Capture and Inelastic Scattering Cross Sections


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The proposal on how to deal with the task 1.4 was sent to the members on 14 February 1990 except two members whose names were not listed at the time. Taking accounts of the comments made on it from a few members, the task is planning to be advanced.

A. $^{235}$U capture cross section

1) Graphical comparison among ENDF/B-VI, JEF-2 and JENDL-3 is made with some measured data. This has been prepared in JAERI.

2) The evaluators are desired to make comments on their evaluation method. In particular, when their results are much different from the others, the evaluators must try to explain reasons. Some comments given by few members us will be discussed.

3) The experimentalists are desired to make comments why the major measurements gave higher capture cross sections below a few hundred keV while lower one is valid for integral experiments. It is pointed out by Sowerby and Moxon that the weights assigned to experiments, the normalization of experiments, and the use of the latest resonance parameter data are important.

4) Sensitivity analysis can be applied to discuss reliability of evaluated results. The sensitivity coefficients are acceptable from Salvatores' and JENDL groups.
5) On the basis of the above discussion, we will decide whether the recent low evaluated values are reasonable or not, and estimate the errors of the evaluated values.

6) More comments from evaluators and experimenters are being urged until the end of May, 1990 and they will be arranged and then sent to the members by the beginning of July, 1990. The comments about them will be invited by the beginning of October, 1990.

B. 238U inelastic scattering cross section

1) Graphical comparison is made among ENDF/B-VI, JEF-2 and JENDL-3 for each level with experimental data. This has been done in JAERI.

2) The status of experimental data including DDX will be reviewed by the experimentalists and some recommendation will be made which data are reliable.

3) The evaluator of each project will present detailed reports on their evaluations (method, code, parameters, etc.).

4) Effects of inelastic scattering cross section of 238U on reactor characteristics are strongly correlated with those of $\chi$ of main fissile nuclides. Hence the sensitivity analyses of these effects should be made by some reactor physicists.

5) On the basis of the above discussion, we will have clearer idea how to deal with the task further.

6) The time schedule of this problem is set in 6 months delayed from that of 238U capture cross section.

C. An observer

Prof. Tang Guoyou (Beijing Univ. Beijing, P. R. China) wishes to be an observer of this sub-group.

Y. Kanda
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Enclosed: Graphical comparison of $^{238}\text{U}(n,\gamma)$ cross section among ENDF/B-VI, JEF-2 and JENDL-3. (4 sheets)
Graphical comparison of $^{238}\text{U}(n,n')$ total cross section among ENDF/B-VI, JEF-2 and JENDL-3. (1 sheet)
$^{238}\text{U} \ (n,\gamma) \ \underline{Cross} \ \underline{Section}$

- JENDL-3
- ENDF/B-VI(PRE.)
- JEF-2

Cross Section (barns)

Neutron Energy (eV)