# EXFOR News (October 2017)

## 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 # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,el | $^{1}$H | CS | 3CZRCHU | 1.6+07 | 1.6+07 | Jour | ZP/A,359,23 | 97 | J.Broz+ | 31776 |
| | $n$,el | $^{1}$H | CS | 3CZRCHU | 1.6+07 | 1.6+07 | Jour | ZP/A,354,401 | 96 | J.Broz+ | 31777 |

## 1 Hydrogen 2

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $d$,$p$ | $^{3}$H | CS | 3CPRAEP | 2.5+03 | 4.0+05 | Jour | PR/C,92,025805 | 15 | Chengboli+ | S0189 |
| * | $d$,$p$ | $^{3}$H | CS | 3CPRAEP | 5.0+03 | 5.2+05 | Jour | PR/C,95,035804 | 17 | Chengboli+ | S0211 |
| * | $^{19}$Ne,$n$+$p$ | $^{19}$Ne | ? | 1USAFSU | 8.6+07 | 8.6+07 | Jour | PRL,117,182701 | 16 | J.Belarge+ | C2248 |

## 2 Helium 4

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $^{23}$Na,$n$ | $^{26}$Al | ? | 1USAANL | 3.0+06 | 5.8+06 | Jour | PR/C,94,065804 | 16 | M.L.Avila+ | C2249 |
| * | $^{23}$Na,$p$ | $^{26}$Mg | ? | 1USAANL | 2.2+06 | 5.8+06 | Jour | PR/C,94,065804 | 16 | M.L.Avila+ | C2249 |

## 3 Lithium 6

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $p$,$\gamma$ | $^{7}$Be | CS | 3CPRIMP | 4.7+04 | 2.5+05 | Jour | PL/B,725,287 | 13 | J.J.He+ | S0083 |
| * | $p$,$\gamma$ | $^{7}$Be | ? | 3CPRIMP | 6.2+04 | 2.5+05 | Jour | PL/B,725,287 | 13 | J.J.He+ | S0083 |
| * | $p$,$^{3}$He | $^{4}$He | CS | 3CPRIMP | 8.7+04 | 2.1+05 | Jour | PL/B,725,287 | 13 | J.J.He+ | S0083 |

## 3 Lithium 7

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $^{15}$N,el | $^{7}$Li | DA | 3POLWWA | 8.1+07 | 8.1+07 | Jour | NP/A,958,234 | 17 | A.T.Rudchik+ | D5134 |
| * | $^{15}$N,inel | $^{7}$Li | DAP | 3POLWWA | 8.1+07 | 8.1+07 | Jour | NP/A,958,234 | 17 | A.T.Rudchik+ | D5134 |

## 4 Beryllium 7

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $p$,el | $^{7}$Be | DA | 4RUSKUR | 1.0+06 | 3.6+06 | Jour | ZEP,67,(12),959 | 98 | V.Z.Goldberg+ | F1313 |

## 4 Beryllium 9

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $p$,el | $^{9}$Be | DA | 1USACAL | 2.0+05 | 1.7+06 | Jour | PR,104,1386 | 56 | F.S.Mozer | F0160 |
| | $p$,$\gamma$ | $^{10}$B | CSP | 3KORNSU | 2.2+05 | 4.4+05 | Jour | NPSM,29,430 | 89 | Y.H.Park+ | D7019 |

## 5 Boron 11

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $^{12}$C,el | $^{11}$B | DA | 4KASKAZ | 1.8+07 | 1.8+07 | Jour | IMP/E,23,1450061 | 14 | Sh.Hamada+ | D0844 |

## 6 Carbon 12

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $p$,el | $^{12}$C | POD | 4RUSSUL | 6.0+06 | 6.0+06 | Conf | 70LENING,2,133 | 70 | P.A.Vaganov+ | F1314 |
| | $p$,x+$p$ | inclusive | CS | 4RUSLPI | 5.0+07 | 5.0+07 | Abst | 72KIEV,1,49(1) | 72 | A.V.Gorbunov+ | F1301 |
| * | $p$,x+$p$ | inclusive | DAE | 4RUSLIN | 1.0+09 | 1.0+09 | Jour | YF,80,175 | 17 | O.V.Miklukho+ | F1283 |
| * | $p$,x+$p$ | inclusive | POD | 4RUSLIN | 1.0+09 | 1.0+09 | Jour | YF,80,175 | 17 | O.V.Miklukho+ | F1283 |
| * | $^{12}$C,el | $^{12}$C | DA | 4KASATN | 1.8+07 | 2.1+07 | Jour | JP/CS,381,012130 | 12 | Sh.Hamada+ | D0846 |
| * | $^{18}$O,fus | | CS | 1USAFSU | 5.3+06 | 1.4+07 | Jour | PL/B,765,99 | 17 | Varinderjitsingh+ | C2257 |
| * | $^{19}$O,fus | | CS | 1USAFSU | 7.4+06 | 1.8+07 | Jour | PL/B,765,99 | 17 | Varinderjitsingh+ | C2257 |

## 6 Carbon 13

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $^{11}$B,$^{7}$Li | $^{17}$O | DAP | 3POLWWA | 4.5+07 | 4.5+07 | Jour | PR/C,95,024607 | 17 | S.Yu.Mezhevych+ | D5133 |

