# EXFOR News (January 2018)

## New experimental data available from Nuclear Reaction Data Centres

EXFOR [1] is a world-wide data library for experimental neutron, charged-particle and photon induced reaction data compiled by the International Network of the Nuclear Reaction Data Centres (NRDC)[a] co-ordinated by the IAEA Nuclear Data Section. Regularly updated web retrieval databases are available at IAEA-NDS as well as NNDC, NEADB, JAEA, JCPRG and CDFE.

This News lists newly created EXFOR entries as well as revised EXFOR entries where new data subentries are added. Entries from articles pubslished in past 10 years are flagged by asterisks (*). Please send an email to N.Otsuka (NRDC Coordinator n.otsuka@iaea.org) for inclusion in the EXFOR News distribution list as well as any question on EXFOR.

[1] N.Otuka et al., Nucl.Data.Sheets **120**(2014)272.

### Quantity codes

| | | | |
|---|---|---|---|
| ALF | $\alpha$-value ($\sigma_{\rm capt}/\sigma_{\rm fis}$) | FY | Fission product yield |
| AMP | Length or amplitude | INT | Cross section integral over incident energy |
| CHG | Fragment charge | KE | Kinetic energy |
| CS | Cross section | KER | Kerma factor |
| CSN | Differential with respect to number of particles | MLT | Multiplicity |
| CSP | Partial cross section | NQ | Nuclear quantity |
| CST | Temperature dependent cross section | NU | Fission neutron multiplicity $\bar{\nu}$ |
| D3A | Triple differential d$\Omega_1$/d$\Omega_2$/d$E'$ | NUD | Delayed fission neutron multiplicity $\bar{\nu}_d$ |
| D3E | Triple differential d$\Omega$/d$E'_1$/d$E'_2$ | NUF | Fragment neutrons |
| D4A | Quadruple diff. d$\Omega_1$/d$\Omega_2$/d$E'_1$/d$E'_2$ | POL | Polarization |
| DA | Differential d/d$\Omega$ | POD | Differential polarization |
| DAA | Double differential d$\Omega_1$/d$\Omega_2$ | PY | Product yield (other than fission) |
| DAE | Double differential d$\Omega$/d$E'$ | RI | Resonance integral |
| DAP | Partial differential d/d$\Omega$ | RP | Resonance parameter |
| DAT | Temperature-dependent Legendre coefficient | RR | Reaction rate |
| DE | Differential d/d$E'$ | SIF | Self indication |
| DEP | Energy spectrum for specific group | SPC | Gamma spectrum |
| DP | Diff. by linear momentum of outgoing part. | TSL | Thermal scattering |
| DT | Diff. by 4-momentum transfer squared | TT | Thick target yield |
| ETA | $\eta$-value $\bar{\nu}\sigma_{\rm fis}/(\sigma_{\rm capt}+\sigma_{\rm fis})$ | TTD | Differential thick target yield, d/d$\Omega$ |
| EVL | Evaluation | TTP | Partial thick target yield |

### Special codes in outgoing particle field

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| abs | Absorption | fus | Fusion | sct | Scattering | tot | Total |
| el | Elastic | inel | Inelastic | tcx | Total charge changing | | |
| fis | Fission | non | Nonelastic | ths | Thermal scattering | | |

### Special codes in incident energy field

| | | | |
|---|---|---|---|
| Fast | Fast reactor spectrum average | Maxw | Maxwellian spectrum average |
| Fiss | Fission spectrum average | Spont | Spontaneous (for fission) |

[a] NNDC (USA), NEADB (France), NDS (Austria), CJD (Russia), CNDC (China), ATOMKI (Hungary), NDPCI (India), JAEA (Japan), JCPRG (Japan), KAERI (Korea), CDFE (Russia), CNPD (Russia), UkrNDC (Ukraine)

## 1 Hydrogen 1

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,tot | | ? | 2UK NIN | 4.6-03 | 3.5+02 | Jour | JP/CM,11,10229 | 99 | M.Celli+ | 23340 |
| * | $^{9}$C,el | $^{1}$H | ? | 1USATAM | 7.8+05 | 5.7+06 | Jour | PL/B,769,62 | 17 | J.Hooker+ | C2265 |
| * | $^{93}$Zr,x | Many | ? | 2JPNIPC | 9.8+09 | 9.8+09 | Jour | PTEP,2017,093D03 | 17 | S.Kawase+ | E2539 |
| | $^{238}$U,fis | | CS | 2GERGSI | 2.4+11 | 2.4+11 | Jour | NP/A,725,213 | 03 | M.Bernas+ | O1069 |

## 1 Hydrogen 2

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\gamma$,abs | | CS | 2ITYFRA | 3.6+08 | 1.1+09 | Jour | PL/B,309,5 | 93 | N.Bianchi+ | M0945 |
| | $\gamma$,$n$ | $^{1}$H | CS | 2BLGGHT | 7.0+06 | 1.9+07 | Jour | PR/C,45,860 | 92 | A.Degraeve+ | M0949 |
| * | $^{9}$Li,$p$ | $^{10}$Li | DAP | 1CANTMF | 1.0+08 | 1.0+08 | Jour | PRL,118,012701 | 17 | M.Cavallaro+ | C2256 |
| * | $^{93}$Zr,x | Many | ? | 2JPNIPC | 9.8+09 | 9.8+09 | Jour | PTEP,2017,093D03 | 17 | S.Kawase+ | E2539 |

## 1 Hydrogen 3

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $\alpha$,$\gamma$ | $^{7}$Li | ? | 4RUSTPI | 1.6+04 | 1.6+04 | Jour | FCY/L,14,366 | 17 | V.M.Bystritsky+ | F1325 |

## 1 Hydrogen

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,tot | | ? | 2GRCATH | 1.0-02 | 1.5+01 | Rept | EANDC(OR)-63L | 67 | M.Dritsa+ | 22613 |

## 2 Helium 3

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\gamma$,$n$+$p$ | $^{1}$H | CS | 2GERMNZ | 2.0+08 | 7.9+08 | Jour | NP/A,614,461 | 97 | G.Audit+ | M0944 |

## 2 Helium 4

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $^{33}$S,$p$ | $^{36}$Cl | ? | 1USANOT | 2.6+07 | 5.0+07 | Jour | PR/C,96,015803 | 17 | T.Anderson+ | C2268 |

## 3 Lithium 6

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,$p$ | $^{6}$He | ? | 2AUSIRK | 1.5+07 | 1.5+07 | Thes | SCHANTL | 70 | W.Schantl | 21846 |
| * | $d$,x | $^{7}$Be | CS | 4RUSEPA | 2.2+06 | 9.8+06 | Jour | IZV,81,(6),717 | 17 | L.N.Generalov+ | F1322 |

## 3 Lithium 7

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,$\gamma$ | $^{8}$Li | CS | 4RUSKUR | 2.8+05 | 2.8+05 | Jour | DOK,111,(2),331 | 56 | E.A.Koltypin+ | 40707 |
| | $p$,$n$+$^{3}$He | $^{4}$He | DAE | 1USAANL | 5.8+06 | 7.0+06 | Rept | ANL-NDM-53 | 80 | J.W.Meadows+ | C1124 |
| | $p$,$n$+$^{3}$He | $^{4}$He | ? | 1USAANL | 4.7+06 | 7.8+06 | Rept | ANL-NDM-53 | 80 | J.W.Meadows+ | C1124 |
| * | $p$,x | $^{7}$Be | CS | 4RUSEPA | 1.9+06 | 1.1+07 | Jour | IZV,81,(6),717 | 17 | L.N.Generalov+ | F1322 |
| * | $d$,2$n$ | $^{7}$Be | CS | 4RUSEPA | 8.4+06 | 9.8+06 | Jour | IZV,81,(6),717 | 17 | L.N.Generalov+ | F1322 |
| * | $d$,x | $^{7}$Be | CS | 4RUSEPA | 5.0+06 | 7.7+06 | Jour | IZV,81,(6),717 | 17 | L.N.Generalov+ | F1322 |

## 4 Beryllium 9

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\gamma$,tot | | CS | 2ITYFRA | 2.2+08 | 1.1+09 | Jour | NP/A,553,631C | 93 | M.Anghinolfi+ | M0943 |
| | $n$,$p$ | $^{9}$Li | ? | 2AUSIRK | 1.5+07 | 1.5+07 | Thes | SCHANTL | 70 | W.Schantl | 21846 |

## 5 Boron 10

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,x+$\alpha$ | inclusive | CS | 1USAINL | Fast | | Jour | NT,25,305 | 74 | H.Farrariv+ | 14300 |
| | $n$,x+$\alpha$ | inclusive | CS | 1USAAIF | Fast | | Jour | NT,25,305 | 74 | H.Farrariv+ | 14300 |

