

Cross Section Evaluation Working Group Highlights

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The 49th meeting of the Cross Section Evaluation Working Group was held at Brookhaven National Laboratory, November 8-10, 2000. A total of 30 individuals participated from 11 U.S. organizations and one each from KAERI (S. Korea), NEA Data Bank (Paris), IAEA Nuclear Data Section (Vienna) and Technion (Israel).

Probably the most important result of the meeting was a consensus that a new version of the library, ENDF/B-VII, should be created. Despite the fact that no 'theme' could be identified for a new version of ENDF, it was felt that there would be sufficient new evaluations and new standards in three to four years to warrant an ENDF/B-VII. New evaluations would include photonuclear library, evaluations extended up to 150 MeV for both neutrons and protons, and other improvements such as U-238 scattering, new U-235 and capture gamma-ray spectra.

CSEWG approved the distribution of release 8 of ENDF/B-VI. The distribution of release 8 will be completed in April 2001. The new and revised materials contained in this release are listed in attachment. Most of the revisions deal with capture gamma ray spectra (LANL) and neutron cross-sections of fission products below the fast energy region (KAERI). Once the release 8 is completed, ENDF/B-VI will be kept frozen.

BNL agreed to prepare a Pre-ENDF/B-VII Web site. This site will contain information about the ENDF/B-VII development as well as access to evaluations completed after release 8.

Progress in three processing code systems was reported. LANL maintains two versions of NJOY, version 97 up to 20 MeV and version 99 for higher energies. ANL continues to improve its system, MC2. ORNL is testing its AMPX 2000 for production use.

Several format changes were discussed and approved. Among them are revision of decay data format, implementation of a new format for presenting atomic data relating to X-ray and electron emission arising from photon interactions, removal of a restriction in order to allow energy dependent scattering radius in ENDF/B, and a revision of Reich-Moore resonance format to allow for channel spin.

Interesting presentations were made on problems associated with Reich-Moore formalism for charged particles, Kalbach procedure for photonuclear angular distributions, methods to

accommodate isomeric states in inelastic scattering and summation rules for Pu-239 and Al-27, and 6-digit MAT numbers.

The meeting discussed in detail the Physor 2000 paper "Analysis of LWR Benchmarks Based on Different Methods and Nuclear Data Evaluations" by W. Bernmatt, M. Mattes et al. Several arguments were put forward suggesting that the calculated low k_{eff} for low-enriched uranium assemblies using the ENDF/B-VI revision 5 data is caused by over-absorption in U-238 rather than U-235 cross sections. Recommended was revision of U-238 capture and scattering data. A possibility was discussed to form a task force, perhaps in the form of a NEA WPEC subgroup, to resolve this issue.

Several interesting presentations on data testing were made, including the status of the International Criticality Safety Benchmark Evaluation Project, and analysis of Pu and high-enriched uranium experiments that include silicon dioxide.

The status and future of the International Standards Evaluation Project was discussed. Several critical measurements are currently in progress. It was noted with satisfaction that IAEA will launch a new CRP to address R-matrix and generalized least squares procedures to produce new standards for light nuclei.

A new Web site at Argonne National Laboratory now provides information on experimental resources for nuclear data studies in the United States, <http://www.td.anl.gov/nres/>.

Next Meeting:

The next CSEWG meeting will be held at Brookhaven National Laboratory on November 5-8, 2001. Two extra events are planned to mark this 50-th meeting, a symposium 'CSEWG in Retrospective' will be held, followed by a banquet. CSEWG alumni and present members would be invited to contribute papers on the history of CSEWG to the seminar.

Attachment

Contents of ENDF/B-VI Release 8

Neutron sublibrary

Material	Source
Be9	LANL: P. Young
N14	LANL: P. Young
O16	LANL: P. Young
F19	LANL: P. Young
Na23	LANL: P. Young
Mg	LANL: P. Young
Al27	LANL: P. Young
Si29	ORNL: N. Larson
Cl35	LANL: P. Young
Cl37	LANL: P. Young
K	LANL: P. Young
Sc45	LANL: P. Young
Cr50	LANL: P. Young
Cr52	LANL: P. Young
Cr53	LANL: P. Young
Cr54	LANL: P. Young
Mn55	LANL: P. Young
Fe-isot	LANL: P. Young
Ni-isot	LANL: P. Young
Cu63	LANL: P. Young
Cu65	LANL: P. Young
Zr	ANL: A.B. Smith
Mo95	KAERI: Oh
Tc99	KAERI: Chang
Ru101	KAERI: Oh
Rh103	KAERI: Chang
Pd105	KAERI: Oh
Ag109	KAERI: Oh
Sn120	NNDC: V. McLane
Sn122	NNDC: V. McLane
Sn124	NNDC: V. McLane
Sb121	ANL: A.B. Smith
Sb123	ANL: A.B. Smith

Neutron sublibrary

Material	Source
Xe131	KAERI: Oh
Nd143	KAERI: Chang
Nd145	KAERI: Chang
Sm147	KAERI: Oh
Sm150	KAERI: Oh
Sm151	KAERI: Oh
Sm152	KAERI: Oh
Gd155	KAERI: Chang
Gd157	KAERI: Oh
Pa232	ORNL: R.Q. Wright
U232	ORNL: R.Q. Wright
Np236	ORNL: R.Q. Wright

Other libraries

Decay	LANL: T. England
EEDL	LLNL: D. Cullen
EPDL	LLNL: D. Cullen
EADL	LLNL: D. Cullen