

Status of U-238 Inelastic Scattering Cross Section Evaluation in the Sub-group 1.4

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on International Evaluation Cooperation
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1. A report titled "Database for ^{238}U Inelastic Scattering Cross Section Evaluation"[1] has been compiled to provide a basic and common reference data book for the $^{238}\text{U}(n,n')$ evaluation cooperation. Copies of the report are distributed in this meeting. The evaluated values in JENDL-3, ENDF/B-VI, JEF-2, BROND-2 and CENDL-2 are graphically compares with available experimental data which are compiled from EXFOR. For convenience, measured values for the total, radiative capture, total elastic scattering and differential elastic scattering cross sections and information about level structure of ^{238}U are presented in the report.

2. A comparison of double-differential neutron emission cross sections (DDX) calculated from the data in JENDL-3, JEF-2 and ENDF/B-VI with experiments is presented from Fukahori et al.[2]. It is found that the evaluated values disagree with the experiments. In the re-evaluation this problem should be solved. To obtain more certain information we are planning to compile available DDX experiments to supplement the database presented in the report mentioned above.

3. A future plan for the re-evaluation is made by the coordinator as following :

(1) At the first step, the coordinator will present a new evaluation in the beginning of this July. This work is progressing to give the data for JENDL-3.2.

(2) It will be sent to the members of the working group and discussed by this autumn.

(3) A revised evaluation will be presented by the end of this year on the basis of the discussions by the members.

(4) It will be made an agreement in the working group and be presented the result at the international conference on nuclear data held at Gatlinburg in June 1994.

4. A guiding principle in the 1st step re-evaluation is:

(1) The direct process of the partial inelastic scattering to 1st and 2nd levels are treated with the coupled channel model.

(2) Those above 3rd level are calculated with the DWBA model and are normalized to available experiments compiled in the reference data book [1].

(3) The parameters reported by Bruyere le Chatel group are adopted in the calculation.

(4) The levels adopted in the evaluation are those whose J^π are definitely identified in ref. 3.

(5) The outcome is compared with available DDX experiments and revised if necessary to reach a reasonable agreement between them.

5. There is problem to be confirmed among the members : The inelastic scattering cross sections can not be independently evaluated on other cross sections such as total, elastic cross sections and so on. The coordinator, however, use the data concerned in JENDL-3 as a matter of course.

6. Experiments are recommended between 1 and 2 MeV to evaluate more certain partial inelastic scattering cross sections.

References

1. Y.Kanda, N.Fujikawa and T.Kawano, "Database for ^{238}U Inelastic Scattering Cross Section Evaluation" to be published as JAERI-M report.
2. T.Fukahori et al., JAERI-M 92-053, INDC (JPN)-159/L
3. E.N.Shurshikov, Nucl.Data sheets 53, 601(1988)