## 5 Boron 11

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,$p$ | $^{11}$Be | ? | 2AUSIRK | 1.5+07 | 1.5+07 | Thes | SCHANTL | 70 | W.Schantl | 21846 |

## 6 Carbon 12

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\gamma$,abs | | CS | 2ITYFRA | 3.6+08 | 1.2+09 | Jour | PL/B,309,5 | 93 | N.Bianchi+ | M0945 |
| | $\gamma$,tot | | CS | 2ITYFRA | 2.2+08 | 1.1+09 | Jour | NP/A,553,631C | 93 | M.Anghinolfi+ | M0943 |
| | $n$,inel | $^{12}$C | DAP | 2JPNJAE | 7.8+06 | 1.3+07 | Conf | 91JUELIC,,329 | 91 | K.Hasegawa+ | 23341 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| $\alpha$,$^{6}$Li | $^{10}$B | CSP | 1USAWAU | 4.2+07 | 4.2+07 | Jour | NP/A,188,430 | 72 | C.Rudy+ | C1093 |
| $\alpha$,$^{6}$Li | $^{10}$B | DAP | 1USAWAU | 4.2+07 | 4.2+07 | Jour | NP/A,188,430 | 72 | C.Rudy+ | C1093 |
| $\alpha$,$^{7}$Be | $^{9}$Be | CSP | 1USAWAU | 4.2+07 | 4.2+07 | Jour | NP/A,188,430 | 72 | C.Rudy+ | C1093 |
| $\alpha$,$^{7}$Be | $^{9}$Be | DAP | 1USAWAU | 4.2+07 | 4.2+07 | Jour | NP/A,188,430 | 72 | C.Rudy+ | C1093 |

## 7 Nitrogen 15

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Min | Max | | Ref Vol Page | | | |
| $n$,$p$ | $^{15}$C | ? | 2AUSIRK | 1.5+07 | 1.5+07 | Thes | SCHANTL | 70 | W.Schantl | 21846 |

## 8 Oxygen 16

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Min | Max | | Ref Vol Page | | | |
| $n$,$\alpha$ | $^{13}$C | DAP | 2JPNJAE | 1.0+07 | 1.2+07 | Conf | 91JUELIC,,329 | 91 | K.Hasegawa+ | 23341 |
| $n$,inel | $^{16}$O | DAP | 2JPNJAE | 1.2+07 | 1.2+07 | Conf | 91JUELIC,,329 | 91 | K.Hasegawa+ | 23341 |
| $n$,$p$ | $^{16}$N | ? | 2AUSIRK | 1.5+07 | 1.5+07 | Thes | SCHANTL | 70 | W.Schantl | 21846 |
| $\alpha$,$^{6}$Li | $^{14}$N | CSP | 1USAWAU | 4.2+07 | 4.2+07 | Jour | NP/A,188,430 | 72 | C.Rudy+ | C1093 |
| $\alpha$,$^{6}$Li | $^{14}$N | DAP | 1USAWAU | 4.2+07 | 4.2+07 | Jour | NP/A,188,430 | 72 | C.Rudy+ | C1093 |
| $\alpha$,$^{7}$Li | $^{13}$N | CSP | 1USAWAU | 4.2+07 | 4.2+07 | Jour | NP/A,188,430 | 72 | C.Rudy+ | C1093 |
| $\alpha$,$^{7}$Li | $^{13}$N | DAP | 1USAWAU | 4.2+07 | 4.2+07 | Jour | NP/A,188,430 | 72 | C.Rudy+ | C1093 |
| $\alpha$,$^{7}$Be | $^{13}$C | CSP | 1USAWAU | 4.2+07 | 4.2+07 | Jour | NP/A,188,430 | 72 | C.Rudy+ | C1093 |
| $\alpha$,$^{7}$Be | $^{13}$C | DAP | 1USAWAU | 4.2+07 | 4.2+07 | Jour | NP/A,188,430 | 72 | C.Rudy+ | C1093 |
| $\alpha$,$^{8}$Be | $^{12}$C | CSP | 1USAWAU | 4.2+07 | 4.2+07 | Jour | NP/A,188,430 | 72 | C.Rudy+ | C1093 |
| $\alpha$,$^{9}$Be | $^{11}$C | CSP | 1USAWAU | 4.2+07 | 4.2+07 | Jour | NP/A,188,430 | 72 | C.Rudy+ | C1093 |
| $\alpha$,$^{9}$Be | $^{11}$C | DAP | 1USAWAU | 4.2+07 | 4.2+07 | Jour | NP/A,188,430 | 72 | C.Rudy+ | C1093 |

## 8 Oxygen 18

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Min | Max | | Ref Vol Page | | | |
| $n$,$p$ | $^{18}$N | ? | 2AUSIRK | 1.5+07 | 1.5+07 | Thes | SCHANTL | 70 | W.Schantl | 21846 |

## 9 Fluorine 19

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Min | Max | | Ref Vol Page | | | |
| $\gamma$,abs | | CS | 2BLGGHT | 1.5+07 | 2.6+07 | Jour | PR/C,32,368 | 85 | E.Kerkhove+ | M0951 |
| $\gamma$,$p$ | $^{18}$O | CSP | 2BLGGHT | 1.3+07 | 2.6+07 | Jour | PR/C,32,368 | 85 | E.Kerkhove+ | M0951 |
| $\gamma$,x+$p$ | inclusive | CS | 2BLGGHT | 1.5+07 | 2.6+07 | Jour | PR/C,32,368 | 85 | E.Kerkhove+ | M0951 |
| $n$,$p$ | $^{19}$O | CS | 2AUSIRK | 1.5+07 | 1.5+07 | Thes | SCHANTL | 70 | W.Schantl | 21846 |

## 11 Sodium

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $p$,x | $^{18}$F | TT | 1USADAV | 2.1+07 | 6.8+07 | Jour | ARI,43,1005 | 92 | M.C.Lagunas-Solar+ | C0096 |

## 11 Sodium 23

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $n$,$p$ | $^{23}$Ne | ? | 2AUSIRK | 1.5+07 | 1.5+07 | Thes | SCHANTL | 70 | W.Schantl | 21846 |

## 12 Magnesium 24

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $\gamma$,$n$ | $^{23}$Mg | CS | 3AULAML | 1.2+07 | 2.4+07 | Jour | NP/A,159,81 | 70 | D.V.Webb+ | M0955 |
| $\gamma$,$n$ | $^{23}$Mg | INT | 3AULAML | | 2.4+07 | Jour | NP/A,159,81 | 70 | D.V.Webb+ | M0955 |
| $n$,$p$ | $^{24}$Na | ? | 2AUSIRK | 1.5+07 | 1.5+07 | Thes | SCHANTL | 70 | W.Schantl | 21846 |

## 12 Magnesium 25

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $n$,$p$ | $^{25}$Na | ? | 2AUSIRK | 1.5+07 | 1.5+07 | Thes | SCHANTL | 70 | W.Schantl | 21846 |

## 12 Magnesium 26

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $n$,$p$ | $^{26}$Na | ? | 2AUSIRK | 1.5+07 | 1.5+07 | Thes | SCHANTL | 70 | W.Schantl | 21846 |

## 13 Aluminium 27

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $\gamma$,abs | | CS | 2FR SAC | 3.3+08 | 3.3+08 | Jour | NP/A,431,573 | 84 | P.Carlos+ | M0947 |
| $n$,inel | $^{27}$Al | DAP | 2JPNJAE | 7.8+06 | 1.3+07 | Conf | 91JUELIC,,329 | 91 | K.Hasegawa+ | 23341 |
| $n$,$p$ | $^{27}$Mg | CS | 4UKRKHU | 1.4+07 | 1.4+07 | Jour | ZET,44,472 | 63 | G.P.Chursin+ | 40798 |
| $n$,x | $^{26}$Mg | DAP | 2JPNJAE | 1.3+07 | 1.3+07 | Conf | 91JUELIC,,329 | 91 | K.Hasegawa+ | 23341 |
| $n$,x+$\gamma$ | inclusive | DAE | 2JPNJAE | 7.8+06 | 1.3+07 | Conf | 91JUELIC,,329 | 91 | K.Hasegawa+ | 23341 |
| $n$,x+$\gamma$ | inclusive | DAP | 2JPNJAE | 7.8+06 | 1.3+07 | Conf | 91JUELIC,,329 | 91 | K.Hasegawa+ | 23341 |
| $p$,el | $^{27}$Al | DA | 3RUMCIP | 4.5+06 | 7.1+06 | Jour | NP/A,307,65 | 78 | M.Cenja+ | F0950 |