## 7 Nitrogen 14

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $^{3}$He,el | $^{14}$N | DA | 4KASKAZ | 5.0+07 | 6.0+07 | Jour | APP/B,47,2017 | 16 | N.Burtebayev+ | D0842 |
| * | $^{3}$He,inel | $^{14}$N | DAP | 4KASKAZ | 5.0+07 | 6.0+07 | Jour | APP/B,47,2017 | 16 | N.Burtebayev+ | D0842 |
| * | $\alpha$,el | $^{14}$N | DA | 4KASKAZ | 4.8+07 | 4.8+07 | Jour | APP/B,47,2017 | 16 | N.Burtebayev+ | D0842 |
| * | $\alpha$,inel | $^{14}$N | DAP | 4KASKAZ | 4.8+07 | 4.8+07 | Jour | APP/B,47,2017 | 16 | N.Burtebayev+ | D0842 |

## 8 Oxygen 16

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

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $p$,el | $^{16}$O | DA | 1USAPTN | 1.9+07 | 1.9+07 | Jour | PR,100,1409 | 55 | W.F.Hornyak+ | C0899 |
| | $p$,inel | $^{16}$O | CSP | 1USAPTN | 1.9+07 | 1.9+07 | Jour | PR,100,1409 | 55 | W.F.Hornyak+ | C0899 |
| | $p$,inel | $^{16}$O | DAP | 1USAPTN | 1.9+07 | 1.9+07 | Jour | PR,100,1409 | 55 | W.F.Hornyak+ | C0899 |

## 10 Neon 22

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $p,\gamma$ | | RP | 1USATNL | 1.5+05 | 4.2+05 | Jour | PR/C,95,015806 | 17 | K.J.Kelly+ | C2254 |
| * | $p,\gamma$ | $^{23}$Na | CSP | 1USATNL | 4.2+05 | 4.2+05 | Jour | PR/C,95,015806 | 17 | K.J.Kelly+ | C2254 |
| * | $p,\gamma$ | $^{23}$Na | RR | 1USATNL | | | Jour | PR/C,95,015806 | 17 | K.J.Kelly+ | C2254 |

## 13 Aluminium 27

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $p$,x | Many | CS | 4RUSFVE | 3.7+07 | 7.0+10 | Jour | AE,89,(5),418 | 00 | G.I.Krupnyi+ | F1319 |
| | $p$,x | $^{7}$Be | ? | 4RUSFVE | 3.7+07 | 7.0+10 | Jour | AE,89,(5),418 | 00 | G.I.Krupnyi+ | F1319 |
| | $p$,x | $^{22}$Na | ? | 4RUSFVE | 3.7+07 | 7.0+10 | Jour | AE,89,(5),418 | 00 | G.I.Krupnyi+ | F1319 |
| | $\alpha$,x | $^{7}$Be | CS | 4ZZZDUB | 2.9+07 | 4.5+07 | Conf | 92ALMAAT,291 | 92 | S.A.Karamyan+ | F1318 |
| | $\alpha$,x | $^{22}$Na | CS | 4ZZZDUB | 1.9+07 | 4.5+07 | Conf | 92ALMAAT,291 | 92 | S.A.Karamyan+ | F1318 |
| | $\alpha$,x | $^{24}$Na | CS | 4ZZZDUB | 2.8+07 | 3.5+07 | Conf | 92ALMAAT,291 | 92 | S.A.Karamyan+ | F1318 |
| | $\alpha$,x | $^{28}$Mg | CS | 4ZZZDUB | 2.7+07 | 3.5+07 | Conf | 92ALMAAT,291 | 92 | S.A.Karamyan+ | F1318 |
| | $\alpha$,x | $^{29}$Al | CS | 4ZZZDUB | 2.8+07 | 3.5+07 | Conf | 92ALMAAT,291 | 92 | S.A.Karamyan+ | F1318 |
| | $^{6}$He,$\alpha$ | $^{29}$Al | DAP | 4RUSKUR | 2.2+07 | 2.2+07 | Conf | 93DUBNS,276 | 93 | D.V.Aleksandrov+ | F1316 |
| * | $^{12}$C,el | $^{27}$Al | DA | 4KASATN | 2.1+07 | 2.1+07 | Jour | PS,84,045201 | 11 | Sh.Hamada+ | D0828 |
| * | $^{12}$N,el | $^{27}$Al | DA | 4KASATN | 2.1+07 | 2.4+07 | Jour | PS,84,045201 | 11 | Sh.Hamada+ | D0828 |
| * | $^{16}$O,el | $^{27}$Al | DA | 4KASATN | 2.8+07 | 2.8+07 | Jour | PS,84,045201 | 11 | Sh.Hamada+ | D0828 |
| | $^{93}$Nb,x+$n$ | inclusive | PY | 1USABRK | 2.5+10 | 2.5+10 | Jour | PR/C,58,3451 | 98 | L.Heilbronn+ | C0897 |

## 20 Calcium 40

| | 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 | YF,80,175 | 17 | O.V.Miklukho+ | F1283 |
| * | $p$,x+$p$ | inclusive | POD | 4RUSLIN | 1.0+09 | 1.0+09 | Jour | YF,80,175 | 17 | O.V.Miklukho+ | F1283 |

## 22 Titanium

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n,\gamma$ | | ? | 1USAORL | 1.0+02 | 6.0+05 | Jour | KPS,59,1685 | 11 | K.H.Guber+ | 14324 |

## 22 Titanium 48

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n,\gamma$ | $^{49}$Ti | ? | 1USAORL | 1.0+02 | 6.0+05 | Jour | KPS,59,1685 | 11 | K.H.Guber+ | 14324 |

