# Nuclear Structure and Decay Data Evaluations and Related Activities of the Idaho Group

for report to the meeting of the

U. S. Nuclear Data Program
April 18-20, 2001 at Brookhaven National Laboratory

## 1. Mass-chain Evaluations

Within the Nuclear Structure and Decay Data Evaluation Network, the Idaho Group has the evaluation responsibility for the twelve mass chains 87 and 153-163. The participants in this work are R. G. Helmer and C. W. Reich. Since the last Network meeting in April 2000, the complete evaluation for A=161 has been carried out, added to ENSDF, and published in Nuclear Data Sheets. We are currently working on A=87 and 156.

The current status of our twelve A chains is as follows:

| Mass | Last publication date | Updated nuclides |
|---|---|---|
| 87 | 2/1991 | |
| 153 | 2/1998 | |
| 154 | 10/1998 | |
| 155 | 4/1994 | |
| 156 | 1/1992 | 4 |
| 157 | 6/1996 | 1 |
| 158 | 3/1996 | |
| 159 | 5/1994 | |
| 160 | 8/1996 | |
| 161 | 8/2000 | |
| 162 | 7/1999 | |
| 163 | 1/2000 | |

## II. Nuclide Evaluations

Several years it was decided that the currentness of ENSDF would be improved by encouraging the evaluation of the data for individual nuclides. In response to a priority listing of nuclides, $^{156}$Er has been evaluated, added to ENSDF, and published in Nuclear Data Sheets.

## III. Decay Data Evaluation Project, DDEP

R. G. Helmer has been the coordinator of an international group that is carrying out evaluations of decay data for a set of nuclides that are important for several applications. This group includes non-ENSDF evaluators from France, Germany, Russia, Spain, and the United Kingdom, along with ENSDF evaluators E. Browne and J. K. Tuli. Mr. Helmer organized and chaired a meeting of this group in Braunschweig, Germany in June 2000. The DDEP is the main contributor to a current

International Atomic Energy Agency, IAEA, Coordinated Research Program, CRP, on X-ray and Gamma-ray Standards for Detector Calibration.

This year we have supplied final evaluations for the decay of $^{24}$Na, $^{46}$Sc, $^{51}$Cr, $^{54}$Mn, and $^{153}$Gd, as well as draft evaluations for $^{7}$Be and $^{153}$Sm.

IV. Coordinating Activities

R. G. Helmer, Chairman of the Working Group on Nuclear Structure and Decay Data Evaluations, has been involved in the planning for this US NDP meeting.

C. W. Reich attended the international Network meeting in Vienna in December 2000. He reported on the need to reconsider how 2nd forbidden non-unique beta spectrum shapes are presently treated in ENSDF. He presented information showing that the measured shapes of these transitions differ significantly from those assumed (namely, allowed) in the ENSDF processing codes. This affects the computed average beta energies and logft values.

V. Related Activities

C. W. Reich was an active participant in the Subcommittee created at the 1998 international Network meeting to revise the JPI assignment rules given in the Nuclear Data Sheets. He was assigned the lead responsibility for preparing the revisions to these rules.

R. G. Helmer is a member of an IAEA CRP to evaluate decay data for nuclides used in the efficiency calibration of Ge semiconductor gamma-ray detectors. This CRP will use the methodology and results of the above DDEP.