

VIII-I. SUMMARY OF RESEARCH ACTIVITIES

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VIII-I-1. MEETINGS AND SEMINARS

Specialists' Meetings Held in the FY 2009

1. Specialist's Meeting on the Chemistry and Technology of Actinide Elements, KUR
2. Biological Studies for Advanced Radiotherapy
3. Proceedings of the 2nd Specialist Research Meeting on MIEZE/N(R)SE Spectroscopy III
4. Specialists' Meeting on Radioactive Waste Management
5. Specialist Research Meeting on "The Introduction of Total Micro-Element Analysis System and Its Application in Kyoto University Reactor"
6. Proceedings of the Specialist Research Meeting on "Abnormal Protein Aggregation and the Folding Diseases, and Their Protection and Repair System"
7. Specialists' Meeting on Neutron Imaging
8. The Specialist Meeting on Positron Beam Techniques for Sciences and Engineering
9. Meeting for Neutron Capture Therapy Using Reactor- and Accelerator-Based Neutron Sources
10. The Specialist Research Meeting on Condensed Matter Physics Research Using Short-Lived Nuclei and Radiations (II)
11. The Role of Mitochondrial Functions in Radiation Induced Carcinogenesis
12. The Workshop on the Movement and Transfer of C-14 in the Environment
13. 1st Meeting of Analysis Method for Small-Angle Neutron Scattering

Workshops Organized in the FY 2009

14. The Workshop on the Development and Applications of Devices for Neutrons III
15. Development and Application of Accelerator Neutron Source in KURRI II
16. The Workshop on Materials Irradiation Effects and Applications

Special Meeting Held in the FY 2009

Meeting on the Future Project of Kyoto University Research Reactor Institute

VIII-I-2. COLLABORATION RESEARCH AND VISITING SCIENTISTS

Visiting Scientists

The number of project researches	13
(The number of allotted research subject)	(94)
The number of general joint researches	66
The total man-days of visiting scientists	2906

VIII-I-3. EXPERIMENTAL RESEARCH

VIII-I-3-1. LIST OF PROJECT RESEARCH

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|-------------|--|
| [Project 1] | Project Research on Study of Microstructural Evolution and Physicality Changes in Irradiated Solid Materials |
| [Project 2] | Study on Nuclear Data for MA and LLFP Nuclides |
| [Project 3] | Biological Effects of Low Dose Radiation |
| [Project 4] | Fundamental and Developmental Research on Physical and Chemical Characteristics of Actinides |
| [Project 5] | Project Research on Material Science Using Short-Lived Nuclei and Radiations |
| [Project 6] | Project Research on the Abnormal Aggregation of Proteins by UV and Gamma Ray-Irradiation and Study of Repair Mechanism |

- [Project 7] Development of Neutron Optical Devices and Its Application to New Neutron Spectrometer and Imaging
- [Project 8] Trace Elemental Analysis Using Research Reactor
- [Project 9] Deuterium Exchanges in the Biological Macromolecules for a Neutron Analysis
- [Project10] Analyzing Tumor Microenvironment and Exploiting Its Characteristics for Controlling Malignant Solid Tumors
- [Project 12] Studies on Radiation Safety Control at Accelerator Facilities
- [Project 13] Project Research on the New Applicant Development Using the Characteristics of the Particles from the Neutron Capture Reaction

VIII-I-3-2. LIST OF COLLABORATION RESEARCH

1. Slow Neutron Physics and Neutron Scattering

- CO1-1 Development of Cold Neutron Interferometer with Perfectly Separated Paths (21024)
- CO1-2 Development of Analyzing Method of Small-Angle Scattering for Size Distribution of SeGregation Particles in Metal Alloy (21044)

2. Nuclear Physics and Nuclear Data

- CO2-1 Production rate of p Nuclei Sm-146 via Pm-146 Using Bremsstrahlung (21009)
- CO2-2 Development of a Calibration Method for Neutron Detectors Using White Neutrons with Energy Range from Thermal to 10 keV(21019)

