

CONTENTS

I. ANNUAL SUMMARY OF EXPERIMENTAL RESEARCH ACTIVITIES		1
I-1. PROJECT RESEARCHES		2
Project 1	Analyzing Tumor Microenvironment and Exploiting its Characteristics in Search of Optimizing Cancer Therapy Including Neutron Capture Therapy S. Masunaga (R2P1)	3
PR1-1	Significance of combination with both continuous administration of hypoxic cytotoxin, tirapazamine and mild temperature hyperthermia in BNCT in terms of local tumor control and lung metastatic potential S. Masunaga <i>et al.</i> (R2P1-1)	4
PR1-2	Development of Amino Acid Derivatives Containing ^{10}B -Clusters for BNCT A. Matsushita <i>et al.</i> (R2P1-2)	5
PR1-3	Proteolysis of a Histone Acetyl Reader Protein Induces Chemoresistance of Cancer Cells under Hypoxia by Inhibiting Cell Cycle Progression in S Phase T. Haitani <i>et al.</i> (R2P1-3)	6
PR1-4	Cancer-Targeting Hyaluronic Acid/Carboranyl Pyrene Complex for Boron Neutron Capture Therapy K. Yamana <i>et al.</i> (R2P1-6)	7
PR1-5	An evaluation of stratified mouse model and the response of tumor cells to BNCT S. Imamichi <i>et al.</i> (R2P1-9)	8
PR1-6	Attempts to sensitize tumor cells by exploiting the tumor microenvironment Y. Sanada <i>et al.</i> (R2P1-12)	9
Project 2	Project Research on Advances in Isotope-Specific Studies Using Multi-Element Mössbauer Spectroscopy M. Seto (R2P2)	11
PR2-1	Peak intensity of quadrupole doublet of cordierite by single crystal Mössbauer microspectroscopy K. Shinoda, Y. Kobayashi (R2P2-1)	12
PR2-2	Low-Temperature Behavior of Mössbauer Spectra for $\text{Fe}_2\text{O}_3\text{-Al}_2\text{O}_3$ Solid Solution S. Takai <i>et al.</i> (R2P2-2)	13
PR2-3	Characterization of steel microstructure using Mössbauer spectroscopy G. Miyamoto <i>et al.</i> (R2P2-3)	14
PR2-4	Mössbauer study of Diluted Iron Nanoparticles R. Masuda <i>et al.</i> (R2P2-4)	15
PR2-5	Research on magnetism in a novel Kondo Lattice II Y. Kamihara <i>et al.</i> (R2P2-5)	16
PR2-6	Recoil-free fraction in ^{197}Au Mössbauer Spectroscopy for precursor of supported gold cluster catalysts H. Ohashi <i>et al.</i> (R2P2-6)	17
PR2-7	^{119}Sn Mössbauer Study of Absorbed Sn on Metallic Oxide Y. Kobayashi <i>et al.</i> (R2P2-7)	18
PR2-8	Development of Single-Line Compounds for ^{166}Er Mössbauer Spectroscopy S. Kitao <i>et al.</i> (R2P2-8)	19
Project 4	The effect of boron neutron capture therapy on normal tissues M. Suzuki (R2P4)	21
PR4-1	The effect of boron neutron capture therapy (BNCT) on normal lung in mice M. Suzuki, Y. Tamari (R2P4-1)	22