## 23 Vanadium 51

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $^{45}$Sc,x | $^{89}$Nb | CS | 3INDTRM | 5.9+07 | 7.1+07 | Jour | PRM,38,291 | 92 | M.Dasgupta+ | D6247 |
| $^{45}$Sc,x | $^{90}$Nb | CS | 3INDTRM | 5.9+07 | 7.1+07 | Jour | PRM,38,291 | 92 | M.Dasgupta+ | D6247 |
| $^{45}$Sc,x | $^{90}$Mo | CS | 3INDTRM | 5.9+07 | 7.1+07 | Jour | PRM,38,291 | 92 | M.Dasgupta+ | D6247 |
| $^{45}$Sc,x | $^{92}$Mo | CSP | 3INDTRM | 5.8+07 | 7.1+07 | Jour | PRM,38,291 | 92 | M.Dasgupta+ | D6247 |
| $^{45}$Sc,x | $^{92}$Tc | CS | 3INDTRM | 5.9+07 | 7.1+07 | Jour | PRM,38,291 | 92 | M.Dasgupta+ | D6247 |
| $^{45}$Sc,x | $^{93}$Tc | CS | 3INDTRM | 5.8+07 | 7.1+07 | Jour | PRM,38,291 | 92 | M.Dasgupta+ | D6247 |

## 24 Chromium 53

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n,\gamma$ | $^{54}$Cr | ? | 1USAORL | 1.0+02 | 6.0+05 | Jour | KPS,59,1685 | 11 | K.H.Guber+ | 14324 |

## 26 Iron 54

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $p$,inel | $^{54}$Fe | CSP | 1USAOHO | 3.7+06 | 7.7+06 | Jour | PR/C,46,2375 | Dec 92 | N.Boukharouba+ | C0471 |

## 26 Iron 56

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $p$,inel | $^{56}$Fe | CSP | 1USAOHO | 4.1+06 | 7.7+06 | Jour | PR/C,46,2375 | Dec 92 | N.Boukharouba+ | C0471 |

## 26 Iron 58

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $\alpha$,el | $^{58}$Fe | DA | 1USALRL | 2.1+07 | 2.1+07 | Jour | PR,165,1218 | 68 | C.B.Fulmer+ | C0924 |
| $\alpha$,inel | $^{58}$Fe | DAP | 1USALRL | 2.1+07 | 2.1+07 | Jour | PR,165,1218 | 68 | C.B.Fulmer+ | C0924 |

## 27 Cobalt 59

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $^{37}$Cl,2$n$ | $^{94}$Ru | CS | 3INDTRM | 5.5+07 | 7.1+07 | Jour | PRM,38,291 | 92 | M.Dasgupta+ | D6247 |
| $^{37}$Cl,x | $^{89}$Nb | CS | 3INDTRM | 6.1+07 | 7.1+07 | Jour | PRM,38,291 | 92 | M.Dasgupta+ | D6247 |
| $^{37}$Cl,x | $^{90}$Nb | CS | 3INDTRM | 5.7+07 | 7.1+07 | Jour | PRM,38,291 | 92 | M.Dasgupta+ | D6247 |
| $^{37}$Cl,x | $^{90}$Mo | CS | 3INDTRM | 5.5+07 | 7.1+07 | Jour | PRM,38,291 | 92 | M.Dasgupta+ | D6247 |
| $^{37}$Cl,x | $^{92}$Mo | CSP | 3INDTRM | 5.6+07 | 7.1+07 | Jour | PRM,38,291 | 92 | M.Dasgupta+ | D6247 |
| $^{37}$Cl,x | $^{92}$Tc | CS | 3INDTRM | 5.6+07 | 7.1+07 | Jour | PRM,38,291 | 92 | M.Dasgupta+ | D6247 |
| $^{37}$Cl,x | $^{93}$Tc | CS | 3INDTRM | 5.5+07 | 7.1+07 | Jour | PRM,38,291 | 92 | M.Dasgupta+ | D6247 |

## 28 Nickel 58

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $\alpha$,el | $^{58}$Ni | DA | 1USALRL | 2.1+07 | 2.1+07 | Jour | PR,165,1218 | 68 | C.B.Fulmer+ | C0924 |
| $\alpha$,inel | $^{58}$Ni | DAP | 1USALRL | 2.1+07 | 2.1+07 | Jour | PR,165,1218 | 68 | C.B.Fulmer+ | C0924 |

## 28 Nickel 62

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $\alpha$,el | $^{62}$Ni | DA | 1USALRL | 2.1+07 | 2.1+07 | Jour | PR,165,1218 | 68 | C.B.Fulmer+ | C0924 |
| $\alpha$,inel | $^{62}$Ni | DAP | 1USALRL | 2.1+07 | 2.1+07 | Jour | PR,165,1218 | 68 | C.B.Fulmer+ | C0924 |

## 28 Nickel 64

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $\alpha$,el | $^{64}$Ni | DA | 1USALRL | 2.1+07 | 2.1+07 | Jour | PR,165,1218 | 68 | C.B.Fulmer+ | C0924 |
| $\alpha$,inel | $^{64}$Ni | DAP | 1USALRL | 2.1+07 | 2.1+07 | Jour | PR,165,1218 | 68 | C.B.Fulmer+ | C0924 |
| $^{32}$S,x | $^{89}$Nb | CS | 3INDTRM | 5.8+07 | 7.3+07 | Jour | PRM,38,291 | 92 | M.Dasgupta+ | D6247 |
| $^{32}$S,x | $^{90}$Nb | CS | 3INDTRM | 5.2+07 | 7.3+07 | Jour | PRM,38,291 | 92 | M.Dasgupta+ | D6247 |
| $^{32}$S,x | $^{90}$Mo | CS | 3INDTRM | 5.2+07 | 7.3+07 | Jour | PRM,38,291 | 92 | M.Dasgupta+ | D6247 |
| $^{32}$S,x | $^{92}$Mo | CSP | 3INDTRM | 5.2+07 | 7.3+07 | Jour | PRM,38,291 | 92 | M.Dasgupta+ | D6247 |
| $^{32}$S,x | $^{92}$Tc | CS | 3INDTRM | 5.5+07 | 7.0+07 | Jour | PRM,38,291 | 92 | M.Dasgupta+ | D6247 |
| $^{32}$S,x | $^{93}$Tc | CS | 3INDTRM | 5.2+07 | 7.3+07 | Jour | PRM,38,291 | 92 | M.Dasgupta+ | D6247 |

