

Nuclear data measurement project at J-PARC MLF

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Advanced reactor systems such as fast breeder reactors and accelerator driven systems which are used for transmutation of long lived fission products (LLFP) and minor actinide (MA) are now under planning. This kind of system would be very useful for reducing MA and LLFP, and also for public acceptance if considering the increasing use of the nuclear power plants in future. For the optimum design of the advanced reactor system, precise nuclear data are indispensable.

In Japan now being constructed is the high intensity neutron source, 1MW power JSNS (Japan Spallation Neutron source) at J-PARC. The produced neutron intensity is very high and expected to be a little bit lower than 1.4 MW power SNS in USA, which is under commissioning now and will be the highest intensity spallation neutron source in the world. Therefore, it is good opportunity to use JSNS for the nuclear data measurements. We are promoting a project to measure the nuclear data of MA, LLFP and relating nuclides. Major part of this project is measurements of the neutron capture cross section of MA and LLFP at J-PARC, so we are now preparing the experimental equipments for the MA and LLFP cross section measurements. The samples we are now considering are Cm as MA, and Zr-93, Tc-99 and so on as LLFP. Main detector is high resolution Ge detector covering large solid angle and the improvement of it is being performed and shields for neutrons and gamma-rays are also being placed. To support the J-PARC experiments the complementary experiments at other facilities are being performed. The sample preparation is important part of this kind of measurements, so the MA and LLFP samples are carefully designed, purchased and inspected. In 2008 the first beam will be provided at J-PARC MLF (Material Life Science Facility). We are preparing the experimental setup to start the commissioning of the first beam delivering.

In the presentation I would like to explain the present status of the project concerning to the J-PARC nuclear data measurements.

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