PR4-2	Clarification of the normal cell fractionation as a trigger for radiation-induced liver injury S. Takeno, M. Suzuki (R2P4-2)	23
PR4-3	The biological effect on neurons and brain blood vessels induced by Boron Neutron Capture Therapy N. Kondo <i>et al.</i> (R2P4-3)	24
PR4-4	The Effect of Boron Neutron Capture Therapy to Normal Bones in Mice R. Iwasaki <i>et al.</i> (R2P4-5)	25
Project 5	Preclinical studis on gadolinium neutron capture therapy M. Suzuki (R2P5)	27
PR5-1	Investigation of cell killing effect by auger electrons emitted during gadolinium neutron capture therapy (Gd-NCT) M. Suzuki, H. Tanaka (R2P5-1)	28
PR5-2	Development of Nano Carriers Installed with Gd(III)-Thiacalixarene Complex for Gd-NCT N. Iki <i>et al.</i> (R2P5-2)	29
PR5-3	Gadolinium neutron capture therapy as new treatment for head and neck cancer T. Andoh <i>et al.</i> (R2P5-3)	30
PR5-4	Preparation of functional molecules with Hoechst unit K. Tanabe <i>et al.</i> (R2P5-5)	31
PR5-5	Development of Gadolinium-loaded mesoporous silica-based nanoparticles and application to cancer radiotherapy F. Tamanoi <i>et al.</i> (R2P5-6)	32
PR5-6	Evaluation of Antitumor effectivity by Gd-neutron capture therapy using Gd ₂ O ₃ incorporated nanomicelle H. Xuan <i>et al.</i> (R2P5-7)	33
PR5-7	Development of ¹⁰ B-enriched GdBO ₃ nanoparticles for neutron capture therapy of cancer Li Zhao <i>et al.</i> (R2P5-8).....	34
PR5-8	Study about neutron capture therapy using polymeric drug delivery systems chelating Gd Y. Miura <i>et al.</i> (R2P5-9).....	35
PR5-9	In vivo dose-dependent administration study in mice of Gd-EDTMP: gadolinium neutron capture therapy formulation for bone metastasis T. Matsukawa <i>et al.</i> (R2P5-10).....	36
Project 6	Enhancement of research methods for material irradiation and defect analysis A. Kinomura (R2P6)	38
PR6-1	Study to improve transport and measurement performance of a slow positron beamline A. Kinomura <i>et al.</i> (R2P6-1).....	39
PR6-2	Doping effect of Re, Mo, Ta on electron-irradiation induced defects in W T. Toyama <i>et al.</i> (R2P6-2).....	40
PR6-3	Change in the Positron Annihilation Lifetime of Electron-irradiated F82H by Hydrogen Charging 2 K. Sato <i>et al.</i> (R2P6-3).....	41
PR6-4	Gamma-ray induced light emission from GaN single crystal wafer T. Nakamura <i>et al.</i> (R2P6-4).....	42
PR6-5	Change of free volume in hydrogenated DLC film by the irradiation of soft X-rays K. Kanda <i>et al.</i> (R2P6-6).....	43
PR6-6	Positron annihilation spectroscopy on diamond-like carbon films S. Nakao <i>et al.</i> (R2P6-7)	44
Project 7	Chemical and electronic properties of Actinide compounds and their applications T. Yamamura <i>et al.</i> (R2P7)	46

PR7-1	Antiferromagnetism in uranium intermetallic compound with structural modulation Y. Haga <i>et al.</i> (R2P7-1)	47
PR7-2	Adsorption Characterization of Actinide Chemical Species on Solid Adsorbents T. Suzuki <i>et al.</i> (R2P7-3)	48
PR7-3	Synthesis of noble phthaloyanine derivatives and effect of substituent on recognition of light actinide and chemical property-2 M. Nakase <i>et al.</i> (R2P7-8)	49
PR7-4	Hydrothermal synthesis of actinide mixed oxides for basic debris research T. Yamamura <i>et al.</i> (R2P7-9)	50
Project 8	Development on Neutron Imaging Application Y. Saito (R2P8)	52
PR8-1	Measurements of multiphase flow dynamics using neutron radiography Y. Saito <i>et al.</i> (R2P8-1)	53
PR8-2	Void Fraction Measurement of Refrigerant Two-Phase Flows in Cross-Flow Parallel Mini-Channel Evaporator H. Asano <i>et al.</i> (R2P8-2)	54
PR8-3	Visualization of Transient Change of Refrigerant Distribution in Activated Carbon Particle Layer H. Asano <i>et al.</i> (R2P8-3)	55
PR8-4	Neutron radiography measurements of the mixing behavior of reactant streams during hydrothermal synthesis S. Takami <i>et al.</i> (R2P8-4)	56
PR8-5	Quantitatively Visualization of a Microchannel Heat Exchanger under Non-uniformly Heated Condition H. Umekawa <i>et al.</i> (R2P8-5)	57
PR8-6	Frost Deposition Distribution Estimated by X-ray and Neutron Cooperative Imaging R. Matsumoto <i>et al.</i> (R2P8-6)	58
PR8-7	Analysis of vapor pressure in fire spalling of high-strength concrete Y. Nishio <i>et al.</i> (R2P8-8)	59
PR8-8	Measurement of coolant inside a flat laminate vapor chamber in the vertical posture with Neutron Radiography K. Mizuta <i>et al.</i> (R2P8-9)	60
PR8-9	Quantitative Study of the Image Quality for Neutron Imaging M. Kitaguchi <i>et al.</i> (R2P8-10)	61
PR8-10	Dynamic Visualization of Hydrogen Accumulation Behavior in Metallic Materials via Neutron Imaging K. Shimizu <i>et al.</i> (R2P8-13)	62
PR8-11	<i>In-situ</i> Lithium diffusion behavior in NASICON-Type Structured Lithium Ion Conductive Composite by Means of Neutron Radiography S. Takai <i>et al.</i> (R2P8-14)	63
Project 9	Advancement of integrated system for dose estimation in BNCT Y. Sakurai (R2P9)	65
PR9-1	Establishment of characterization estimation method in BNCT irradiation field using Bonner sphere and ionization chamber (IV) Y. Sakurai <i>et al.</i> (R2P9-1)	66
PR9-2	Study on New Type of Neutron Spectrometer for BNCT K. Watababe <i>et al.</i> (R2P9-2)	67
PR9-3	Response characteristic measurements of lithium-glass scintillators used in the BSS for the intense neutron beams A. Masuda <i>et al.</i> (R2P9-3)	68