## 30 Zinc 64

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $\alpha$,el | $^{64}$Zn | DA | 1USALRL | 2.1+07 | 2.1+07 | Jour | PR,165,1218 | 68 | C.B.Fulmer+ | C0924 |
| $\alpha$,inel | $^{64}$Zn | DAP | 1USALRL | 2.1+07 | 2.1+07 | Jour | PR,165,1218 | 68 | C.B.Fulmer+ | C0924 |

## 30 Zinc 68

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $^{28}$Si,2$n$ | $^{94}$Ru | CS | 3INDTRM | 5.2+07 | 7.1+07 | Jour | PRM,38,291 | 92 | M.Dasgupta+ | D6247 |
| $^{28}$Si,4$n$ | $^{92}$Ru | CS | 3INDTRM | 6.4+07 | 7.1+07 | Jour | PRM,38,291 | 92 | M.Dasgupta+ | D6247 |
| $^{28}$Si,x | $^{89}$Nb | CS | 3INDTRM | 5.6+07 | 7.1+07 | Jour | PRM,38,291 | 92 | M.Dasgupta+ | D6247 |
| $^{28}$Si,x | $^{90}$Nb | CS | 3INDTRM | 5.2+07 | 7.1+07 | Jour | PRM,38,291 | 92 | M.Dasgupta+ | D6247 |
| $^{28}$Si,x | $^{90}$Mo | CS | 3INDTRM | 5.1+07 | 7.1+07 | Jour | PRM,38,291 | 92 | M.Dasgupta+ | D6247 |
| $^{28}$Si,x | $^{92}$Mo | CSP | 3INDTRM | 5.1+07 | 7.1+07 | Jour | PRM,38,291 | 92 | M.Dasgupta+ | D6247 |
| $^{28}$Si,x | $^{92}$Tc | CS | 3INDTRM | 5.4+07 | 7.1+07 | Jour | PRM,38,291 | 92 | M.Dasgupta+ | D6247 |
| $^{28}$Si,x | $^{93}$Tc | CS | 3INDTRM | 5.1+07 | 7.1+07 | Jour | PRM,38,291 | 92 | M.Dasgupta+ | D6247 |

## 30 Zinc 70

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,$\gamma$ | $^{71}$Zn | CS | 3INDTRM | 9.6+05 | 1.7+06 | Jour | PR/C,95,024619 | 17 | L.R.M.Punte+ | 33076 |

## 36 Krypton 93

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,B- | $^{93}$Rb | NUD | 3ISLSOR | Spont | | Conf | 67VIENNA,,115 | 67 | S.Amiel+ | 31775 |

## 37 Rubidium 93

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,B- | $^{93}$Sr | NUD | 3ISLSOR | Spont | | Conf | 67VIENNA,,115 | 67 | S.Amiel+ | 31775 |

## 38 Strontium

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $p$,x | Many | CS | 4RUSFVE | 1.0+09 | 1.0+09 | Conf | 94PARIS,389 | 94 | V.G.Semenov+ | F1315 |
| $p$,x | $^{52}$Mn | CS | 4RUSFVE | 1.0+09 | 1.0+09 | Conf | 94PARIS,389 | 94 | V.G.Semenov+ | F1315 |
| $p$,x | $^{58}$Co | CS | 4RUSFVE | 1.0+09 | 1.0+09 | Conf | 94PARIS,389 | 94 | V.G.Semenov+ | F1315 |
| $p$,x | $^{60}$Co | CS | 4RUSFVE | 1.0+09 | 1.0+09 | Conf | 94PARIS,389 | 94 | V.G.Semenov+ | F1315 |
| $p$,x | $^{71}$Zn | CS | 4RUSFVE | 1.0+09 | 1.0+09 | Conf | 94PARIS,389 | 94 | V.G.Semenov+ | F1315 |
| $p$,x | $^{73}$Se | CS | 4RUSFVE | 1.0+09 | 1.0+09 | Conf | 94PARIS,389 | 94 | V.G.Semenov+ | F1315 |
| $p$,x | $^{77}$Br | CS | 4RUSFVE | 1.0+09 | 1.0+09 | Conf | 94PARIS,389 | 94 | V.G.Semenov+ | F1315 |
| $p$,x | $^{82}$Br | CS | 4RUSFVE | 1.0+09 | 1.0+09 | Conf | 94PARIS,389 | 94 | V.G.Semenov+ | F1315 |
| $p$,x | $^{79}$Kr | CS | 4RUSFVE | 1.0+09 | 1.0+09 | Conf | 94PARIS,389 | 94 | V.G.Semenov+ | F1315 |
| $p$,x | $^{86}$Rb | CS | 4RUSFVE | 1.0+09 | 1.0+09 | Conf | 94PARIS,389 | 94 | V.G.Semenov+ | F1315 |