## 14 Silicon

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,x | $^{28}$Al | DAP | 2JPNJAE | 7.8+06 | 1.3+07 | Conf | 91JUELIC,,329 | 91 | K.Hasegawa+ | 23341 |
| | $n$,x | $^{28}$Si | DAP | 2JPNJAE | 7.8+06 | 1.2+07 | Conf | 91JUELIC,,329 | 91 | K.Hasegawa+ | 23341 |
| | $n$,x | $^{29}$Si | DAP | 2JPNJAE | 7.8+06 | 1.2+07 | Conf | 91JUELIC,,329 | 91 | K.Hasegawa+ | 23341 |
| | $n$,x+$\gamma$ | inclusive | DAE | 2JPNJAE | 7.8+06 | 1.3+07 | Conf | 91JUELIC,,329 | 91 | K.Hasegawa+ | 23341 |
| | $n$,x+$\gamma$ | inclusive | DAP | 2JPNJAE | 7.8+06 | 1.3+07 | Conf | 91JUELIC,,329 | 91 | K.Hasegawa+ | 23341 |

## 14 Silicon 28

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\gamma$,$\alpha$ | $^{24}$Mg | CSP | 3AULAML | 1.5+07 | 2.2+07 | Jour | NP,72,23 | 65 | P.H.Cannington+ | M0946 |
| | $\gamma$,$n$ | $^{27}$Si | CS | 3AULAML | 1.7+07 | 3.2+07 | Jour | NP/A,159,81 | 70 | D.V.Webb+ | M0955 |
| | $\gamma$,$n$ | $^{27}$Si | INT | 3AULAML | | 2.4+07 | Jour | NP/A,159,81 | 70 | D.V.Webb+ | M0955 |
| | $\gamma$,$p$ | $^{27}$Al | CSP | 3AULAML | 1.7+07 | 2.3+07 | Jour | NP,72,23 | 65 | P.H.Cannington+ | M0946 |
| | $n$,$p$ | $^{28}$Al | ? | 2AUSIRK | 1.5+07 | 1.5+07 | Thes | SCHANTL | 70 | W.Schantl | 21846 |
| * | $p$,x+$p$ | inclusive | DAE | 4RUSLIN | 1.0+09 | 1.0+09 | Jour | JEL,106,(2),69 | 17 | O.V.Miklukho+ | F1328 |

## 14 Silicon 29

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,$p$ | $^{29}$Al | ? | 2AUSIRK | 1.5+07 | 1.5+07 | Thes | SCHANTL | 70 | W.Schantl | 21846 |

## 14 Silicon 30

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,$p$ | $^{30}$Al | ? | 2AUSIRK | 1.5+07 | 1.5+07 | Thes | SCHANTL | 70 | W.Schantl | 21846 |

## 15 Phosphorus 30

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $p$,$\gamma$ | $^{31}$S | CS | 1USAMSU | 8.0+06 | 4.5+08 | Jour | PL/B,769,549 | 17 | A.Kankainen+ | C2267 |

## 15 Phosphorus 31

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $p$,el | $^{31}$P | DA | 3RUMCIP | 5.1+06 | 8.0+06 | Jour | NP/A,307,65 | 78 | M.Cenja+ | F0950 |

## 16 Sulphur 31

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $p,\gamma$ | | RP | 1USAANL | | | Jour | PR/C,96,035801 | 17 | L.Afanasieva+ | C2269 |
| * | $p,\gamma$ | $^{32}$Cl | RR | 1USAANL | | | Jour | PR/C,96,035801 | 17 | L.Afanasieva+ | C2269 |

## 16 Sulphur 34

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n,p$ | $^{34}$P | ? | 2AUSIRK | 1.5+07 | 1.5+07 | Thes | SCHANTL | 70 | W.Schantl | 21846 |

## 17 Chlorine 37

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n,p$ | $^{37}$S | ? | 2AUSIRK | 1.5+07 | 1.5+07 | Thes | SCHANTL | 70 | W.Schantl | 21846 |

## 19 Potassium 39

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n,2n$ | $^{38}$K | CS | 2UK BIA | 1.5+07 | 1.5+07 | Jour | JIN,32,3950 | 70 | A.J.Cox+ | 23339 |

## 19 Potassium 41

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n,p$ | $^{41}$Ar | CS | 2AUSIRK | 1.5+07 | 1.5+07 | Thes | SCHANTL | 70 | W.Schantl | 21846 |

## 20 Calcium 40

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n,p$ | $^{40}$K | CS | 2AUSIRK | 1.5+07 | 1.5+07 | Thes | SCHANTL | 70 | W.Schantl | 21846 |
| | $n,p$ | $^{40}$K | ? | 2AUSIRK | 1.5+07 | 1.5+07 | Thes | SCHANTL | 70 | W.Schantl | 21846 |

## 22 Titanium 46

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,x+$\gamma$ | inclusive | CSP | 2ZZZGEL | | 7.3+05 | Jour | PR/C,96,014621 | 17 | A.Olacel+ | 23346 |

## 22 Titanium 47

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,x+$\gamma$ | inclusive | CSP | 2ZZZGEL | | 1.8+06 | Jour | PR/C,96,014621 | 17 | A.Olacel+ | 23346 |

## 22 Titanium 48

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,inel | $^{48}$Ti | CS | 2ZZZGEL | | 1.0+06 | Jour | PR/C,96,014621 | 17 | A.Olacel+ | 23346 |
| * | $n$,inel | $^{48}$Ti | CSP | 2ZZZGEL | | 2.4+06 | Jour | PR/C,96,014621 | 17 | A.Olacel+ | 23346 |
| * | $n$,x+$\gamma$ | inclusive | CSP | 2ZZZGEL | | 3.3+06 | Jour | PR/C,96,014621 | 17 | A.Olacel+ | 23346 |
| * | $d$,x+$n$ | inclusive | DE | 4RUSFEI | 2.7+06 | 3.8+06 | Jour | YF,79,(2),95 | 16 | B.V.Zhuravlev+ | F1321 |

## 22 Titanium 49

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,inel | $^{49}$Ti | CS | 2ZZZGEL | | 1.4+06 | Jour | PR/C,96,014621 | 17 | A.Olacel+ | 23346 |
| * | $n$,x+$\gamma$ | inclusive | CSP | 2ZZZGEL | | 1.7+06 | Jour | PR/C,96,014621 | 17 | A.Olacel+ | 23346 |

## 22 Titanium 50

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,x+$\gamma$ | inclusive | CSP | 2ZZZGEL | | 1.6+06 | Jour | PR/C,96,014621 | 17 | A.Olacel+ | 23346 |

## 26 Iron

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,x | $^{56}$Fe | DAP | 2JPNJAE | 7.8+06 | 7.8+06 | Conf | 91JUELIC,,329 | 91 | K.Hasegawa+ | 23341 |
| | $n$,x+$\gamma$ | inclusive | DAE | 2JPNJAE | 7.8+06 | 1.3+07 | Conf | 91JUELIC,,329 | 91 | K.Hasegawa+ | 23341 |
| | $n$,x+$\gamma$ | inclusive | DAP | 2JPNJAE | 7.8+06 | 1.3+07 | Conf | 91JUELIC,,329 | 91 | K.Hasegawa+ | 23341 |

## 26 Iron 56

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $p$,x+$p$ | inclusive | DAE | 4RUSLIN | 1.0+09 | 1.0+09 | Jour | JEL,106,(2),69 | 17 | O.V.Miklukho+ | F1328 |

## 28 Nickel

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,x | $^{60}$Ni | DAP | 2JPNJAE | 1.2+07 | 1.3+07 | Conf | 91JUELIC,,329 | 91 | K.Hasegawa+ | 23341 |
| | $n$,x+$\gamma$ | inclusive | DAE | 2JPNJAE | 1.2+07 | 1.3+07 | Conf | 91JUELIC,,329 | 91 | K.Hasegawa+ | 23341 |
| | $n$,x+$\gamma$ | inclusive | DAP | 2JPNJAE | 1.2+07 | 1.3+07 | Conf | 91JUELIC,,329 | 91 | K.Hasegawa+ | 23341 |

## 28 Nickel 58

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,$\alpha$ | $^{55}$Fe | CS | 2GERJUL | 5.4+06 | 9.5+06 | Jour | NSE,88,(2),143 | 84 | S.M.Qaim+ | 21958 |
| | $n$,inel | $^{58}$Ni | DAP | 2JPNJAE | 1.2+07 | 1.3+07 | Conf | 91JUELIC,,329 | 91 | K.Hasegawa+ | 23341 |
| * | $^{6}$Li,fus | | CS | 1USANOT | 9.1+06 | 1.3+07 | Jour | PR/C,96,024616 | 17 | E.F.Aguilera+ | C2271 |
| * | $^{6}$Li,fus | $^{1}$H | CS | 1USANOT | 9.1+06 | 1.3+07 | Jour | PR/C,96,024616 | 17 | E.F.Aguilera+ | C2271 |
| * | $^{6}$Li,x+$p$ | inclusive | CS | 1USANOT | 9.1+06 | 1.3+07 | Jour | PR/C,96,024616 | 17 | E.F.Aguilera+ | C2271 |
| * | $^{6}$Li,x+$p$ | inclusive | DA | 1USANOT | 9.1+06 | 1.2+07 | Jour | PR/C,96,024616 | 17 | E.F.Aguilera+ | C2271 |