PR9-4	Neutron measurement by using the self-activation of iodine-added liquid scintillators A. Nohtomi <i>et al.</i> (R2P9-5)	69
PR9-5	Development of Absolute Epi-thermal and Fast Neutron Flux Intensity Detectors for BNCT I. Murata <i>et al.</i> (R2P9-6)	70
PR9-6	Characterization of Active Neutron Detector for Boron Neutron Capture Therapy M. Takada <i>et al.</i> (R2P9-7)	71
PR9-7	Study for microdosimetry using silicon-on-insulator microdosimeter in the BNCT irradiation field (IV) Y. Sakurai <i>et al.</i> (R2P9-8)	72
PR9-8	Measurement of thermal neutrons and gamma rays in BNCT beam with polymer gel detector K. Tanaka <i>et al.</i> (R2P9-9)	73
PR9-9	Development of two dimensional neutron detector in BNCT irradiation field H. Tanaka <i>et al.</i> (R2P9-10)	74
PR9-10	Study of Neutron Fluence and Gamma ray Distribution Measuring using Thermoluminescence Slabs K. Shinsho <i>et al.</i> (R2P9-11)	75
PR9-11	Development and evaluation of 3D gel dosimeter for the measurement of dose distribution in BNCT S. Hayashi <i>et al.</i> (R2P9-13)	76
PR9-12	Establishment of beam-quality estimation method in BNCT irradiation field using dual phantom technique (IV) Y. Sakurai <i>et al.</i> (R2P9-14)	77
PR9-13	Development of a prompt gamma-ray imaging detector using an 8 x 8 arrayed LaBr ₃ (Ce) scintillator for BNCT K. Okazaki <i>et al.</i> (R2P9-15)	78
PR9-14	Development of Fiber-reading Radiation Monitoring System with an Optical Fiber and Red-emitting Scintillator at the ⁶⁰ Co Radiation Facility S. Kurosawa <i>et al.</i> (R2P9-16)	79
PR9-15	Establishment of the Imaging Technology of 478 keV Prompt Gamma-rays of Boron-neutron Capture Reaction and the Measurement of the Intensity of the Neutron Field S. Komura <i>et al.</i> (R2P9-17)	80
PR9-16	Feasibility study for quality assurance and control for irradiation field in BNCT S. Nakamura <i>et al.</i> (R2P9-18)	81
PR9-17	Evaluation of thermal neutron irradiation field for semiconductor device irradiation H. Tanaka <i>et al.</i> (R2P9-19)	82
PR9-18	Optimization of Bolus Shape for Boron Neutron Capture Therapy — Examination Using Simple Shaped Phantom for Experimental Verification — T. Takata <i>et al.</i> (R2P9-20)	83
PR9-19	Verification of the annealing capability of boric acid-infused PVA-GTA-I gel dosimeter H. Yasuda <i>et al.</i> (R2P9-23)	84
PR9-20	Establishment of Quantitative Measurement of Boron Concentration Distribution in vivo by Imaging of Prompt Gamma Rays S. Komura <i>et al.</i> (R2P9-24)	85
I-2. COLLABORATION RESEARCHES		86
1. Slow Neutron Physics and Neutron Scattering		
CO1-1	Towards larger-m polarizing neutron supermirror M. Hino <i>et al.</i> (R2009)	87
CO1-2	Current Status of Versatile Compact Neutron Diffractometer (VCND) on the B-3 Beam Port of KUR, 2020 K. Mori <i>et al.</i> (R2070)	88

