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WPEC Subgroup C
HPRL
High Priority Request List for Nuclear Data

www.oecd-nea.org/dbdata/hprl

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NUCLEAR ENERGY AGENCY

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WPEC Subgroup C / HPRL

① Review of the SG-C EG and HPRL status

② Discussion of entry status

③ Deliverables and ND2019 contribution

EG-HPRL (SG-C) membership

- Expert members: experimentalists, evaluators, and (too few) users
- Representatives of nuclear data evaluation projects or countries
  - ENDF: Y. Danon (RPI)
  - JEFF: E. Dupont (CEA), A. Plompen (EC-JRC-Geel), G. Rimpault (CEA)
  - JENDL: O. Iwamoto (JAEA), N. Iwamoto (JAEA), T. Iwasaki (Tohoku), A. Kimura (JAEA), K. Yokoyama (JAEA)
  - BROND: V. Pronyaev (IPPE), V. Koscheev (IPPE)
  - CENDL: Zhigang Ge (CIAE), Xichao Ruan (CIAE), Sun Weili (IAPCM), Haicheng Wu (CIAE)
  - IAEA: R. Capote, A. Koning, A. Trkov
  - Korea: Young-Ouk Lee (KAERI)
  - Romania: A. Negret (IFIN-HH)
  - NEA: M. Fleming

NEA mailing lists

Two mailing lists managed by NEA

- wpec-sgc@oecd-nea.org - SG-C members + former members + anyone interested in SG-C activities (28 members in total, no moderator);
  more at https://www.oecd-nea.org/sympa/arc/wpec-sgc (password protected)
- hprl@oecd-nea.org - ND community, mainly ND producers (100+ members, moderated by NEA);
  more at https://www.oecd-nea.org/sympa/arc/hprl (no password)
- Both are available from the WPEC SG-C webpage
  https://www.oecd-nea.org/science/wpec/hprl

Please inform NEA or myself of any necessary update

HPRL database, tools and website

Hosted by NEA at www.oecd-nea.org/dbdata/hprl

- New features implemented since June 2018
  - Direct access to the subcategories SPQ-dosimetry and SPQ-standards
  - Upload of the contents of the "feedback table" for each entry:
    - Main recent references (experiments, theory/evaluation, validation)
    - Entry Status: "Work in progress", "Pending new evaluation or validation", and "Completed"
  - Archiving of "Completed" entries, which are no longer visible by default
- Remaining features to discuss and implement
  - Implementation of the "Status" and "Status date" fields in the database, search engine and search output
  - Possibility to have multiple requesters for a given entry (e.g. "11G+")
  - New features could be implemented in the context of the NEA website upgrade (see talk by NEA)

Entry-related list of main recent references

Updates in February (done) and June 2019 (ongoing)

- F. Belloni, et al., Neutron induced fission cross section measurements of **^{240}Pu** and **^{242}Pu**, EPJ Conf. 146 (2017) 04062
- M. Schulc, et al., Investigation of ^{127}I(n,2n)^{126}I and **^{23}Na(n,2n)^{22}Na** reactions using ^{252}Cf neutron source, ASME J of Nuclear Rad Sci. 5 (2019) 030918
- M. Schulc, et al., Validation of selected **(n,2n) dosimetry reactions** in IRDFF-1.05 library, Applied Radiation and Isotopes 143 (2019) 132
- M. Mastromarco, et al. (n_TOF Collaboration), Cross section measurements of **^{155,157}Gd(n,g)** induced by thermal and epithermal neutrons, EPJ A 55 (2019) 9
- T. Koglër, et al., Fast-neutron-induced fission cross section of **^{242}Pu** measured at the neutron time-of-flight facility nELBE, PRC 99 (2019) 024604
- E. Pirovano, et al., Cross section and neutron angular distribution measurements of **neutron scattering on natural iron**, PRC 99 (2019) 024601

Recent entries

New entries since June 2018

- 2 High priority requests + 1 update
  - Bi-209(n,g) BR; Pu-239(n,tot)
  - Update of 11G (^{239}Pu alpha ratio) is approved but not yet online
- 1 SPQ-dosimetry requests to improve ^{239}Pu(n_{th},f) PFNS high-energy tail
  - 10 SACS of well-known high-threshold dosimetry reactions in ^{239}Pu PFNS

