MANREAD – Minor actinide nuclear reaction data Status

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MANREAD

- Co-ordinated Research Project Nuclear Data Section IAEA
- Started by A. Mengoni
- Currently co-ordinated by N. Oțuka
- CRP term is finished
- Report is being assembled
Simplified objectives

• Assess status of Minor actinide reaction data
• Outlook for improvement
Components

- Check of available experimental data
- Reports from recent and ongoing experiments
- A few experiments included: Budapest Am-241(n,g), Athens Am-241(n,2n), Troisk lead slowing down spectrometer for Cm fission
- Feedback from evaluations: JAEA, CIAE, IPPE, Minsk
Example assessment: $^{241}\text{Am}(n,g)$ RI

Y. Nagai
Example measurement: fission LSDS

Fursov

\[ \text{Example measurement: fission LSDS} \]

\[ \text{Fursov} \]
Example recent experiments
IRMM, CEA

\[ ^{241}\text{Am}(n,2n)^{240}\text{Am} \]
Example measurements

$n_{\text{TOF}}, \ 237\text{Np}(n,g)$

Figure 12: The $^{237}\text{Np}$ capture cross section measured at $n_{\text{TOF}}$. On the left panel, the average capture cross section from 1 to 500 eV is compared to the values from previous measurements and evaluations. In the right panel, the cross section in the Unresolved Resonance Region, from 600 eV to 2 keV, is shown, together with previous results and with JEFF-3.1 evaluation.
Example experiments: $^{245}\text{Cm}$

N_TOF

IRMM
Outlook experiments

ANNRI/J-PARC
N_TOF EAR-2
LANL Stacking
NFS
FRANZ

Figure 2.23: Side and top view of the ANNRI (copy from ref. [86])
Examples Evaluation (Han, CIAE)
Examples evaluation (Iwamoto, JAEA)
Summary

Final report being drafted
Significant effort on MA is ongoing
Promise for improvement
Some very difficult points

Cm capture
MA inelastic
Accuracy of fission

Promising theoretical developments
Good recent experimental effort

ANDES:
Pu-240, Pu-242 (n,f)
Am-241(n,g)
Pu-238(n,f) and Cm(n,g) by surrogate (feasibility)