CO1-3	Radius of Gyration of Polymer for Viscosity Index Improver at Various Temperatures Evaluated by Small-Angle X-Ray and Neutron Scatterings T. Hirayama <i>et al.</i> (R2076)	89
CO1-4	Development of High-resolution cold/ultracold neutron detectors using nuclear emulsion N. Naganawa <i>et al.</i> (R2138)	90
CO1-5	Optimization of neutron spin flipper with large beam acceptance M. Kitaguchi <i>et al.</i> (R2139)	91
CO1-6	Development of multiplayer mirrors for neutron interferometer M. Kitaguchi <i>et al.</i> (R2140)	92
 2. Nuclear Physics and Nuclear Data		
CO2-1	Quantitation of Gamma Ray Emission from Capture Reaction of Uranium-238 (2) Y. Nauchi <i>et al.</i> (R2006)	93
CO2-2	Thermal-Neutron Capture Cross-Section Measurement of ²³⁷ Np Using Graphite Thermal Column S. Nakamura <i>et al.</i> (R2042)	94
CO2-3	Measurement of Energy Resokution in the KURNS-LINAC Pulsed Neutron Facility T. Sano <i>et al.</i> (R2067)	95
CO2-4	β -Decay Study of Fission Products around A=150 Using the On-Line Mass Separator KUR-ISOL Y. Irie <i>et al.</i> (R2072)	96
CO2-5	Measurements of thermal neutron total and scattering cross section of moderator materials J. Nishiyama <i>et al.</i> (R2087)	97
CO2-6	Development of a neutron sintillator for a compact NRTA system F. Ito <i>et al.</i> (R2090)	98
CO2-7	Feasibility study on a current-mode ³ He gas neutron detectors for thermal and epi-thermal neutron measurements T. Matsumoto <i>et al.</i> (R2100)	99
CO2-8	Technique of Transferring Radioactive Atomic Nuclei Implanted in Dry Ice Film A. Taniguchi <i>et al.</i> (R2130)	100
 3. Reactor Physics and Reactor Engineering		
CO3-1	Development of Real-time Subcriticality Monitor Using an Optical Fiber Type Detector K. Watanabe <i>et al.</i> (R2CA01)	101
CO3-2	Void reactivity measurements of lead and bismuth in the KUCA-A core R. Katano <i>et al.</i> (R2CA02)	102
CO3-3	Measurement of Reaction Rates of Intermediate Neutrons on Critical Core with Various Neutron Spectra Zone N. Aizawa <i>et al.</i> (R2CA03)	103
CO3-4	Measurements of ²³⁷ Np and ²⁴³ Am Fission Reaction Rates in Lead Region at A-core of KUCA A. Oizumi <i>et al.</i> (R2CA04)	104
CO3-5	Measurement of Very Large Subcriticality by Using Spallation Neutron Source K. Hashimoto <i>et al.</i> (R2CA06)	105
CO3-6	Basic Research for Sophistication of High-power Reactor Noise Analysis (III) S. Hohara <i>et al.</i> (R2034)	106
 4. Material Science and Radiation Effects		
CO4-1	Evaluation of Gamma-ray Induced Current on Triaxial Cables Y. Gotoh <i>et al.</i> (R2008)	107

CO4-2	Damage Evolution in Neutron-irradiated Metals during Neutron Irradiation at Elevated Temperatures I. Mukouda and Q. Xu (R2011)	108
CO4-3	Lattice strain of Al by ECAP process K. Iwase and K. Mori (R2025)	109
CO4-4	Synthesis of complex nanoparticles in water by γ -ray irradiation reduction F. Hori <i>et al.</i> (R2046)	110
CO4-5	Defect structure and characterization of electron irradiated intermetallic alloys F. Hori <i>et al.</i> (R2047)	111
CO4-6	Study on formation mechanisms of nano-structures on Ge surfaces by low-fluence ion irradiations J. Yanagisawa <i>et al.</i> (R2052)	112
CO4-7	PAC Spectra of the ^{111m}Cd Probe in $\text{Cd}_{0.25}\text{Fe}_{2.75}\text{O}_4$ W. Sato <i>et al.</i> (R2053)	113
CO4-8	Characterization of the effect of Au-ion irradiation on $\text{GdBa}_2\text{Cu}_3\text{O}_{7-\delta}$ superconducting tapes using a slow positron beam T. Ozaki <i>et al.</i> (R2055).....	114
CO4-9	Local Structure of Cd Impurities doped in $\text{Cd}_x\text{Sr}_{1-x}\text{TiO}_3$ Studied by TDPAC Method S. Komatsuda <i>et al.</i> (R2056)	115
CO4-10	Radiophotoluminescence behavior in Cu-doped silica glass - Dose dependence and effect of heat treatment post irradiation - Y. Takada <i>et al.</i> (R2062).....	116
CO4-11	Complex Structure of Ions Coordinated with Hydrophilic Polymer 21. Ionic Diffusion in Polymeric Structure Utilized by Polyiodide Ions. (2) A. Kawaguchi and Y. Morimoto (R2064)	117
CO4-12	Tritium release behavior from long term heated Li_2TiO_3 pebbles K. Katayama <i>et al.</i> (R2066)	118
CO4-13	Vacancy migration behavior in an $\text{Al}_{0.3}\text{CoCrFeNi}$ high entropy alloy K. Sugita <i>et al.</i> (R2068).....	119
CO4-14	Construction of EO Sampling Detection System of Coherent Transition Radiation with Optical Cherenkov Radiation T. Takahashi (R2071).....	120
CO4-15	Measurement of the Internal Pressure and Lifetime of Ultrafine Bubbles D. Hayashi <i>et al.</i> (R2081)	121
CO4-16	Porosity Measurements of Sintered-Silver Bonding Plates K. Wakamoto <i>et al.</i> (R2084).....	122
CO4-17	Demagnetization Measurement of Permanent Magnet Materials Against Neutrons Irradiation Y. Fuwa <i>et al.</i> (R2093)	123
CO4-18	Neutron scattering study on microstructure of vitrified radioactive wastes K. Kaneko <i>et al.</i> (R2097)	124
CO4-19	Research on Polymer Composite Materials Containing Ion-implanted Metal Nanoparticles Using a Slow Positron Beam Y. Kobayashi <i>et al.</i> (R2104)	125
CO4-20	Study of resonant frequency change with irradiation dose of piezoelectric PZT element M. Kobayashi <i>et al.</i> (R2110)	126
CO4-21	Tritium recovery behavior for tritium breeder of $\text{Li}_4\text{SiO}_4 - \text{Li}_2\text{TiO}_3$ mixture material Y. Oya <i>et al.</i> (R2115).....	127
CO4-22	Formation of radiation defects on tungsten and their influence on effect of hydrogen isotope retention K. Tokunaga <i>et al.</i> (R2120).....	128