## 28 Nickel 60

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,$\gamma$ | $^{61}$Ni | CS | 1USAORL | 2.0+03 | 4.5+05 | Jour | PR/C,27,2556 | 83 | C.M.Perey+ | 12751 |

## 28 Nickel 62

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,$\alpha$ | $^{59}$Fe | CS | 2GERJUL | 6.4+06 | 9.5+06 | Jour | NSE,88,(2),143 | 84 | S.M.Qaim+ | 21958 |

## 29 Copper

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\gamma$,abs | | CS | 2FR SAC | 2.4+08 | 3.3+08 | Jour | NP/A,431,573 | 84 | P.Carlos+ | M0947 |
| | $n$,x+$\gamma$ | inclusive | DAE | 2JPNJAE | 1.2+07 | 1.3+07 | Conf | 91JUELIC,,329 | 91 | K.Hasegawa+ | 23341 |
| | $n$,x+$\gamma$ | inclusive | DAP | 2JPNJAE | 1.2+07 | 1.3+07 | Conf | 91JUELIC,,329 | 91 | K.Hasegawa+ | 23341 |
| | $p$,x | $^{18}$F | CS | 1USABNL | 1.0+09 | 3.0+09 | Jour | BAP,1,224 | 56 | J.Hudis+ | C1059 |

## 29 Copper 63

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\gamma$,$n$ | $^{62}$Cu | CS | 3AULAML | 1.1+07 | 2.4+07 | Jour | NP/A,122,177 | 68 | D.G.Owen+ | M0953 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,inel | $^{63}$Cu | DAP | 2JPNJAE | 1.2+07 | 1.3+07 | Conf | 91JUELIC,,329 | 91 | K.Hasegawa+ | 23341 |
| * | $d$,$\gamma$ | $^{65}$Zn | CS | 4RUSEPA | 2.9+06 | 4.0+06 | Jour | IZV,81,(6),717 | 17 | L.N.Generalov+ | F1322 |

## 29 Copper 65

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,inel | $^{65}$Cu | DAP | 2JPNJAE | 1.2+07 | 1.2+07 | Conf | 91JUELIC,,329 | 91 | K.Hasegawa+ | 23341 |
| * | $p$,$n$ | $^{65}$Zn | CS | 4RUSEPA | 2.4+06 | 1.2+07 | Jour | IZV,81,(6),717 | 17 | L.N.Generalov+ | F1322 |
| * | $d$,$2n$ | $^{65}$Zn | CS | 4RUSEPA | 4.7+06 | 1.1+07 | Jour | IZV,81,(6),717 | 17 | L.N.Generalov+ | F1322 |

## 30 Zinc 64

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\gamma$,$n$ | $^{63}$Zn | CS | 3AULAML | 1.2+07 | 2.3+07 | Jour | NP/A,122,177 | 68 | D.G.Owen+ | M0953 |

## 32 Germanium 74

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,$\alpha$ | $^{71}$Zn | CS | 1USATNL | 1.5+07 | 1.5+07 | Jour | PR/C,95,054605 | 17 | Meghabhike+ | 14472 |
| * | $n$,$\gamma$ | $^{75}$Ge | CS | 1USATNL | 3.8+05 | 7.4+06 | Jour | PL/B,741,150 | 15 | M.Bhike+ | 14469 |

## 32 Germanium 76

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,$2n$ | $^{75}$Ge | CS | 1USATNL | 9.9+06 | 1.5+07 | Jour | PR/C,95,054605 | 17 | Meghabhike+ | 14472 |
| * | $n$,$\gamma$ | $^{77}$Ge | CS | 1USATNL | 3.8+05 | 1.5+07 | Jour | PL/B,741,150 | 15 | M.Bhike+ | 14469 |

## 33 Arsenic 84

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0,B- | $^{84}$Se | NUD | 2GERMNZ | Spont | | Jour | JIN,35,1407 | 73 | J.-V.Kratz+ | 20521 |

## 33 Arsenic 85

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0,B- | $^{85}$Se | NUD | 2GERMNZ | Spont | | Jour | JIN,35,1407 | 73 | J.-V.Kratz+ | 20521 |

## 33 Arsenic 86

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0,B- | $^{86}$Se | NUD | 2GERMNZ | Spont | | Jour | JIN,35,1407 | 73 | J.-V.Kratz+ | 20521 |

## 35 Bromine

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $^{12}$C,x+$\alpha$ | inclusive | CS | 4ZZZDUB | | | Jour | YF,80,(4),338 | 17 | V.V.Belaga+ | F1326 |

## 35 Bromine 87

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0,B- | $^{87}$Kr | NUD | 2GERMNZ | Spont | | Jour | NP/A,317,335 | 79 | K.-L.Kratz+ | 23241 |
| | 0,B- | $^{87}$Kr | ? | 2GERMNZ | Spont | | Jour | NP/A,317,335 | 79 | K.-L.Kratz+ | 23241 |

## 37 Rubidium 92

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0,B- | $^{92}$Sr | NUD | 2ZZZCER | Spont | | Prog | MAINZ-78,27 | 79 | A.Schroeder+ | 23345 |

## 37 Rubidium 93

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0,B- | $^{93}$Sr | NUD | 2FR ILL | Spont | | Jour | ZP/A,312,43 | 83 | K.-L.Kratz+ | 23242 |

## 37 Rubidium 94

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0,B- | $^{93}$Sr | NUD | 2FR ILL | Spont | | Jour | ZP/A,312,43 | 83 | K.-L.Kratz+ | 23242 |
| | 0,B- | $^{93}$Sr | ? | 2FR ILL | Spont | | Jour | ZP/A,312,43 | 83 | K.-L.Kratz+ | 23242 |
| | 0,B- | $^{94}$Sr | NUD | 2FR ILL | Spont | | Jour | ZP/A,312,43 | 83 | K.-L.Kratz+ | 23242 |

## 37 Rubidium 95

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,B- | $^{94}$Sr | ? | 2FR ILL | Spont | | Jour | ZP/A,312,43 | 83 | K.-L.Kratz+ | 23242 |
| 0,B- | $^{95}$Sr | NUD | 2FR ILL | Spont | | Jour | ZP/A,312,43 | 83 | K.-L.Kratz+ | 23242 |

## 37 Rubidium 96

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Min | Max | | Ref Vol Page | | | |
| 0,B- | $^{96}$Sr | NUD | 2FR ILL | Spont | | Jour | ZP/A,312,43 | 83 | K.-L.Kratz+ | 23242 |

## 37 Rubidium 97

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Min | Max | | Ref Vol Page | | | |
| 0,B- | $^{97}$Sr | NUD | 2FR ILL | Spont | | Jour | ZP/A,312,43 | 83 | K.-L.Kratz+ | 23242 |
| 0,B- | $^{97}$Sr | NUD | 2ZZZCER | Spont | | Prog | MAINZ-78,27 | 79 | A.Schroeder+ | 23345 |

## 37 Rubidium 98

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Min | Max | | Ref Vol Page | | | |
| 0,B- | $^{98}$Sr | NUD | 2ZZZCER | Spont | | Prog | MAINZ-78,27 | 79 | A.Schroeder+ | 23345 |

## 38 Strontium 88

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Min | Max | | Ref Vol Page | | | |
| $p$,$\gamma$ | $^{89}$Y | CSP | 4ZZZDUB | 2.1+06 | 3.6+06 | Jour | NP/A,378,293 | 82 | A.Dygo+ | F1327 |

## 39 Yttrium 89

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Min | Max | | Ref Vol Page | | | |
| 0,0 | | NQ | 4ZZZDUB | Spont | | Jour | NP/A,378,293 | 82 | A.Dygo+ | F1327 |
| $\gamma$,$p$ | $^{88}$Sr | CS | 2BLGGHT | 1.4+07 | 2.4+07 | Jour | PR/C,30,1182 | 84 | E.Vancamp+ | M0954 |
| $\gamma$,$p$ | $^{88}$Sr | CSP | 2BLGGHT | 1.3+07 | 2.5+07 | Jour | PR/C,30,1182 | 84 | E.Vancamp+ | M0954 |
| $p$,$\gamma$ | $^{90}$Zr | CSP | 4ZZZDUB | 2.6+06 | 3.3+06 | Jour | NP/A,378,293 | 82 | A.Dygo+ | F1327 |

## 40 Zirconium

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Min | Max | | Ref Vol Page | | | |
| $\gamma$,abs | | CS | 2FR SAC | 2.4+08 | 3.3+08 | Jour | NP/A,431,573 | 84 | P.Carlos+ | M0947 |