## 39 Yttrium 89

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $\gamma$,2$n$ | $^{87}$Y | CS | 3KORPUE | | 5.5+07 | Jour | NIM/B,344,76 | 15 | M.Tatari+ | G3125 |
| * | $\gamma$,3$n$ | $^{86}$Y | CS | 3KORPUE | | 5.5+07 | Jour | NIM/B,344,76 | 15 | M.Tatari+ | G3125 |
| | $p$,0 | | RP | 1USAORL | | | Jour | NP/A,107,21 | 68 | C.H.Johnson+ | C0774 |
| * | $p$,x | $^{83}$Rb | CS | 3KORKAE | 4.5+07 | 6.7+07 | Jour | NIM/B,398,1 | 17 | S.C.Yang+ | D7020 |
| * | $p$,x | $^{83}$Rb | TT | 3KORKAE | 4.5+07 | 6.7+07 | Jour | NIM/B,398,1 | 17 | S.C.Yang+ | D7020 |
| * | $p$,x | $^{84}$Rb | CS | 3KORKAE | 3.9+07 | 6.7+07 | Jour | NIM/B,398,1 | 17 | S.C.Yang+ | D7020 |
| * | $p$,x | $^{84}$Rb | TT | 3KORKAE | 3.9+07 | 6.7+07 | Jour | NIM/B,398,1 | 17 | S.C.Yang+ | D7020 |
| * | $p$,x | $^{83}$Sr | CS | 3KORKAE | 4.8+07 | 6.7+07 | Jour | NIM/B,398,1 | 17 | S.C.Yang+ | D7020 |
| * | $p$,x | $^{83}$Sr | TT | 3KORKAE | 4.8+07 | 6.7+07 | Jour | NIM/B,398,1 | 17 | S.C.Yang+ | D7020 |
| * | $p$,x | $^{85}$Sr | CS | 3KORKAE | 3.6+07 | 6.7+07 | Jour | NIM/B,398,1 | 17 | S.C.Yang+ | D7020 |
| * | $p$,x | $^{85}$Sr | TT | 3KORKAE | 3.6+07 | 6.7+07 | Jour | NIM/B,398,1 | 17 | S.C.Yang+ | D7020 |
| * | $p$,x | $^{86}$Y | CS | 3KORKAE | 3.6+07 | 6.7+07 | Jour | NIM/B,398,1 | 17 | S.C.Yang+ | D7020 |
| * | $p$,x | $^{86}$Y | TT | 3KORKAE | 3.6+07 | 6.7+07 | Jour | NIM/B,398,1 | 17 | S.C.Yang+ | D7020 |
| * | $p$,x | $^{87}$Y | CS | 3KORKAE | 3.6+07 | 6.7+07 | Jour | NIM/B,398,1 | 17 | S.C.Yang+ | D7020 |
| * | $p$,x | $^{87}$Y | TT | 3KORKAE | 3.6+07 | 6.7+07 | Jour | NIM/B,398,1 | 17 | S.C.Yang+ | D7020 |
| * | $p$,x | $^{88}$Y | CS | 3KORKAE | 3.6+07 | 6.7+07 | Jour | NIM/B,398,1 | 17 | S.C.Yang+ | D7020 |
| * | $p$,x | $^{88}$Y | TT | 3KORKAE | 3.6+07 | 6.7+07 | Jour | NIM/B,398,1 | 17 | S.C.Yang+ | D7020 |
| * | $p$,x | $^{86}$Zr | CS | 3KORKAE | 4.1+07 | 6.7+07 | Jour | NIM/B,398,1 | 17 | S.C.Yang+ | D7020 |
| * | $p$,x | $^{86}$Zr | TT | 3KORKAE | 4.1+07 | 6.7+07 | Jour | NIM/B,398,1 | 17 | S.C.Yang+ | D7020 |
| * | $p$,x | $^{88}$Zr | CS | 3KORKAE | 3.6+07 | 6.7+07 | Jour | NIM/B,398,1 | 17 | S.C.Yang+ | D7020 |
| * | $p$,x | $^{88}$Zr | TT | 3KORKAE | 3.6+07 | 6.7+07 | Jour | NIM/B,398,1 | 17 | S.C.Yang+ | D7020 |
| * | $p$,x | $^{89}$Zr | CS | 3KORKAE | 3.6+07 | 6.7+07 | Jour | NIM/B,398,1 | 17 | S.C.Yang+ | D7020 |
| * | $p$,x | $^{89}$Zr | TT | 3KORKAE | 3.6+07 | 6.7+07 | Jour | NIM/B,398,1 | 17 | S.C.Yang+ | D7020 |

## 40 Zirconium

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $\gamma$,x | $^{86}$Y | CS | 3KORPUE | | 5.5+07 | Jour | NIM/B,344,76 | 15 | M.Tatari+ | G3125 |
| * | $\gamma$,x | $^{87}$Y | CS | 3KORPUE | | 5.5+07 | Jour | NIM/B,344,76 | 15 | M.Tatari+ | G3125 |
| * | $\gamma$,x | $^{89}$Zr | CS | 3KORPUE | | 5.5+07 | Jour | NIM/B,344,76 | 15 | M.Tatari+ | G3125 |

## 41 Niobium 93

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $^{93}$Nb,x+$n$ | inclusive | PY | 1USABRK | 2.5+10 | 4.0+10 | Jour | PR/C,58,3451 | 98 | L.Heilbronn+ | C0897 |

## 42 Molybdenum 92

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $p$,$\gamma$ | $^{93}$Tc | CS | 4UKRIJD | 6.8+06 | 6.8+06 | Jour | UFZ,61,283 | 16 | A.M.Savrasov | D5132 |
| * | $d$,$n$ | $^{93}$Tc | CS | 4UKRIJD | 4.5+06 | 4.5+06 | Jour | UFZ,61,283 | 16 | A.M.Savrasov | D5132 |

