

DE LA RECHERCHE À L'INDUSTRIE



WPEC Subgroup C —— HPRL —— High Priority Request List for Nuclear Data

www.oecd-nea.org/dbdata/hprl

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- 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)
- hpri@oecd-nea.org - ND community, mainly ND producers (100+ members, moderated by NEA); more at <https://www.oecd-nea.org/sympa/arc/hpri> (no password)
- Both are available from the WPEC SG-C webpage <https://www.oecd-nea.org/science/wpec/hpri>

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 $^{127}\text{I}(n,2n)^{126}\text{I}$ and $^{23}\text{Na}(n,2n)^{22}\text{Na}$ 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 $^{155,157}\text{Gd}(n,g)$ induced by thermal and epithermal neutrons, EPJ A 55 (2019) 9
- T. Koglör, 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 $^{239}\text{Pu}(n_{\text{th}},f)$ 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 $^{206,207}\text{Pb}(n,\text{inl})$)

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)

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 $E_n=5-8$ MeV)

➤ Set status as “*Completed*” ?

- ID12: U-235(n,g)
- ID21: Am-241(n,f)



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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, $^{197}\text{Au}(n,\text{tot})?$ $^{238}\text{U}(n,g)?$
- 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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