## 40 Zirconium 90

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0,0 | | NQ | 4ZZZDUB | Spont | | Jour | NP/A,378,293 | 82 | A.Dygo+ | F1327 |
| | $p$,$\gamma$ | $^{91}$Nb | CSP | 1USAKTY | 2.0+06 | 5.7+06 | Jour | PR/C,35,1265 | 87 | C.E.Laird+ | C1052 |
| | $p$,inel | $^{90}$Zr | CSP | 1USAKTY | 4.2+06 | 5.7+06 | Jour | PR/C,35,1265 | 87 | C.E.Laird+ | C1052 |

## 44 Ruthenium

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $p$,x | $^{96}$Tc | CS | 1CANCAN | 7.2+06 | 1.7+07 | Jour | JLCR,60,S324 | 17 | K.Gagnon+ | C2274 |
| * | $p$,x | $^{99}$Tc | CS | 1CANCAN | 9.2+06 | 1.7+07 | Jour | JLCR,60,S324 | 17 | K.Gagnon+ | C2274 |
| * | $p$,x | $^{95}$Ru | CS | 1CANCAN | 1.3+07 | 1.7+07 | Jour | JLCR,60,S324 | 17 | K.Gagnon+ | C2274 |
| * | $p$,x | $^{97}$Ru | CS | 1CANCAN | 1.3+07 | 1.7+07 | Jour | JLCR,60,S324 | 17 | K.Gagnon+ | C2274 |
| * | $p$,x | $^{103}$Ru | CS | 1CANCAN | 1.3+07 | 1.7+07 | Jour | JLCR,60,S324 | 17 | K.Gagnon+ | C2274 |
| * | $p$,x | $^{96}$Rh | CS | 1CANCAN | 7.2+06 | 1.7+07 | Jour | JLCR,60,S324 | 17 | K.Gagnon+ | C2274 |
| * | $p$,x | $^{97}$Rh | CS | 1CANCAN | 7.2+06 | 1.7+07 | Jour | JLCR,60,S324 | 17 | K.Gagnon+ | C2274 |
| * | $p$,x | $^{98}$Rh | CS | 1CANCAN | 7.2+06 | 1.7+07 | Jour | JLCR,60,S324 | 17 | K.Gagnon+ | C2274 |
| * | $p$,x | $^{99}$Rh | CS | 1CANCAN | 7.2+06 | 1.7+07 | Jour | JLCR,60,S324 | 17 | K.Gagnon+ | C2274 |
| * | $p$,x | $^{100}$Rh | CS | 1CANCAN | 7.2+06 | 1.7+07 | Jour | JLCR,60,S324 | 17 | K.Gagnon+ | C2274 |
| * | $p$,x | $^{101}$Rh | CS | 1CANCAN | 7.2+06 | 1.7+07 | Jour | JLCR,60,S324 | 17 | K.Gagnon+ | C2274 |
| * | $p$,x | $^{102}$Rh | CS | 1CANCAN | 7.2+06 | 1.6+07 | Jour | JLCR,60,S324 | 17 | K.Gagnon+ | C2274 |

## 44 Ruthenium 100

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,$\gamma$ | $^{101}$Ru | CS | 1USAORL | 3.0+03 | 7.0+05 | Jour | NSE,73,174 | 80 | R.L.Macklin+ | 10875 |

## 44 Ruthenium 101

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,$\gamma$ | $^{102}$Ru | CS | 1USAORL | 3.0+03 | 7.0+05 | Jour | NSE,73,174 | 80 | R.L.Macklin+ | 10875 |

## 44 Ruthenium 102

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,$\gamma$ | $^{103}$Ru | CS | 1USAORL | 3.0+03 | 6.0+05 | Jour | NSE,73,174 | 80 | R.L.Macklin+ | 10875 |

## 44 Ruthenium 104

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n,\gamma$ | $^{105}$Ru | CS | 1USAORL | 3.0+03 | 7.0+05 | Jour | NSE,73,174 | 80 | R.L.Macklin+ | 10875 |

## 45 Rhodium 103

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n,\gamma$ | $^{104}$Rh | CS | 1USAORL | 3.0+03 | 7.0+05 | Jour | NSE,73,174 | 80 | R.L.Macklin+ | 10875 |
| | $p,\gamma$ | $^{104}$Pd | CS | 2GERBOC | 3.0+06 | 4.9+06 | Jour | PR/C,76,015802 | 07 | A.Spyrou+ | O1534 |

## 46 Palladium 104

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n,\gamma$ | $^{105}$Pd | CS | 1USAORL | 3.0+04 | 3.0+04 | Jour | NSE,71,182 | 79 | R.L.Macklin+ | 10868 |

## 46 Palladium 105

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n,\gamma$ | $^{106}$Pd | CS | 1USAORL | 3.0+04 | 3.0+04 | Jour | NSE,71,182 | 79 | R.L.Macklin+ | 10868 |

## 46 Palladium 106

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n,\gamma$ | $^{107}$Pd | CS | 1USAORL | 3.0+04 | 3.0+04 | Jour | NSE,71,182 | 79 | R.L.Macklin+ | 10868 |

## 47 Silver

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $p$,x | $^{18}$F | CS | 1USABNL | 1.0+09 | 3.0+09 | Jour | BAP,1,224 | 56 | J.Hudis+ | C1059 |
| * | $^{12}$C,x+$\alpha$ | inclusive | CS | 4ZZZDUB | | | Jour | YF,80,(4),338 | 17 | V.V.Belaga+ | F1326 |

## 47 Silver 107

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n,2n$ | $^{106}$Ag | CS | 4UKRKHU | 1.4+07 | 1.4+07 | Jour | ZET,44,472 | 63 | G.P.Chursin+ | 40798 |

## 47 Silver 109

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,2$n$ | $^{108}$Ag | CS | 4UKRKHU | 1.4+07 | 1.4+07 | Jour | ZET,44,472 | 63 | G.P.Chursin+ | 40798 |

## 48 Cadmium 111

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $\gamma$,inel | $^{111}$Cd | CS | 4RUSJIA | | 8.0+06 | Jour | YF,80,423 | 17 | V.G.Nedorezov+ | M0941 |

## 49 Indium 113

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $\gamma$,inel | $^{113}$In | CS | 4RUSJIA | | 8.0+06 | Jour | YF,80,423 | 17 | V.G.Nedorezov+ | M0941 |

## 49 Indium 115

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $\gamma$,inel | $^{115}$In | CS | 4RUSJIA | | 8.0+06 | Jour | YF,80,423 | 17 | V.G.Nedorezov+ | M0941 |

## 50 Tin

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\gamma$,abs | | CS | 2FR SAC | 2.4+08 | 3.3+08 | Jour | NP/A,431,573 | 84 | P.Carlos+ | M0947 |

## 50 Tin 117

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,$\gamma$ | $^{118}$Sn | CS | 4ZZZDUB | 2.5-02 | 2.5-02 | Jour | SNP,39,665 | 84 | V.P.Alfimenkov+ | 40865 |

## 52 Tellurium 136

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0,B- | $^{136}$I | NUD | 2GERMNZ | Spont | | Prog | MAINZ-76,10 | 76 | M.Zendel+ | 23343 |

## 53 Iodine 137

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,B- | $^{137}$Xe | ? | 2GERMNZ | Spont | | Jour | NP/A,317,335 | 79 | K.-L.Kratz+ | 23241 |

## 53 Iodine 138

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,B- | $^{138}$Xe | NUD | 2GERMNZ | Spont | | Jour | NP/A,317,335 | 79 | K.-L.Kratz+ | 23241 |

## 55 Caesium 141

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,B- | $^{141}$Ba | NUD | 2FR ILL | Spont | | Prog | MAINZ-77,59 | 78 | H.Ohm+ | 23344 |

## 55 Caesium 142

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,B- | $^{142}$Ba | NUD | 2FR ILL | Spont | | Prog | MAINZ-77,59 | 78 | H.Ohm+ | 23344 |

## 55 Caesium 143

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,B- | $^{143}$Ba | NUD | 2FR ILL | Spont | | Prog | MAINZ-77,59 | 78 | H.Ohm+ | 23344 |

## 55 Caesium 144

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,B- | $^{144}$Ba | NUD | 2FR ILL | Spont | | Prog | MAINZ-77,59 | 78 | H.Ohm+ | 23344 |

## 55 Caesium 145

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,B- | $^{145}$Ba | NUD | 2FR ILL | Spont | | Prog | MAINZ-77,59 | 78 | H.Ohm+ | 23344 |

## 55 Caesium 146

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0,B- | $^{146}$Ba | NUD | 2FR ILL | Spont | | Prog | MAINZ-77,59 | 78 | H.Ohm+ | 23344 |

## 55 Caesium 147

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0,B- | $^{147}$Ba | NUD | 2ZZZCER | Spont | | Prog | MAINZ-78,27 | 79 | A.Schroeder+ | 23345 |

