The Progress Report of CNDC to NRDC Meeting

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1 General

CENDL is carried out by China Nuclear Data Center and China Nuclear Data Network, China Nuclear Data Committee assumes responsibility the management of CENDL project. China Nuclear Data Center serves as the secretariat of Chinese Nuclear Data Committee. Four young staffs has joined in CNDC in the past two years, the staffs of CNDC are 24 now. The CNDC consists of the following four groups:

- Nuclear Data Evaluation Group
- Nuclear Theory Group
- Macroscopic Data Group
- Data Library Group

2 Nuclear Data Evaluation

CENDL-3.1:

CENDL-3.1 includes comprehensive data evaluations for all neutron reactions in the energy range from 10^{-5}eV to 20MeV for 200 nuclides. The ENDF-6 format is adopted, the files 1, 2, 3, 4, 6, 12~15 are included for major fissile nuclide, structure material and light nuclide, files 1, 2, 3, 4, 5 are given for minor fissile and fission production nuclides.

New evaluations:

During past two years, more than 30 new neutron data evaluations have been performed in CNDC, The range of nuclei contains light nuclides, structure material nuclides, fission product nuclides and actinides (^{12}C,^{14}N,^{16}O,^{23}Na,Mg,Al,^{46,47,48,49,50,nat}Ti,$^{58,\ 60,\ 61,\ 62,\ 64}$Ni,^{63}Cu, ^{85}Y,^{95}Zr, ^{99}Mo,^{129,131,132,134}Xe,^{169}Tm,^{181}Ta, ^{240}Pu et al.). These new evaluations will be collected by CENDL future edition.

Nuclear data for ADS:

This work is a part of the project of ADS system of China, and is supported by China Ministry of science and technology. The theoretical models code MEND has been improved, and the calculation and evaluation of n and p+^{54,56,57,58}Fe reactions for incident nucleon energy below 250 MeV were carried out based on the new MEND code. The calculation and evaluation of n+^{233,234,235,236,238}U reactions for incident neutron energy below 20 MeV were also done, and the benchmark test calculations were done for the neutron data.

Structure and decay data

The nuclear structure and decay data evaluations in CNDC has permanent responsibility for evaluating and updating NSDD for A=51, and 195-198; temporary for A=67.

About 40 new decay data evaluations finished in recent 2 years. The range of nuclides from ^{37}Ar to ^{153}Gd. These evaluations included the half-life, γ –ray intensity, branch ratio and decay schemes et.al. Two evaluation methods ENSDF and DDEP were used in our new evaluations.

Fission yield

Based on the experimental data, the systematics on mass distribution of fission product nuclides and independent yield data were studied. Cumulative yield data from ^{235}U and ^{238}U fission were evaluated for each about 50 fission product nuclides as a base of updating CENDL/FY and for some practical applications.

3. Nuclear reaction model code

The code system LUNF series used for light nuclei model calculations were developed. This code system can be used for the model calculation for neutron introduced reaction with targets ^{6,7}Li, ^{9}Be, ^{10}B, ^{12}C, ^{14}N and ^{16}O. LUNF system can also provide the energy-angular spectra (MF6 in ENDF format) model calculations.

The theoretical model code MEND of nucleon-induced reaction has been improved. In the new version of MEND code, the gamma-production cross sections and ENDF format are included.

4. International Co-operation:

At present, The scientists of CNDC participate in two IAEA Coordinated Research Projects:

- Minor Actinide Neutron Reaction Data
- Updated Decay Data Library for Actinides.

The Following Foreign Scientists have visited CNDC/CIAE :

- A.J. Koning, NRG, Oct. 2008.
- S. G. Yavshits, S.V.Khlebnikov and O. T. Grudzevich, Khlopin Radium Institute and Obninsk State University, Oct. 2008.
- T.V. Golashvili, V.P. Chechev and S. Badikov, ATOMINFORM and Khlopin Radium Institute, Oct. 2008.

5. The meeting and symposium

- The symposium on Nuclear Data Future needed, 16 Dec. 2008, Beijing
- The Technical Meeting of fission yield, May 15-18, 2009, Guilin
- The Meetings of China Nuclear Data Committee，14 May. 2009, Beijing