CO4-23	SAXS Analysis of Heat Denaturation of Soybean Proteins N. Sato <i>et al.</i> (R2121)	129
CO4-24	Study on HPLC Elution Behavior of Metallofullerenes Encapsulating Heavy Lanthanide Elements K. Akiyama <i>et al.</i> (R2122)	130
CO4-25	A study on destruction of cesium aluminosilicate compounds by gamma irradiation (2) H. Ohashi <i>et al.</i> (R2125)	131
CO4-26	Defect Structure with Short Positron Lifetime in Tungsten A. Yabuuchi (R2126)	132
CO4-27	Elucidation of the Mechanism of the Screw-sense Induction and Helix Inversion of Polymer Main Chain Based on the Small Angle X-ray Scattering, the Dynamic Light Scattering, and the Quasielastic Neutron Scattering Measurements Y. Nagata <i>et al.</i> (R2128)	133
CO4-28	Neutron irradiation tests for ITER plasma diagnostics M. Ishikawa <i>et al.</i> (R2131)	134
CO4-29	Irradiation Experiment of Accident Tolerant Control Rod Materials (2) H. Ohta <i>et al.</i> (R2157)	135
CO4-30	Radiochemical Research for the Advancement of ⁹⁹ Mo/ ^{99m} Tc Generator by (n, γ) Method (3) Y. Fujita <i>et al.</i> (R2158)	136
CO4-31	The Absorbance Measurement for Color Dosimeter of Gamma-ray Using a Photochromic Diarylethene Containing Additives S. Komatsuda <i>et al.</i> (R2172)	137
CO4-32	Synthesis and superconducting properties of EuSn ₂ As ₂ R. Takahashi <i>et al.</i> (R2176)	138

5. *Geochemistry and Environmental Science*

CO5-1	Production of technetium-99 by neutron irradiation of molybdenum trioxide T. Kubota <i>et al.</i> (R2004)	139
CO5-2	Volcanic and Tectonic History of Philippine Sea Plate (South of Japan) Revealed by ⁴⁰ Ar/ ³⁹ Ar Dating Technique O. Ishizuka <i>et al.</i> (R2005)	140
CO5-3	Ar-Ar dating of basaltic rocks within accretionary complex to reconstruct the tectonic settings of paleo-Japanese archipelago N. Hirano <i>et al.</i> (R2028)	141
CO5-4	INAA, Halogen Analysis, and Ar-Ar/I-Xe Dating for the Hayabusa2-return sample R. Okazaki <i>et al.</i> (R2030)	142
CO5-5	Determination of Abundance of Rare Metal Elements in Seafloor Hydrothermal Ore Deposits by INAA Techniques-7: Cross check with ICP-QMS analysis J. Ishibashi <i>et al.</i> (R2032)	143
CO5-6	Size distribution of main constituents(Al,Ca,Fe) in soil particles of the atmospheric aerosols. N. Ito <i>et al.</i> (R2044)	144
CO5-7	Mineral Luminescence and Application to Seismic Fault Geochronology N. Hasebe <i>et al.</i> (R2049)	145
CO5-8	Absorption of alkali metal ions by white radish sprouts (II) M. Yanaga <i>et al.</i> (R2054)	146
CO5-9	Study on the variation of the concentration of elements diffusing in the atmosphere by INAA N. Hagura <i>et al.</i> (R2061)	147
CO5-10	Neutron activation analysis of carbonate reference materials: coral (JCp-1) and giant clam (JCt-1)	