## 62 Samarium 154

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,0 | | RP | 2UK HAR | | | Jour | NP,5,294 | 58 | E.M.Bowey+ | 21118 |

## 64 Gadolinium 156

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $p$,$t$ | $^{154}$Gd | CSP | 1USABRK | 2.5+07 | 2.5+07 | Jour | EPJ/A,53,62 | 17 | J.M.Allmond+ | C2258 |
| * | $p$,$t$ | $^{154}$Gd | DAP | 1USABRK | 2.5+07 | 2.5+07 | Jour | EPJ/A,53,62 | 17 | J.M.Allmond+ | C2258 |

## 66 Dysprosium

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,$\gamma$ | | CS | 1USARPI | 1.0-02 | 2.0+01 | Jour | PNE,94,126 | 17 | R.C.Block+ | 14470 |
| * | $n$,tot | | CS | 1USARPI | 4.0+00 | 2.0+03 | Jour | PNE,94,126 | 17 | R.C.Block+ | 14470 |

## 66 Dysprosium 164

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,0 | | RP | 1USARPI | | | Jour | PNE,94,126 | 17 | R.C.Block+ | 14470 |
| * | $n$,$\gamma$ | $^{165}$Dy | CS | 1USARPI | 1.0-02 | 6.0+02 | Jour | PNE,94,126 | 17 | R.C.Block+ | 14470 |
| * | $n$,$\gamma$ | $^{165}$Dy | RI | 1USARPI | 5.0-01 | 2.0+07 | Jour | PNE,94,126 | 17 | R.C.Block+ | 14470 |
| * | $n$,tot | | CS | 1USARPI | 1.0-02 | 2.0+03 | Jour | PNE,94,126 | 17 | R.C.Block+ | 14470 |

## 67 Holmium 165

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Min | Max | | Ref Vol Page | | | |
| $\gamma$,abs | | CS | 2FR SAC | 2.4+08 | 3.3+08 | Jour | NP/A,431,573 | 84 | P.Carlos+ | M0947 |
| $\gamma$,x+$n$ | inclusive | CS | 3RUMBUC | 8.1+06 | 2.3+07 | Jour | NP/A,225,157 | 74 | D.Catana+ | M0948 |
| $p$,x | $^{150}$Dy | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{151}$Dy | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{150}$Ho | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{151}$Ho | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{152}$Ho | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{151}$Er | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{152}$Er | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{153}$Er | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{153}$Tm | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{154}$Tm | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |

## 69 Thulium 169

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Min | Max | | Ref Vol Page | | | |
| $p$,x | $^{150}$Dy | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{150}$Ho | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{151}$Ho | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{152}$Ho | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{151}$Er | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{152}$Er | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{153}$Er | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{153}$Tm | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{154}$Tm | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{155}$Yb | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |

## 73 Tantalum

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Min | Max | | Ref Vol Page | | | |
| $p$,x | $^{151}$Ho | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{152}$Ho | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{151}$Er | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{152}$Er | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{153}$Er | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{153}$Tm | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{154}$Tm | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{155}$Yb | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |

## 73 Tantalum 181

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Min | Max | | Ref Vol Page | | | |
| $\gamma$,abs | | CS | 2FR SAC | 2.4+08 | 3.3+08 | Jour | NP/A,431,573 | 84 | P.Carlos+ | M0947 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,el | | RP | 1USARPI | 2.0+04 | 6.0+05 | Jour | PR/C,96,014607 | 17 | B.J.Mcdermott+ | 14473 |
| * | $n$,$\gamma$ | | RP | 1USARPI | 2.0+04 | 6.0+05 | Jour | PR/C,96,014607 | 17 | B.J.Mcdermott+ | 14473 |
| * | $n$,$\gamma$ | $^{182}$Ta | CS | 1USARPI | 2.1+04 | 1.2+06 | Jour | PR/C,96,014607 | 17 | B.J.Mcdermott+ | 14473 |
| | $p$,x+$n$ | inclusive | PY | 1USAANL | 5.4+06 | 7.1+06 | Rept | ANL-NDM-53 | 80 | J.W.Meadows+ | C1124 |

## 74 Tungsten

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Min | Max | | Ref Vol Page | | | |
| $p$,x | Many | PY | 1USABNL | 1.0+09 | 1.0+09 | Jour | NSE,130,320 | 98 | C.E.Laird+ | C1057 |

## 75 Rhenium

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Min | Max | | Ref Vol Page | | | |
| $p$,x | $^{150}$Dy | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{150}$Ho | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{151}$Ho | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{152}$Ho | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{151}$Er | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{152}$Er | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{153}$Er | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{153}$Tm | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{154}$Tm | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{155}$Yb | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |

## 79 Gold 197

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Min | Max | | Ref Vol Page | | | |
| $\gamma$,fis | | CS | 2ITYFRA | 1.0+08 | 3.0+08 | Jour | PR/C,39,911 | 89 | V.Lucherini+ | M0952 |
| $p$,x | $^{18}$F | CS | 1USABNL | 1.0+09 | 3.0+09 | Jour | BAP,1,224 | 56 | J.Hudis+ | C1059 |
| $p$,x | $^{151}$Ho | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{152}$Ho | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{152}$Er | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{153}$Er | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{154}$Tm | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{175}$Pt | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{176}$Pt | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{177}$Pt | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{178}$Pt | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{183}$Au | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $p$,x | $^{183}$Hg | CS | 1CANTMF | 4.8+08 | 4.8+08 | Jour | CJP,58,891 | 80 | H.Dautet+ | C1094 |
| $^{6}$He,5$n$ | $^{198}$Tl | CS | 4ZZZDUB | 3.1+07 | 6.0+07 | Jour | JP/G,34,2297 | 07 | A.A.Kulko+ | F1320 |
| $^{6}$He,7$n$ | $^{196}$Tl | CS | 4ZZZDUB | 5.7+07 | 6.0+07 | Jour | JP/G,34,2297 | 07 | A.A.Kulko+ | F1320 |
| $^{6}$He,x | $^{196}$Au | CS | 4ZZZDUB | 3.8+07 | 5.7+07 | Jour | JP/G,34,2297 | 07 | A.A.Kulko+ | F1320 |
| $^{6}$He,x | $^{198}$Au | CS | 4ZZZDUB | 1.5+07 | 6.0+07 | Jour | JP/G,34,2297 | 07 | A.A.Kulko+ | F1320 |
| * | $^{13}$C,x | $^{192}$Au | CS | 1USABRK | 1.1+08 | 1.3+08 | Jour | PR/C,96,024602 | 17 | B.H.Daub+ | C2273 |
| * | $^{13}$C,x | $^{193}$Au | CS | 1USABRK | 9.8+07 | 1.3+08 | Jour | PR/C,96,024602 | 17 | B.H.Daub+ | C2273 |
| * | $^{13}$C,x | $^{194}$Au | CS | 1USABRK | 8.5+07 | 1.3+08 | Jour | PR/C,96,024602 | 17 | B.H.Daub+ | C2273 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $^{13}$C,x | $^{195}$Au | CS | 1USABRK | 1.1+08 | 1.3+08 | Jour | PR/C,96,024602 | 17 | B.H.Daub+ | C2273 |
| * | $^{13}$C,x | $^{196}$Au | CS | 1USABRK | 5.6+07 | 1.3+08 | Jour | PR/C,96,024602 | 17 | B.H.Daub+ | C2273 |
| * | $^{13}$C,x | $^{198}$Au | CS | 1USABRK | 5.6+07 | 1.3+08 | Jour | PR/C,96,024602 | 17 | B.H.Daub+ | C2273 |
| * | $^{13}$C,x | $^{199}$Au | CS | 1USABRK | 9.8+07 | 1.3+08 | Jour | PR/C,96,024602 | 17 | B.H.Daub+ | C2273 |

## 81 Thallium 203

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $^{45}$Sc,x | $^{244}$Fm | CS | 4ZZZDUB | 2.4+08 | 2.4+08 | Jour | NP/A,239,157 | 75 | Yu.Ts.Oganessian+ | F1324 |

## 82 Lead

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\gamma$,abs | | CS | 2FR SAC | 1.4+08 | 4.4+08 | Jour | NP/A,431,573 | 84 | P.Carlos+ | M0947 |
| | $n$,x | $^{206}$Pb | DAP | 2JPNJAE | 7.8+06 | 1.3+07 | Conf | 91JUELIC,,329 | 91 | K.Hasegawa+ | 23341 |
| | $n$,x | $^{208}$Pb | DAP | 2JPNJAE | 7.8+06 | 1.2+07 | Conf | 91JUELIC,,329 | 91 | K.Hasegawa+ | 23341 |
| | $n$,x+$\gamma$ | inclusive | DAE | 2JPNJAE | 7.8+06 | 1.3+07 | Conf | 91JUELIC,,329 | 91 | K.Hasegawa+ | 23341 |
| | $n$,x+$\gamma$ | inclusive | DAP | 2JPNJAE | 7.8+06 | 1.3+07 | Conf | 91JUELIC,,329 | 91 | K.Hasegawa+ | 23341 |
| | $p$,x | Many | PY | 1USABNL | 1.0+09 | 1.0+09 | Jour | NSE,130,320 | 98 | C.E.Laird+ | C1057 |
| | $p$,x | $^{18}$F | CS | 1USABNL | 1.0+09 | 3.0+09 | Jour | BAP,1,224 | 56 | J.Hudis+ | C1059 |
| * | $^{12}$C,x+$\alpha$ | inclusive | CS | 4ZZZDUB | | | Jour | YF,80,(4),338 | 17 | V.V.Belaga+ | F1326 |