## 42 Molybdenum 94

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $d$,$n$ | $^{95}$Tc | CS | 4UKRIJD | 4.5+06 | 4.5+06 | Jour | UFZ,61,283 | 16 | A.M.Savrasov | D5132 |

## 42 Molybdenum 97

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $d$,$\alpha$ | $^{95}$Nb | CS | 4UKRIJD | 4.5+06 | 4.5+06 | Jour | UFZ,61,283 | 16 | A.M.Savrasov | D5132 |

## 47 Silver

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $\gamma$,x | $^{104}$Ag | CS | 3KORPUE | | 6.0+07 | Jour | NIM/B,342,188 | 15 | V.D.Nguyen+ | G3124 |
| * | $\gamma$,x | $^{106}$Ag | CS | 3KORPUE | | 6.0+07 | Jour | NIM/B,342,188 | 15 | V.D.Nguyen+ | G3124 |
| | $p$,x | Many | CS | 4RUSLIN | 1.0+09 | 1.0+09 | Jour | ZEP,19,(11),691 | 74 | E.N.Volnin+ | F1312 |
| | $p$,x | $^{6}$He | DAE | 4RUSLIN | 1.0+09 | 1.0+09 | Jour | ZEP,19,(11),691 | 74 | E.N.Volnin+ | F1312 |
| | $p$,x | $^{6}$Li | DAE | 4RUSLIN | 1.0+09 | 1.0+09 | Jour | ZEP,19,(11),691 | 74 | E.N.Volnin+ | F1312 |
| | $p$,x | $^{7}$Li | DAE | 4RUSLIN | 1.0+09 | 1.0+09 | Jour | ZEP,19,(11),691 | 74 | E.N.Volnin+ | F1312 |
| | $p$,x | $^{8}$Li | DAE | 4RUSLIN | 1.0+09 | 1.0+09 | Jour | ZEP,19,(11),691 | 74 | E.N.Volnin+ | F1312 |
| | $p$,x | $^{7}$Be | DAE | 4RUSLIN | 1.0+09 | 1.0+09 | Jour | ZEP,19,(11),691 | 74 | E.N.Volnin+ | F1312 |
| | $p$,x | $^{9}$Be | DAE | 4RUSLIN | 1.0+09 | 1.0+09 | Jour | ZEP,19,(11),691 | 74 | E.N.Volnin+ | F1312 |
| | $p$,x | $^{10}$Be | DAE | 4RUSLIN | 1.0+09 | 1.0+09 | Jour | ZEP,19,(11),691 | 74 | E.N.Volnin+ | F1312 |
| | $p$,x | $^{10}$B | DAE | 4RUSLIN | 1.0+09 | 1.0+09 | Jour | ZEP,19,(11),691 | 74 | E.N.Volnin+ | F1312 |
| | $p$,x | $^{11}$B | DAE | 4RUSLIN | 1.0+09 | 1.0+09 | Jour | ZEP,19,(11),691 | 74 | E.N.Volnin+ | F1312 |
| | $p$,x | $^{12}$B | DAE | 4RUSLIN | 1.0+09 | 1.0+09 | Jour | ZEP,19,(11),691 | 74 | E.N.Volnin+ | F1312 |
| | $p$,x+$\alpha$ | inclusive | DAE | 4RUSLIN | 1.0+09 | 1.0+09 | Jour | ZEP,19,(11),691 | 74 | E.N.Volnin+ | F1312 |
| | $p$,x+$^{3}$He | inclusive | DAE | 4RUSLIN | 1.0+09 | 1.0+09 | Jour | ZEP,19,(11),691 | 74 | E.N.Volnin+ | F1312 |

## 50 Tin 120

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $^{7}$Li,inel | $^{120}$Sn | DAP | 3BZLUSP | 2.1+07 | 2.7+07 | Jour | JP/G,43,055103 | 16 | V.A.B.Zagatto+ | D0821 |

## 52 Tellurium 128

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $^{12}$C,3$n$ | $^{137}$Ce | CS | 3INDNSD | 4.2+07 | 8.2+07 | Jour | PR/C,91,014603 | 15 | Manojkumarsharma+ | D6254 |

## 52 Tellurium 130

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\alpha$,el | $^{130}$Te | DA | 4RUSMOS | 2.0+07 | 2.0+07 | Conf | 91MINSK,332 | 91 | A.Kirov+ | F1317 |

