or several thousand years and to construct its deterioration model, and will contribute to selection of a method for managent of radioactive wastes arising from decommissioning operations. A wide variety of radioactive wastes have arisen from decommissioning of the Fukushima Daiichi Nuclear Power Station. These wastes need to be managed (storage, processing, disposal) for a certain period. It is not rational to obtain each data on the soundness and deterioration of a waste solidified product for all wastes, since characteristics of a waste solidified product changes according to properties of the wastes.	Non-Radiation Worker	Material Geo and Environemtal Sciences Architectural and Civil Engineering Chemical Engineering Applied Physics Computer and Information
J46	R&D on processing of radioactive organic liquids	Sector of Nuclear Fuel, Decommissioning and Waste Management Technology Development Nuclear Backend Technology Center	Waste Processing Technology Section Decommissioning Technology Department	Tokai, Ibaraki	Takeshi Osugi 【Tel】+81-29-282-1133(ext.65701) 【E-mail】 ohsugi.takeshi[at]jaea.go.jp	This R&D attempts to treat radioactive organic liquids containing uranium after evaluating characterization of them, and will contribute to the promotion of decommissioning of domestic nuclear facilities. Waste organic solvent and machine oil used in nuclear facilities have been stored, and it can be predicted that many research facilities will generate them according to decommissioning. It is considered that these organic solvents and the like have a negative impact on the landfill environment and are difficult to be solidified by using cementitious materials. Therefore, it is positioned as one of the wastes that is difficult to treat, and it is required to establish an appropriate processing method as the steam reforming treatment or the alkali activated materials (AAM) solidification.	Radiation Worker	Geo and Environemtal Sciences Radiation Material Applied Chemistry Chemical Engineering Computer and Information
J47	Development of techniques of radiometric dating for geological events	Tono Geoscience Center Sector of Nuclear Fuel, Decommissioning and Waste Management Technology Development	Geochronology Research Group Geoscientific Research Department	Toki, Gifu	Yoko Kokubu 【Tel】+81-572-53-0211 【E-mail】 kokubu.yoko[at]jaea.go.jp	For the study on long-term geological stability related to research and development of the geological disposal of high-level radioactive waste, we need to estimate the ages of past fault and volcanic activities, as well as uplift and erosion rates by techniques of radiometric dating. This work will include radiometric dating for these geological samples and improvements of their methods. Particularly, applicants should have a background in geochronology using iodine-129, chlorine-36, beryllium-10, electron spin resonance and potassium-argon dating methods.	Radiation Worker	Measurements and Instruments Geo and Environemtal Sciences Chemistry
J48	Research on debris coolability considering nuclear physics with melted and distributed fuel particles	Sector of Fast Reactor and Advanced Reactor Research and Development Fast Reactor Cycle System Research and Development Center (https://www.jaea.go.jp/04/o-arai/index.html)	System Safety Analysis and Evaluation Group	Oarai, Ibaraki	Takashi Takata 【Tel】+81-297-1919 (ex.6036) 【E-mail】 takata.takashi[at]jaea.go.jp	In a severe accident of sodium cooled fast reactor, fuel assembles may melt and divide into a number of small particles. Then, they will drop and pile upon a bottom side of the reactor vessel (or a core cathcer pan). The coolability of the dropped fuels is one of key issues. In this research, a coupling of nuclear physics with the distributed fuel debris with thermal hydraulics has been examined considering by a fat running so as to enhance a predictbility of the coolability as a severe accidnet analysis tool.	Non-Radiation Worker	Computer and Information□ Mechanics Radiation