	S. Sekimoto <i>et al.</i> (R2077)	148
CO5-11	⁴⁰ Ar- ³⁹ Ar Dating of Extraterrestrial Materials in KURNS N. Iwata <i>et al.</i> (R2079)	149
CO5-12	Neutron Activation Analysis of Iron Meteorites N. Shirai and S. Sekimoto (R2083)	150
CO5-13	Neutron activation analysis of stable cesium and trace elements in the lake water of Lake Onuma on Mt. Akagi Y. Okada <i>et al.</i> (R2092)	151
CO5-14	Transfer of silver, cesium, and rubidium from nutrient solution to radish (<i>Raphanus sativus</i> var. <i>sativus</i>) T. Kubota <i>et al.</i> (R2098)	152
CO5-15	Neutron Activation Analysis of Environmental Samples Y. Oura and Md. S. Reza (R2103)	153
CO5-16	I-Xe ages of solar noble gas-rich meteorites H. Sumino <i>et al.</i> (R2112)	154
CO5-17	Bulk Chemical Compositions of two LL7 Chondrites M. Ebihara <i>et al.</i> (R2113)	155
CO5-18	Metamorphic age of Acasta gneiss and regional cooling history H. Hyodo <i>et al.</i> (R2143)	156
 6. Life Science and Medical Science		
CO6-1	Structural study of the overlapping tri-nucleosome in solution M. Nishimura <i>et al.</i> (R2003)	157
CO6-2	Character of DNA damage induced by nuclear plant neutron beams H. Terato <i>et al.</i> (R2007)	158
CO6-3	Evaluation of radiation resistance of lens constituent proteins involved in age-related cataract T. Takata and K. Lampi (R2010)	159
CO6-4	A feasibility study of inverse contrast-matching small-angle neutron scattering method combined with size exclusion chromatography using antibody interactions as model systems M. Yagi-Utsumi <i>et al.</i> (R2020)	160
CO6-5	Structural characterization of circadian clock protein complexes H. Yagi <i>et al.</i> (R2024)	161
CO6-6	Radioresistance Mechanisms Acquired by Adaptive Evolution and their Evolutionary Mechanisms T. Saito (R2029)	162
CO6-7	SAXS analysis of the formation process of the nucleation intermediate of insulin B chain: The measurement at different pH conditions Y. Yoshikawa <i>et al.</i> (R2043)	163
CO6-8	Evaluation of boron neutron capture therapy (BNCT) using brain tumor bearing rats or mice models H. Kashiwagi <i>et al.</i> (R2050)	164
CO6-9	The study of boron neutron capture therapy (BNCT) for primary central nervous system lymphoma (PCNSL) H. Kashiwagi <i>et al.</i> (R2051)	165
CO6-10	Identification of amino acid residues responsible for the temperature dependency of sHsps from methanogens M. Yohda <i>et al.</i> (R2058)	166
CO6-11	Quantitative analysis of contribution of tumor vascular damage to antitumor effect of X-ray using BNCR K. Ono <i>et al.</i> (R2065)	167

CO6-12	¹¹ C medical-isotope production via the ¹² C(γ ,n) ¹¹ C reaction with carbon nanotube(CNT) N. Takahashi <i>et al.</i> (R2108)	168
CO6-13	Demonstrated Measuring by Laser Device of the Thickness of A Human Thigh Calcified Artery Vascular Tissue N. Miyoshi and T. Takahashi (R2111)	169
CO6-14	Design, Synthesis, and Evaluation of Glucose and Macrocyclic Polyamine-type Boron Carriers for NCT S. Aoki <i>et al.</i> (R2156)	170
CO6-15	Preparation and Characterization of BPA-uridine conjugate for BNCT K. Tanabe <i>et al.</i> (R2160)	171
CO6-16	Asp racemization/isomerization in shedding products of cell adhesion molecule 1 is potentially involved in the neurodegeneration induced by elevated pressure A. Yoneshige <i>et al.</i> (R2169)	172