## 55 Caesium 133

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $p$,x | Many | CS | 4RUSFVE | 1.0+09 | 1.0+09 | Conf | 94PARIS,389 | 94 | V.G.Semenov+ | F1315 |
| | $p$,x | $^{84}$Rb | CS | 4RUSFVE | 1.0+09 | 1.0+09 | Conf | 94PARIS,389 | 94 | V.G.Semenov+ | F1315 |
| | $p$,x | $^{89}$Zr | CS | 4RUSFVE | 1.0+09 | 1.0+09 | Conf | 94PARIS,389 | 94 | V.G.Semenov+ | F1315 |
| | $p$,x | $^{95}$Tc | CS | 4RUSFVE | 1.0+09 | 1.0+09 | Conf | 94PARIS,389 | 94 | V.G.Semenov+ | F1315 |
| | $p$,x | $^{96}$Tc | CS | 4RUSFVE | 1.0+09 | 1.0+09 | Conf | 94PARIS,389 | 94 | V.G.Semenov+ | F1315 |
| | $p$,x | $^{110}$Ag | CS | 4RUSFVE | 1.0+09 | 1.0+09 | Conf | 94PARIS,389 | 94 | V.G.Semenov+ | F1315 |
| | $p$,x | $^{109}$In | CS | 4RUSFVE | 1.0+09 | 1.0+09 | Conf | 94PARIS,389 | 94 | V.G.Semenov+ | F1315 |
| | $p$,x | $^{111}$In | CS | 4RUSFVE | 1.0+09 | 1.0+09 | Conf | 94PARIS,389 | 94 | V.G.Semenov+ | F1315 |
| | $p$,x | $^{114}$In | CS | 4RUSFVE | 1.0+09 | 1.0+09 | Conf | 94PARIS,389 | 94 | V.G.Semenov+ | F1315 |
| | $p$,x | $^{113}$Sn | CS | 4RUSFVE | 1.0+09 | 1.0+09 | Conf | 94PARIS,389 | 94 | V.G.Semenov+ | F1315 |
| | $p$,x | $^{118}$Sb | CS | 4RUSFVE | 1.0+09 | 1.0+09 | Conf | 94PARIS,389 | 94 | V.G.Semenov+ | F1315 |
| | $p$,x | $^{125}$Xe | CS | 4RUSFVE | 1.0+09 | 1.0+09 | Conf | 94PARIS,389 | 94 | V.G.Semenov+ | F1315 |
| | $p$,x | $^{127}$Xe | CS | 4RUSFVE | 1.0+09 | 1.0+09 | Conf | 94PARIS,389 | 94 | V.G.Semenov+ | F1315 |
| | $p$,x | $^{131}$Ba | CS | 4RUSFVE | 1.0+09 | 1.0+09 | Conf | 94PARIS,389 | 94 | V.G.Semenov+ | F1315 |

## 58 Cerium 138

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,2$n$ | $^{137}$Ce | CS | 3CPRNPC | | | Jour | RCA,103,613 | 15 | Junhualuo+ | 32738 |

## 59 Praseodymium 141

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $\gamma$,2$n$ | $^{139}$Pr | CS | 4RUSMOS | 1.7+07 | 3.0+07 | Jour | IZV,81,744 | 17 | V.V.Varlamov+ | M0938 |
| * | $\gamma$,2$n$ | $^{139}$Pr | INT | 4RUSMOS | | 3.0+07 | Jour | IZV,81,744 | 17 | V.V.Varlamov+ | M0938 |
| * | $\gamma$,3$n$ | $^{138}$Pr | CS | 4RUSMOS | 2.8+07 | 3.0+07 | Jour | IZV,81,744 | 17 | V.V.Varlamov+ | M0938 |
| * | $\gamma$,3$n$ | $^{138}$Pr | INT | 4RUSMOS | | 3.0+07 | Jour | IZV,81,744 | 17 | V.V.Varlamov+ | M0938 |
| * | $\gamma$,$n$ | $^{140}$Pr | CS | 4RUSMOS | 8.8+06 | 3.0+07 | Jour | IZV,81,744 | 17 | V.V.Varlamov+ | M0938 |
| * | $\gamma$,$n$ | $^{140}$Pr | INT | 4RUSMOS | | 3.0+07 | Jour | IZV,81,744 | 17 | V.V.Varlamov+ | M0938 |
| * | $\gamma$,x+$n$ | inclusive | CS | 4RUSMOS | 8.8+06 | 3.0+07 | Jour | IZV,81,744 | 17 | V.V.Varlamov+ | M0938 |
| * | $\gamma$,x+$n$ | inclusive | INT | 4RUSMOS | | 3.0+07 | Jour | IZV,81,744 | 17 | V.V.Varlamov+ | M0938 |

## 60 Neodymium 142

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

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,2$n$ | $^{141}$Nd | CS | 3CPRNPC | 1.4+07 | 1.5+07 | Jour | IPC,109,63 | 15 | Junhualuo+ | 32743 |
| * | $n$,$p$ | $^{142}$Pr | CS | 3CPRNPC | 1.4+07 | 1.5+07 | Jour | IPC,109,63 | 15 | Junhualuo+ | 32743 |

## 60 Neodymium 146

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,$\alpha$ | $^{143}$Ce | CS | 3CPRNPC | 1.4+07 | 1.5+07 | Jour | IPC,109,63 | 15 | Junhualuo+ | 32743 |
| * | $n$,$p$ | $^{146}$Pr | CS | 3CPRNPC | 1.4+07 | 1.5+07 | Jour | IPC,109,63 | 15 | Junhualuo+ | 32743 |

## 60 Neodymium 148

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,2$n$ | $^{147}$Nd | CS | 3CPRNPC | 1.4+07 | 1.5+07 | Jour | IPC,109,63 | 15 | Junhualuo+ | 32743 |

## 60 Neodymium 150

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,2$n$ | $^{149}$Nd | CS | 3CPRNPC | 1.4+07 | 1.5+07 | Jour | IPC,109,63 | 15 | Junhualuo+ | 32743 |

## 62 Samarium 144

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,$\alpha$ | $^{141}$Nd | CS | 3CPRNPC | 1.5+07 | 1.5+07 | Jour | RCA,104,523 | 16 | Junhualuo+ | 32730 |
| * | $n$,$p$ | $^{144}$Pm | CS | 3CPRNPC | 1.4+07 | 1.5+07 | Jour | RCA,104,523 | 16 | Junhualuo+ | 32730 |

## 62 Samarium 149

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,$p$ | $^{149}$Pm | CS | 3CPRNPC | 1.4+07 | 1.5+07 | Jour | RCA,104,523 | 16 | Junhualuo+ | 32730 |