3. Reactor Physics and Reactor Engineering

- CO3-1 Development on In-Reactor Observation System by Using Cherenkov Light (21053)
- CO3-2 Development of Subcriticality Measurement for Accelerator-Driven Reactor (IV) (CA21102)
- CO3-3 Measurements of Reactivity Worth of Rare-Earth Elements (CA21103)
- CO3-4 Development of Real Time Spectrometer for Fast Neutrons (CA21104)
- CO3-5 Quantification of Neutron and γ Ray Fields for Subcriticality Determination (2) (CA21105)
- CO3-6 Pulse Neutron Experiment for Accelerator-Driven System (2) (CA21106)

4. Material Science and Radiation Effects

- CO4-1 Influence of γ -Ray Irradiation Conditions on Encapsulation of Hydrogen Atom into Silsesquioxane (21008)
- CO4-2 Coherent Excitation of Superionic Conduction (21011)
- CO4-3 Dependence of Gamma-Ray Dose on Annihilation Behavior of Irradiation Defects in Li_2TiO_3 (21013)
- CO4-4 Absorption Spectroscopy with the Coherent THz Radiation from Linac Electron Beams (21014)
- CO4-5 Property of Linearly Polarized Coherent Transition Radiation Emitted from Wire-Grid Radiator (21015)
- CO4-6 Complete Decomposition of Pyrrolidone Derivatives by γ -Ray Irradiation under Heating (21020)
- CO4-7 Radiation-Induced Luminescence for Applying to Retrospective Dosimetry (21022)
- CO4-8 Development of a Reflection-Mode Scanning Near-Field THz-Wave Microscopy with Coherent Transition Radiation (21023)
- CO4-9 Complex Structure of Ions Coordinated with Hydrophilic Polymer. 10: (21026)
- CO4-10 Monolayer Formation of Poly(methyl-n-propylsilane) on PEG Aqueous Solution (21043)

5. Geochemistry and Environmental Science

- CO5-1 Study of Earth and Planetary Matters by Thermoluminescence (21001)
- CO5-2 Soil Remediation with Natural Organic Substances (21003)
- CO5-3 Thermoluminescence Colour Image Analyses of Lake Sediments (21004)
- CO5-4 Photon Activation Analysis Using KUR-Linac (21025)

- CO5-5 Cathodoluminescence Study of Nanodiamond Formation in Meteorites (21029)
- CO5-6 Observation of Atmospheric Aerosols at Sakai, Osaka (21031)
- CO5-7 Investigation for Environmental Radioactivity in Relic Obtained from Salt-Production Site, Japan (21052)

6. *Life Science and Medical Science*

- CO6-1 Characterization of Clustered DNA Damage Induced by Ionizing Radiation Specifically (21059)

7. *Neutron Capture Therapy*

- CO7-1 Performance Test of a Neutron Detector Using Side-Lighting Optical Fiber (21040)
- CO7-2 Characteristic Estimation for D₂O Facility of KUR with Low-Enriched Uranium Fuel (21042)

8. *Neutron Radiography and Radiation Application*

- CO8-1 Transmission Electron Images Using ²⁰⁴Tl (21005)

11. *Accelerator Physics*

- CO11-1 Demonstration of Terahertz-Wave Spectrophotometry by Compton Backscattering of Coherent Transition Radiation Using KURRI-LINAC (21018)

12. *Others*

- CO12-1 Development of the CCD-Based UCN Detector with Fine Spatial Resolution (21016)

VIII-I-3-3. LIST OF ORIGINAL RESEARCH

- OR1 Influence of Manipulating Hypoxia in Solid Tumors on Radiation Dose-Rate Effect *in vivo*, with Reference to That in Quiescent Tumor Cell Population
- OR2 Usefulness of Hexamethylenetetramine as an Adjuvant to Radiotherapy and Cisplatin Treatment for solid Tumors: Its Independency of p53 Status
- OR3 Assessment of Environmental and Social Impacts Originating from the Use of Nuclear Energy

**VIII-II. ANNUAL SUMMARY OF EXPERIMENTAL
RESEARCH ACTIVITIES**