7. Neutron Capture Therapy

CO7-1	Establishment of a novel mutation breeding using Boron Neutron Capture Reaction (BNCR) M. Kirihata <i>et al.</i> (R2015)	173
CO7-2	Development of antibody-tagged boron compounds using Fc-binding peptide for on-demand receptor target in boron neutron capture therapy I. Nakase <i>et al.</i> (R2016)	174
CO7-3	Development of cyclic RGD-functionalized closo-dodecaborate albumin conjugates for boron neutron capture therapy H. Nakamura <i>et al.</i> (R2021)	175
CO7-4	Development of closo-dodecaborate-containing pteroyl derivatives targeting folate receptor-positive tumors for boron neutron capture therapy H. Nakamura <i>et al.</i> (R2022)	176
CO7-5	Influence of the abscopal effect to the survival rate following head neutron-irradiation between the different inbred mice Y. Kinashi <i>et al.</i> (R2023)	177
CO7-6	Optimization of chemical structures of polymer-BPA complexes for a nonclinical study T. Nomoto <i>et al.</i> (R2035)	178
CO7-7	OKD-001-based BNCT successfully prolongs the overall survival of orthotopic xenograft mouse model of a patient-derived glioblastoma stem-like cell line A. Fujimura <i>et al.</i> (R2039)	179
CO7-8	Enhancement of the cancer cell-killing effects of boron neutron capture therapy by overexpression of LAT1 in human cancer cells K. Ohnishi <i>et al.</i> (R2041)	180
CO7-9	Mechanism of Glioma Stem Cells' Survival Conferred by Glioma Niche after BNCT N. Kondo <i>et al.</i> (R2059)	181
CO7-10	Establishment of protocol for neutron capture therapy for head and neck cancer I. Ota <i>et al.</i> (R2060)	182
CO7-11	Identification of host immunostimulatory effects induced by boron neutron capture therapy T. Watanabe <i>et al.</i> (R2088)	183
CO7-12	Preliminary study of antitumor effectivity by Gd-neutron capture therapy using RGD binding Gd-DTPA-incorporated calcium phosphate nanoparticles to canine hemangiosarcoma model M. Yanagawa <i>et al.</i> (R2089)	184
CO7-13	Screening of boron compounds for BNCT on 2020 International collaboration studies M. Takagaki <i>et al.</i> (R2118)	185
CO7-14	The evaluation of boron neutron capture therapy (BNCT) to the novel mouse model of pelvic recurrence of colorectal cancer J. Arima <i>et al.</i> (R2135)	186

CO7-15	Self-assembling A6K peptide nanotubes for BSH delivery H. Michiue <i>et al.</i> (R2136)	187
CO7-16	Experiment on BNCR Effect of a Novel BPA Formulation using Ionic Liquid by Thermal Neutron Irradiation M. Shirakawa <i>et al.</i> (R2142)	188
CO7-17	Application of Intra-Tumoral Injection of Gadolinium-Polyplex for Gadolinium-Neutron Capture Therapy to Pancreatic Cancer Model in vivo H. Yanagie <i>et al.</i> (R2144)	189
CO7-18	Functionalization of Boron-Containing Nanoparticle and its Application to Boron Neutron Capture Therapy Y. Wang <i>et al.</i> (R2148)	190
CO7-19	Basic research to expand the application of BNCT to companion animals Y. Wada and M. Suzuki (R2151)	191
CO7-20	Development of real-time boron-concentration estimation system for whole-organ irradiation BNCT Y. Sakurai <i>et al.</i> (R2153)	192
CO7-21	Development of ¹⁰ Boron-loaded silica nanoparticles for BNCT application F. Tamanoi <i>et al.</i> (R2155)	193
CO7-22	Three dimensional model for pre-clinical investigations in BNCT K. Igawa <i>et al.</i> (R2162)	194
CO7-23	A novel carbon nanohorns for BNCT in vitro study T. Tsurubuchi <i>et al.</i> (R2167)	195
CO7-24	Development of ¹⁰ BPA-loaded mesoporous silica-based nanoparticles and preliminary evaluation in BNCT mouse experiments F. Tamanoi <i>et al.</i> (R2170)	196
CO7-25	Effects of overexpression of <i>LATI</i> on suppression of tumor growth by boron neutron capture therapy K. Ohnishi <i>et al.</i> (R2173)	197
CO7-26	Synthesis of a Novel Boron Compound with Potential Peptide-Related Nuclear Import M. Shirakawa <i>et al.</i> (R2174)	198

8. Neutron Radiography and Radiation Application

CO8-1	Developments for an innovative method to detect nuclear materials M. Komeda <i>et al.</i> (R2CA08)	199
CO8-2	Neutron Phase Imaging with Talbot-Lau Interferometer at CN-3 T. Shinohara <i>et al.</i> (R2026)	200
CO8-3	Neutron Resonance Spectrometry for Nuclear Security and Safeguards Education J. Kawarabayashi <i>et al.</i> (R2094)	201
CO8-4	Coolant Visualization in the Accumulated Square Rod Arrays M. Kaneda <i>et al.</i> (R2171)	202