## 82 Lead 204

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $^{40}$Ar,2$n$ | $^{242}$Fm | CS | 4ZZZDUB | 2.2+08 | 2.2+08 | Jour | NP/A,255,509 | 75 | G.M.Ter-Akopyan+ | F1323 |
| * | $^{48}$Ca,2$n$ | $^{250}$No | CS | 4ZZZDUB | 2.1+08 | 2.3+08 | Jour | FCY/L,14,382 | 17 | A.I.Svirikhin+ | F1329 |

## 82 Lead 206

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,el | $^{206}$Pb | CS | 2SWDSWR | 1.5+06 | 4.0+06 | Rept | NFL-34 | 82 | N.Olsson+ | 21825 |
| | $^{40}$Ar,2$n$ | $^{244}$Fm | CS | 4ZZZDUB | 2.2+08 | 2.2+08 | Jour | NP/A,255,509 | 75 | G.M.Ter-Akopyan+ | F1323 |
| | $^{40}$Ar,2$n$ | $^{244}$Fm | CS | 4ZZZDUB | 2.2+08 | 2.2+08 | Jour | NP/A,239,157 | 75 | Yu.Ts.Oganessian+ | F1324 |
| | $^{40}$Ar,4$n$ | $^{242}$Fm | CS | 4ZZZDUB | 2.2+08 | 2.2+08 | Jour | NP/A,255,509 | 75 | G.M.Ter-Akopyan+ | F1323 |
| | $^{50}$Ti,2$n$ | $^{254}$Rf | CS | 4ZZZDUB | 2.4+08 | 2.4+08 | Jour | NP/A,255,509 | 75 | G.M.Ter-Akopyan+ | F1323 |
| | $^{50}$Ti,2$n$ | $^{254}$Rf | CS | 4ZZZDUB | 2.6+08 | 2.6+08 | Jour | NP/A,239,157 | 75 | Yu.Ts.Oganessian+ | F1324 |

## 82 Lead 207

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,$\gamma$ | $^{208}$Pb | CS | 2ZZZCER | 2.9+03 | 3.3+05 | Jour | PR/C,74,055802 | 06 | C.Domingo-Pardo+ | 22946 |
| | $^{50}$Ti,2$n$ | $^{255}$Rf | CS | 4ZZZDUB | 2.6+08 | 2.6+08 | Jour | NP/A,239,157 | 75 | Yu.Ts.Oganessian+ | F1324 |

## 82 Lead 208

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,tot | | CS | 2GERMUN | 1.3+00 | 2.0+03 | Jour | PR/C,51,3363 | 95 | L.Koester+ | 22716 |
| | $^{48}$Ti,2$n$ | $^{254}$Rf | CS | 4ZZZDUB | 2.6+08 | 2.6+08 | Jour | NP/A,255,509 | 75 | G.M.Ter-Akopyan+ | F1323 |
| | $^{50}$Ti,2$n$ | $^{256}$Rf | CS | 4ZZZDUB | 2.6+08 | 2.6+08 | Jour | NP/A,239,157 | 75 | Yu.Ts.Oganessian+ | F1324 |
| | $^{50}$Ti,3$n$ | $^{255}$Rf | CS | 4ZZZDUB | 2.6+08 | 2.6+08 | Jour | NP/A,239,157 | 75 | Yu.Ts.Oganessian+ | F1324 |
| | $^{50}$Ti,x | $^{151}$Pm | CS | 4ZZZDUB | 2.4+08 | 2.8+08 | Jour | NP/A,239,157 | 75 | Yu.Ts.Oganessian+ | F1324 |
| | $^{50}$Ti,x | $^{204}$Pb | CS | 4ZZZDUB | 2.4+08 | 2.8+08 | Jour | NP/A,239,157 | 75 | Yu.Ts.Oganessian+ | F1324 |

## 83 Bismuth 209

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,el | $^{209}$Bi | CS | 2SWDSWR | 1.5+06 | 4.0+06 | Rept | NFL-34 | 82 | N.Olsson+ | 21825 |
| * | $n$,fis | | DA | 4RUSLIN | 4.0+07 | 2.9+08 | Jour | JEL,104,365 | 16 | A.S.Vorobyev+ | 41616 |
| | $n$,inel | $^{209}$Bi | DAP | 2JPNJAE | 7.8+06 | 1.0+07 | Conf | 91JUELIC,,329 | 91 | K.Hasegawa+ | 23341 |
| | $n$,x+$\gamma$ | inclusive | DAE | 2JPNJAE | 7.8+06 | 1.3+07 | Conf | 91JUELIC,,329 | 91 | K.Hasegawa+ | 23341 |
| | $n$,x+$\gamma$ | inclusive | DAP | 2JPNJAE | 7.8+06 | 1.3+07 | Conf | 91JUELIC,,329 | 91 | K.Hasegawa+ | 23341 |
| | $^{3}$He,fis | $n$ | CS | 1USAWAS | 2.9+07 | 3.4+07 | Jour | NP/A,173,497 | 71 | E.T.Chulick+ | C1092 |
| | $^{3}$He,fis | $^{99}$Mo | CS | 1USAWAS | 2.8+07 | 3.3+07 | Jour | NP/A,173,497 | 71 | E.T.Chulick+ | C1092 |
| | $\alpha$,$p$ | $^{212}$Po | CS | 1USATAM | 2.6+07 | 6.0+07 | Jour | NP/A,173,487 | 71 | E.T.Chulick+ | C1091 |
| | $\alpha$,x | $^{211}$Po | CS | 1USATAM | 3.0+07 | 5.9+07 | Jour | NP/A,173,487 | 71 | E.T.Chulick+ | C1091 |

## 90 Thorium 232

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,fis | | DA | 4RUSLIN | 1.7+06 | 1.3+08 | Jour | ZEP,102,(4),231 | 15 | A.S.Vorobyev+ | 41608 |
| * | $p$,fis | Many | CS | 2SF JYV | 2.5+07 | 2.5+07 | Jour | BAS,79,869 | 15 | D.Gorelov+ | O2332 |
| | $^{3}$He,fis | $n$ | CS | 1USAWAS | 2.2+07 | 3.4+07 | Jour | NP/A,173,497 | 71 | E.T.Chulick+ | C1092 |
| | $^{3}$He,fis | $n$ | NUD | 1USAWAS | 2.2+07 | 2.9+07 | Jour | NP/A,173,497 | 71 | E.T.Chulick+ | C1092 |
| | $^{3}$He,fis | $^{99}$Mo | CS | 1USAWAS | 2.1+07 | 3.4+07 | Jour | NP/A,173,497 | 71 | E.T.Chulick+ | C1092 |
| | $\alpha$,fis | $n$ | CS | 1USAWAS | 2.0+07 | 2.9+07 | Jour | NP/A,173,497 | 71 | E.T.Chulick+ | C1092 |
| | $\alpha$,fis | $n$ | NUD | 1USAWAS | 2.0+07 | 2.9+07 | Jour | NP/A,173,497 | 71 | E.T.Chulick+ | C1092 |
| | $\alpha$,fis | $^{99}$Mo | CS | 1USAWAS | 2.0+07 | 2.9+07 | Jour | NP/A,173,497 | 71 | E.T.Chulick+ | C1092 |

## 92 Uranium

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\gamma$,abs | | CS | 2FR SAC | 2.4+08 | 3.3+08 | Jour | NP/A,431,573 | 84 | P.Carlos+ | M0947 |
| | $\gamma$,fis | | CS | 2ITYFRA | 2.2+08 | 1.2+09 | Jour | NP/A,553,631C | 93 | M.Anghinolfi+ | M0943 |
| | $p$,x | $^{18}$F | CS | 1USABNL | 1.0+09 | 3.0+09 | Jour | BAP,1,224 | 56 | J.Hudis+ | C1059 |

