

Symposium on Nuclear Data 2020

Ag102 12.9 m	Ag103 65.7 m	Ag104 69.2m	Ag105 41.29 d	S ymposium on	Ag107 51.839 %	Ag108 2.37 m	Ag109 48.161 %	Ag110 24.6 s	Ag111 7.45 d	Ag112 2.135 h
Pd101 8.47 h	Pd102 1.02 %	Pd103 16.991 d	Pd104 11.14 %	Pd105 22.33 %	N uclear	Pd107 6.5e+4 y	Pd108 26.46 %	Pd109 15.700(26)	Pd110 11.72 %	Pd111 23.4 m
Rh100 20.8 h	Rh101 3.3 y	Rh102 2.72 d	Rh103 100 %	Rh104 42.3 s	Rh105 35.95 h	D ata	2020 Nov.	Rh108 9.0 m	Rh109 99 s	Rh110 3.3 s

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Type: Oral Presentation

Roles and Current Status on Reactor Physics Experiment in Research Reactors

Nuclear reactors are mainly categorized as two parts: a commercial power reactor; a test and research reactor for generating electric power and conducting research of radiation utilization, respectively. Of two reactors, main roles of the test and research reactor are to conduct the research and development of nuclear engineering and radiation detection fields with the use of radiation, including neutron, alpha-ray, beta-ray, gamma-ray, and so on, and to contribute to the education of young generation. Many research reactors are importantly equipped with experimental facilities to research objectives, including irradiation holes, neutron beams and spectrum shift changers, although the commercial reactors insufficiently meet the items. An index of classification of research reactors is to provide a wide range of neutron spectrum and thermal reactor power, with the combined use of nuclear fuel, moderators, reflectors and coolant materials by varying the kinds, the geometries, the configurations and the utilization purposes.

Another part of the presentation is to contain the feasibility study on the accelerator-driven system (ADS) conducted for nuclear transmutation analyses with the combined use of the solid-moderated and solid-reflected core and the fixed-field alternating gradient (FFAG) accelerator, in the Institute for Integrated Radiation and Nuclear Science, Kyoto University. Through the experimental analyses by MCNP with major nuclear data libraries (JENDL-4.0, ENDF/B-VII.1, JENDL/HE-2007 and JENDL/D-99), static and kinetic parameters of reactor physics are interestingly revealed for nuclear transmutation of minor actinides (Np-237 and Am-241) and uncertainty quantification of a coolant material (lead and bismuth), with respect to ADS. Additionally, experimental education programs for domestic and overseas students conducted at the Kyoto University Critical Assembly are introduced in the presentation.

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