9. TRU and Nuclear Chemistry

CO9-1	Solid phase transformation of tetravalent metal hydroxide at elevated temperatures T. Kobayashi <i>et al.</i> (R2018)	203
CO9-2	Deterioration of simulated fuel debris in aqueous environment T. Sasaki <i>et al.</i> (R2019)	204
CO9-3	The solvent extraction behavior of Antimony in nitric acid solution using TDdDGA Y. Nakamura <i>et al.</i> (R2063)	205
CO9-4	Electrochemical behavior of U ³⁺ on Ru electrode in LiCl-KCl melts T. Murakami <i>et al.</i> (R2091)	206

CO9-5	Coprecipitation of Ca, Sr, Ba, and Ra with barium sulfate toward the chemical study of Nobelium S. Hayami <i>et al.</i> (R2129)	207
CO9-6	Electrostatic Interaction between Fission Products and Solution Aerosol Particles in Radioaerosol Generation Process K. Takamiya <i>et al.</i> (R2141)	208
10. Health Physics and Waste Management		
CO10-1	Assessment of non-homogenous exposure of radiation workers in an accelerator facility – situation in the small linac facility – M. Kowatari and T. Kubota (R2001)	209
CO10-2	Effective Measures on Safety, Security, Hygiene and Disaster Prevention in Laboratories T. Iimoto <i>et al.</i> (R2002)	210
CO10-3	Mass balance trend of organochlorine and organobromine in a sediment core from Beppu Bay K. Ito <i>et al.</i> (R2040)	211
CO10-4	Application of KURAMA-II to Radiation Monitoring of Public Facilities in Fukushima Prefecture A. Maekawa <i>et al.</i> (R2095)	212
CO10-5	Theoretical Study on Soil Adsorption/Desorption Characteristics of Cs and Sr Using PHREEQC K. Yoshida <i>et al.</i> (R2109)	213
CO10-6	An Attempt to Measure Size Distribution of Radioactive Aerosol Particles Produced in an Electron LINAC Facility Using a Diffusion Battery and Imaging Plates Y. Oki and R. Taniguchi (R2132)	214
12. Others		
CO12-1	Study on Superposition of Coherent Transition Radiation Using a Ring Resonator N. Sei and T. Takahashi (R2013)	215
CO12-2	Empirical Research on the Effective Introduction and Unification of Ambient Dose Rate Mapping Methods Using Car-borne Survey System for Monitoring of Nuclear Facilities by Local Governments H. Tanaka and M. Tanigaki (R2033)	216
CO12-3	Development of neutron imager based on hole-type MPGD with glass capillary plate F. Tokanai <i>et al.</i> (R2036)	217
CO12-4	Stability Monitoring of Hf Oxide Films by Neutron Activation Analysis T. Takatsuka <i>et al.</i> (R2038)	218
CO12-5	Neutron irradiation test at KUR CN-3 H. Ohshita <i>et al.</i> (R2069)	219
CO12-6	A Study of Polyvinylalcohol-borate hydrogels using small angle X-ray scattering T. Tominaga <i>et al.</i> (R2073)	220
CO12-7	Evaluation of LAN cable sheath degradation by gamma irradiation T. Tominaga <i>et al.</i> (R2074)	221
CO12-8	Competitive Adsorption Behaviour of Additives in Lubricating Oil Analyzed by Neutron Reflectometry T. Hirayama <i>et al.</i> (R2075)	222
CO12-9	Multi-element neutron activation analysis of selected Japanese food samples by neutron activation analysis M. Fukushima <i>et al.</i> (R2085)	223
CO12-10	Analyzing the Texture of Roof-tile toward Detailed Provenancial Studies of Excavated Ceramics by NAA M. Tomii <i>et al.</i> (R2096)	224
CO12-11	Development of high-count rate two-dimensional neutron detector system S. Sato <i>et al.</i> (R2106)	225

CO12-12	A response of inner-through type ionization chamber to ^{133}Xe A. Yunoki <i>et al.</i> (R2116)	226
CO12-13	Study of Isotope Separation via Chemical Exchange Reaction R. Hazama <i>et al.</i> (R2119)	227
CO12-14	Beam test of radiation detectors for a muon-electron conversion search experiment, DeeMe M. Aoki <i>et al.</i> (R2127)	228
CO12-15	Neutron activation analysis of Ar, Cl, Br and I in Pd metal T. Miura <i>et al.</i> (R2154)	229
CO12-16	Evaluation of Structural Vacancies in Icosahedral Cluster Solids using Positron Annihilation M. Yamamoto <i>et al.</i> (R2166)	230
CO12-17	Basic experiment for nuclear reactor power monitoring with heat-resistant self-powered gamma ray detector K. Okada <i>et al.</i> (R2168)	231
II. PUBLICATION LIST (APRIL 2020 – MARCH 2021)		232