Status of KAERI/NDEL, 2004-2005

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Nuclear Data Evaluation Laboratory of Korea Atomic Energy Research Institute (KAERI/ NDEL) has 9 Staffs and 1 Secretary. (Evaluation 5, Processing and Benchmark 4)

The main project is "Establishment of Nuclear Data for Future Nuclear R&D" funded by government as a long term nuclear energy development program. KAERI/NDEL is performing nuclear data evaluation, multi-group library processing, and validation. For measurement of nuclear reaction data, KAERI/NDEL is contacting with Pohang Accelerator Laboratory and Van de Graff laboratory of Korea Institute of Geology and Mineral.

In January 2005, Young-Ouk LEE has become the head of KAERI/NDEL after Jonghwa CHANG, who moved to the Nuclear Hydrogen Project of KAERI.

1. Facility

1.1. Pohang Accelerator Laboratory

Major upgrade plan of The Pohang TOF has initiated which includes extension of Fight length to 20m and improvement of electric gun and pulsing system.

1.2 Korea Institute of Geology and Mineral

The 1.4 MV Van de Graaf of KIGAM is equipped with a pulsing and bunching system to measure neutron capture cross section at 1 – 2 MeV range.

2. Measurement

Neutron total cross sections of natural Mo, Cd and Bi were measured in the energy range 0.01 - 100 eV at Pohang TOF. Photo-neutron production cross sections and isomeric cross section ratio were measured by gamma activation analysis at Pohang facility.

Neutron capture cross sections of ^{155,156,157,158,160}Gd were measured in the energy range 10 –100 keV, and 550 keV at Pelletron accelerator of Tokyo Institute of Technology, Japan.

3. Evaluation

3.1. Resonance Parameter Analysis

The resolved resonance parameters, unresolved parameters, and the bound level parameters for ^{232}Th, ^{107}Pd, ^{166}Er are evaluated using the weight average method, the Porter-Thomas distribution and the Bayesian approach, based on the Mughabghab compilation of 1981 and many recent measurements.

3.2. Cross-section Evaluation

Neutron cross sections of ^{95}Mo, ^{101}Ru, ^{103}Rh, ^{105}Pd, ^{109}Ag, ^{131}Xe, ^{133}Cs, ^{141}Pr, ^{143,145}Nd, ^{147,149,150,151,152}Sm, ^{160,161,162,163,164}Dy are evaluated in the frame work of ENDF/B-VII in cooperation with BNL. Evaluation of actinides such as ^{232}Th, ^{231}Pa, ^{233}Pa, ^{233}U, ^{234}U, ^{236}U are ongoing using measured data and EMPIRE-II up to 20 MeV.

4. Services

The nuclear data web server http://atom.kaeri.re.kr/ is continuing service for the internet community.