Completed entries

- U-238(n,g); Hf-nat(n,g); Np-237(n,f); Si-28(n,inl); Fe-56(n,xn); Au-197(n,tot); Cr-52(n,xd/t); Si-28(n,np) ⇢ as agreed in May 2018; recently archived
- 11G (^{239}Pu alpha ratio) pending upload of the update 11G → 11G+

Request candidates

Overlapping requests from IAEA (R. Capote)

- U-233 nubar between thermal and 5 eV (distributed, but not yet approved)
  overlapping with request #9 by A. Bidaud
- U-233 alpha xs ratio between thermal and 5 eV (not distributed yet),
  overlapping with request #9 by A. Bidaud

Possible additional requests

- Medical applications (on the basis on the latest recommendations from the IAEA TM on Nuclear Data for Medical Applications, Dec. 2018 + possible additions for n-induced reactions)
- Lack of data in the fast-range nubar (especially < 20 keV) for major fissile isotopes Pu-239,241 and U-233,235 (but no request so far)
- SG46 initiative on target accuracy requirements
  (update of SG26 recommendations)

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Entry status

- Entry status (agreed in May 2018)
  (1) Work in progress
  covers all experimental and theoretical activities
  (2) Pending new evaluation or validation
  for requests that have already stimulated a lot of activities, but are not completed yet because of the lack of new evaluation or validation
  (3) Completed (or Archived)
  for requests that have been satisfied or that are no longer relevant (consensus required)

- Caution: keep in mind impact on activities when closing an entry

Entry status

- Proposal to have *"Work in progress"* by default for all new entries
- Status for recent entries (2017-2019)
  - *Gd-155,157(n,g):* *"Pending new evaluation or validation"*
  - *Other entries:* *"Work in progress"*
- Status for the (37) older entries (< 2017)
  - ~ 20% *"Completed"*
  - ~ 80% *"Work in progress"* (most of them actually)
    "Pending new evaluation or validation" (for ^{206,207}Pb(n,inl))

Discussion concerning entry status

Proposals of entry status to be discussed further

- Set status as *"Pending new evaluation or validation"* ?
  - ID3,4: Pu-239 and U-235 PFGS
  - ID8: 1-H-2(n,el) DDX
  - ID14: Pu-242(n,g) (INDEN)
  - ID15: Am-241(n,g)
  - ID29: Na-23(n,inl) (INDEN)
  - ID35: Pu-241(n,f) (INDEN)
  - ID39: Pu-242(n,f) (INDEN)
- Set status as *"Completed"* ?
  - ID12: U-235(n,g)
  - ID21: Am-241(n,f)

INDEN list of nuclides with the highest priority (12/2017):

Light elements:
N-14,15; Be-9; Na-23

Structural elements:
Co-59; Ni-58 (to check other Ni isotopes)

Actinides:
Pu-238,240,241,242

Re-evaluations (due to identified issues):
Fe-56,57 (issues in elastic cross sections and angular distributions from 0.85 up to 6 MeV)
Pu-239 (use of newly recommended thermal PFNS, thermal nubar, resonance region)
U-238 (14 MeV leakage issues traceable to inelastic spectra, PFNS for En=5-8 MeV)

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Current mandate

SG-C current mandate runs until June 2020

Deliverables

- A report on the status of all requests describing completed activities and outlook.
- ✓ An up-to-date online version of the "High Priority Request List for Nuclear Data".

My opinion on subgroup reports

- Time consuming and no/little added value for the authors (low impact, no/little citations, not indexed in major databases)

My proposal for SG-C

- For the mandate: deliver a NEA report essentially based on the ND paper + a dump of the HPRL web pages in appendix; do that every 3 years
- If worth the time, but probably more valuable for the authors, write a publication in a refereed journal (Nuclear Data Sheets of Jan 2021?)

ND2019 contribution

Co-authors based on the ones already proposed for the abstract

- Active SG-C members
- NEA staff
- Users that submitted requests in the past 10 years (i.e. all entries post SG26)

Contents similar to the ND presentation (+ more details on completed requests)

- History of request lists
- HPRL governance
- HPRL website
- Example of completed requests, ^{197}Au(n,tot)? ^{238}U(n,g)?
- Current requests
- Latest news
- Conclusion

Still to be written… draft for SG-C and co-authors by mid-July...
⇢ ND2019 submission deadline is 1st of August

Thank you for your attention!

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