

お知らせ(そのI)

NNDENへの投稿

Contribution to Neutron Nuclear Data Evaluation Newsletter-25

Japanese Nuclear Data Committee  
(Nuclear Data Center, JAERI)

Work recently completed and publication:

- (i) Direct and Collective Captures of Energetic Neutrons  
by Ellipsoidally Deformed Nuclei.

H. Kitazawa, T. Hayase and N. Yamamuro (TIT).

(to be published in Nucl. Phys.)

The direct and collective theories for nucleon radiative capture are applied to the ellipsoidally deformed nucleus within the framework of an adiabatic approximation. Numerical application is made for the  $^{238}\text{U}(n,\gamma)^{239}\text{U}$  reaction with 5 to 20 MeV neutrons. Contributions of the capture cross section from the rotational bands for all Nilsson levels in  $^{239}\text{U}$  are calculated to produce the excitation curve and capture  $\gamma$ -ray spectra for this reaction. Good agreement is obtained between the calculated cross sections and the observed data.

- (ii) Evaluation of the Neutron Nuclear Data for  $^{92}\text{Mo}$  and  $^{94}\text{Mo}$   
T. Hojuyama (MAPI), JAERI-M 7276

(reported in Japanese)

Evaluation of the neutron nuclear data for  $^{92}\text{Mo}$  and  $^{94}\text{Mo}$  has been made for the total, elastic scattering, radiative capture and inelastic scattering cross sections in the energy range from  $10^{-5}$  eV to 15 MeV. These data were compiled in Japanese Evaluated Nuclear Data Library, version one, JENDL-1 together with the data for the other molybdenum isotopes and element molybdenum.

- (iii) Evaluation of Neutron Nuclear Data for  $^{245}\text{Cm}$   
S. Igarasi and T. Nakagawa (JAERI), JAERI-M 7733

(reported in Japanese)

Evaluation of neutron nuclear data for  $^{245}\text{Cm}$  was performed below 20 MeV. Calculations below 60 eV where the resonance parameters were given were carried out with the single-level formula, and the differences between multilevel and single-level calculations were taken as the background cross sections. Using semi-empirical formula, the fission cross section was obtained above 50 eV. Optical and statistical model calculations were made in order to obtain the total, capture, inelastic and elastic scattering, (n,2n) and (n,3n) reaction cross sections. The number of neutrons per fission was also estimated.

Work in progress:

- (i) Study on mutual consistency of the evaluated data for  $^{235}\text{U}$ ,  $^{238}\text{U}$ ,  $^{239}\text{Pu}$ ,  $^{240}\text{Pu}$ , and  $^{241}\text{Pu}$  is in progress in Working Group on Heavy-Nuclide Nuclear Data of JNDC. The optical potential parameters were also studied for the above five nuclides (from H. Matsunobu, SAEI).
- (ii) Evaluation work of the nuclear data for  $^{233}\text{U}$  is performed. Evaluation of the total cross section and the fission cross section has been almost completed in the energy range from 100 eV to 20 MeV. The optical potential parameters obtained from the evaluation of the total cross section were consistent with those of the other heavy nuclides. (from H. Matsunobu, SAEI).
- (iii) Evaluation of neutron nuclear data for  $^{236}\text{Pu}$  and  $^{238}\text{Pu}$  is now in progress. The results will be stored in the second version of Japanese Evaluated Nuclear Data Library, JENDL-2. (from T. Hojuyama, MAPI).
- (iv) Reevaluation of  $^{232}\text{Th}$  neutron nuclear data for JENDL-2 is made. (from T. Ohsawa, KYU).
- (v) Evaluation work on resonance parameters of  $^{238}\text{U}$  is making progress. The evaluated parameters will be compiled in JENDL-2. (from T. Nakagawa, JAFRI).

Work planned for the near future :

- (i) Evaluation of neutron nuclear data for  $^{228}\text{Th}$ ,  $^{230}\text{Th}$ ,  $^{233}\text{Th}$  and  $^{234}\text{Th}$  is going to be made. (from T. Ohsawa, KYU),
- (ii) Evaluation on  $^{242}\text{Cm}$  nuclear data will be started. (from T. Fuketa, JAERI)

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