## 92 Uranium 233

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,fis | | DA | 4RUSLIN | 5.5+05 | 2.7+08 | Jour | JEL,104,365 | 16 | A.S.Vorobyev+ | 41616 |
| | $n$,fis | | NU | 1USALAS | 8.0+04 | 8.0+04 | Jour | PR,101,1012 | 56 | B.C.Diven+ | 12337 |
| * | $n$,fis | | NUF | 4RUSLIN | 3.6-02 | 3.6-02 | Jour | YK,,(2),53 | 16 | A.S.Vorobyev+ | 41611 |
| | $^{22}$Ne,5$n$ | $^{250}$No | CS | 4ZZZDUB | 1.2+08 | 1.2+08 | Jour | NP/A,255,509 | 75 | G.M.Ter-Akopyan+ | F1323 |

## 92 Uranium 235

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,fis | | CS | 2FR BRC | 2.5+06 | 2.5+06 | Rept | CEA-N-2194 | 81 | M.Cance+ | 21620 |
| | $n$,fis | | NU | 1USALAS | 8.0+04 | 8.0+04 | Jour | PR,101,1012 | 56 | B.C.Diven+ | 12337 |
| * | $n$,fis | | NUF | 4RUSLIN | 3.6-02 | 3.6-02 | Jour | YK,,(2),53 | 16 | A.S.Vorobyev+ | 41611 |

## 92 Uranium 238

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\gamma$,fis | | CS | 2GERMNZ | 4.7+07 | 7.9+08 | Jour | PL/B,295,28 | 92 | Th.Frommhold+ | M0950 |
| | $^{3}$He,fis | $n$ | CS | 1USAWAS | 2.1+07 | 3.4+07 | Jour | NP/A,173,497 | 71 | E.T.Chulick+ | C1092 |
| | $^{3}$He,fis | $n$ | NUD | 1USAWAS | 2.1+07 | 3.4+07 | Jour | NP/A,173,497 | 71 | E.T.Chulick+ | C1092 |
| | $^{3}$He,fis | $^{99}$Mo | CS | 1USAWAS | 2.2+07 | 3.4+07 | Jour | NP/A,173,497 | 71 | E.T.Chulick+ | C1092 |
| | $\alpha$,fis | $n$ | CS | 1USAWAS | 2.0+07 | 2.9+07 | Jour | NP/A,173,497 | 71 | E.T.Chulick+ | C1092 |
| | $\alpha$,fis | $n$ | NUD | 1USAWAS | 2.0+07 | 2.9+07 | Jour | NP/A,173,497 | 71 | E.T.Chulick+ | C1092 |
| | $\alpha$,fis | $^{99}$Mo | CS | 1USAWAS | 2.0+07 | 2.8+07 | Jour | NP/A,173,497 | 71 | E.T.Chulick+ | C1092 |

## 94 Plutonium 236

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0,fis | | NU | 1USABRK | Spont | | Jour | PR,101,1016 | 56 | D.A.Hicks+ | 13715 |

## 94 Plutonium 238

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0,fis | | NU | 1USABRK | Spont | | Jour | PR,101,1016 | 56 | D.A.Hicks+ | 13715 |
| | $n$,fis | | CS | 4RUSRI | 2.9+06 | 2.9+06 | Rept | INDC(CCP)-213,3 | 83 | B.M.Aleksandrov+ | 40673 |

## 94 Plutonium 239

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,abs | | ETA | 1USABNW | Maxwl | | Jour | NSE,82,325 | 82 | R.C.Lloyd+ | 12793 |
| * | $n$,fis | Many | FY | 2FR ILL | 2.5-02 | 2.5-02 | Jour | PR/C,84,034605 | 11 | Y.K.Gupta+ | 23342 |
| * | $n$,fis | Many | FY | 2FR ILL | 2.5-02 | 2.5-02 | Jour | PR/C,96,014608 | 17 | Y.K.Gupta+ | 23342 |
| | $n$,fis | | NU | 1USALAS | 8.0+04 | 8.0+04 | Jour | PR,101,1012 | 56 | B.C.Diven+ | 12337 |
| * | $n$,fis | | NUF | 4RUSLIN | 3.6-02 | 3.6-02 | Jour | YK,,(2),53 | 16 | A.S.Vorobyev+ | 41611 |

## 94 Plutonium 240

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0,fis | | NU | 1USALAS | Spont | | Jour | PR,101,1012 | 56 | B.C.Diven+ | 12337 |
| | 0,fis | | NU | 1USABRK | Spont | | Jour | PR,101,1016 | 56 | D.A.Hicks+ | 13715 |
| | 0,fis | | NU | 1USALAS | Spont | | Jour | PR,100,190 | 55 | J.E.Hammel+ | 14299 |

## 94 Plutonium 242

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0,fis | | NU | 1USABRK | Spont | | Jour | PR,101,1016 | 56 | D.A.Hicks+ | 13715 |

## 95 Americium 241

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,fis | | CS | 2JPNJAE | 1.0-01 | 2.0+01 | Jour | NIM/A,856,133 | 17 | K.Hirose+ | 23338 |
| | $n$,fis | | CS | 4RUSRI | 2.9+06 | 2.9+06 | Rept | INDC(CCP)-213,3 | 83 | B.M.Aleksandrov+ | 40673 |
| * | $n,\gamma$ | $^{242}$Am | CS | 2JPNJAE | 1.0-01 | 2.0+01 | Jour | NIM/A,856,133 | 17 | K.Hirose+ | 23338 |

## 95 Americium 242

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,0 | | RP | 1USALAS | | | Jour | PR/C,95,061602 | 17 | M.Q.Buckner+ | 14471 |
| * | $n$,fis | | CS | 1USALAS | 1.2-01 | 8.2+05 | Jour | PR/C,95,061602 | 17 | M.Q.Buckner+ | 14471 |
| * | $n,\gamma$ | $^{243}$Am | CS | 1USALAS | 1.2-01 | 8.2+03 | Jour | PR/C,95,061602 | 17 | M.Q.Buckner+ | 14471 |

## 96 Curium 242

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0,fis | | NU | 1USAORL | Spont | | Jour | NSE,75,56 | 80 | J.Halperin+ | 10930 |
| | 0,fis | | NU | 1USABRK | Spont | | Jour | PR,101,1016 | 56 | D.A.Hicks+ | 13715 |

## 96 Curium 244

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,fis | | NU | 1USALAS | Spont | | Jour | PR,101,1012 | 56 | B.C.Diven+ | 12337 |
| 0,fis | | NU | 1USABRK | Spont | | Jour | PR,101,1016 | 56 | D.A.Hicks+ | 13715 |

## 96 Curium 246

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,fis | | NU | 1USAORL | Spont | | Jour | NSE,50,169 | 73 | R.W.Stoughton+ | 10605 |

## 96 Curium 248

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,fis | $\gamma$ | FY | 4ZZZDUB | Spont | | Jour | SJA,71,906 | 91 | E.A.Sokol+ | 41580 |
| 0,fis | | NU | 1USAORL | Spont | | Jour | NSE,50,169 | 73 | R.W.Stoughton+ | 10605 |

## 98 Californium 250

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,fis | | NU | 1USALAS | Spont | | Jour | PR/C,21,637 | 80 | D.C.Hoffman+ | 10901 |

## 98 Californium 252

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,fis | $\gamma$ | FY | 4ZZZDUB | Spont | | Jour | SJA,71,906 | 91 | E.A.Sokol+ | 41580 |
| 0,fis | | NU | 1USAORL | Spont | | Jour | NSE,50,169 | 73 | R.W.Stoughton+ | 10605 |
| 0,fis | | NU | 1USALAS | Spont | | Jour | PR/C,21,637 | 80 | D.C.Hoffman+ | 10901 |
| 0,fis | | NU | 1USAORL | Spont | | Jour | NSE,75,56 | 80 | J.Halperin+ | 10930 |
| 0,fis | | NU | 1USALAS | Spont | | Jour | PR,101,1012 | 56 | B.C.Diven+ | 12337 |
| 0,fis | | NU | 1USABRK | Spont | | Jour | PR,101,1016 | 56 | D.A.Hicks+ | 13715 |
| 0,fis | Many | ? | 1USALRL | Spont | | Jour | PR/C,2,1451 | 70 | W.John+ | 14479 |

## 98 Californium 254

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,fis | $\gamma$ | FY | 4ZZZDUB | Spont | | Jour | SJA,71,906 | 91 | E.A.Sokol+ | 41580 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0,fis | | NU | 1USALAS | Spont | Jour | PR/C,21,637 | 80 | D.C.Hoffman+ | 10901 |

## 100 Fermium 256

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,fis | $\gamma$ | FY | 4ZZZDUB | Spont | | Jour | SJA,71,906 | 91 | E.A.Sokol+ | 41580 |

## 100 Fermium 257

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,fis | | NU | 1USALAS | Spont | | Jour | PR/C,21,637 | 80 | D.C.Hoffman+ | 10901 |

## 101 Mendelevium 259

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,fis | $\gamma$ | FY | 4ZZZDUB | Spont | | Jour | SJA,71,906 | 91 | E.A.Sokol+ | 41580 |