## 62 Samarium 150

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,$p$ | $^{150}$Pm | CS | 3CPRNPC | 1.4+07 | 1.5+07 | Jour | RCA,104,523 | 16 | Junhualuo+ | 32730 |

## 62 Samarium 152

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n,\alpha$ | $^{149}$Nd | CS | 3CPRNPC | 1.4+07 | 1.5+07 | Jour | RCA,104,523 | 16 | Junhualuo+ | 32730 |

## 62 Samarium 154

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n,2n$ | $^{153}$Sm | CS | 3CPRNPC | 1.4+07 | 1.5+07 | Jour | RCA,104,523 | 16 | Junhualuo+ | 32730 |
| * | $n,\alpha$ | $^{151}$Nd | CS | 3CPRNPC | 1.4+07 | 1.5+07 | Jour | RCA,104,523 | 16 | Junhualuo+ | 32730 |

## 65 Terbium 159

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $^{16}$O,$2n$ | $^{173}$Ta | CS | 3INDNSD | 7.5+07 | 9.5+07 | Jour | PR/C,94,044617 | 16 | Manojkumarsharma+ | D6278 |
| * | $^{16}$O,$3n$ | $^{172}$Ta | CS | 3INDNSD | 6.9+07 | 9.5+07 | Jour | PR/C,91,014603 | 15 | Manojkumarsharma+ | D6254 |
| * | $^{16}$O,$3n$ | $^{172}$Ta | CS | 3INDNSD | 6.9+07 | 9.5+07 | Jour | PR/C,94,044617 | 16 | Manojkumarsharma+ | D6278 |
| * | $^{16}$O,x | $^{173}$Hf | CS | 3INDNSD | 7.5+07 | 9.5+07 | Jour | PR/C,94,044617 | 16 | Manojkumarsharma+ | D6278 |

## 66 Dysprosium 156

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $\gamma,n$ | $^{155}$Dy | CS | 2GRCGRC | | 1.4+07 | Jour | EPJ/A,53,85 | 17 | E.Vagena+ | G0055 |

## 66 Dysprosium 158

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $\gamma,n$ | $^{157}$Dy | CS | 2GRCGRC | | 1.4+07 | Jour | EPJ/A,53,85 | 17 | E.Vagena+ | G0055 |

## 66 Dysprosium 162

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n,p$ | $^{162}$Tb | CS | 3CPRNPC | 1.4+07 | 1.5+07 | Jour | IPC,123,109 | 16 | Junhualuo+ | 32735 |

## 66 Dysprosium 163

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

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,$p$ | $^{163}$Tb | CS | 3CPRNPC | 1.4+07 | 1.5+07 | Jour | IPC,123,109 | 16 | Junhualuo+ | 32735 |

## 69 Thulium 169

| | Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Min | Max | | Ref Vol Page | | | |
| * | $^{12}$C,3$n$ | $^{178}$Re | CS | 3INDNSD | 5.6+07 | 8.3+07 | Jour | PR/C,91,014603 | 15 | Manojkumarsharma+ | D6254 |
| * | $^{16}$O,2$n$ | $^{183}$Ir | CS | 3INDNSD | 7.2+07 | 9.5+07 | Jour | PR/C,94,044617 | 16 | Manojkumarsharma+ | D6278 |
| * | $^{16}$O,3$n$ | $^{182}$Ir | CS | 3INDNSD | 7.2+07 | 9.5+07 | Jour | PR/C,91,014603 | 15 | Manojkumarsharma+ | D6254 |

## 71 Lutetium 176

| | Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Min | Max | | Ref Vol Page | | | |
| * | $\gamma$,el | | RP | 2GERIFS | 1.3+06 | 2.9+06 | Jour | PR/C,75,034301 | 07 | S.Walter+ | G0056 |

## 73 Tantalum 181

| | Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Min | Max | | Ref Vol Page | | | |
| * | $^{16}$O,2$n$ | $^{195}$Tl | CS | 3INDNSD | 7.6+07 | 9.9+07 | Jour | PR/C,94,044617 | 16 | Manojkumarsharma+ | D6278 |
| * | $^{16}$O,3$n$ | $^{194}$Tl | CS | 3INDNSD | 7.6+07 | 9.9+07 | Jour | PR/C,91,014603 | 15 | Manojkumarsharma+ | D6254 |

## 74 Tungsten 186

| | Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Min | Max | | Ref Vol Page | | | |
| * | $\gamma$,2$n$ | $^{184}$W | CS | 4RUSMOS | 1.3+07 | 2.8+07 | Jour | IZV,81,744 | 17 | V.V.Varlamov+ | M0938 |
| * | $\gamma$,2$n$ | $^{184}$W | INT | 4RUSMOS | | 2.8+07 | Jour | IZV,81,744 | 17 | V.V.Varlamov+ | M0938 |
| * | $\gamma$,3$n$ | $^{183}$W | CS | 4RUSMOS | 2.1+07 | 2.8+07 | Jour | IZV,81,744 | 17 | V.V.Varlamov+ | M0938 |
| * | $\gamma$,3$n$ | $^{183}$W | INT | 4RUSMOS | | 2.8+07 | Jour | IZV,81,744 | 17 | V.V.Varlamov+ | M0938 |
| * | $\gamma$,$n$ | $^{185}$W | CS | 4RUSMOS | 9.1+06 | 2.8+07 | Jour | IZV,81,744 | 17 | V.V.Varlamov+ | M0938 |
| * | $\gamma$,$n$ | $^{185}$W | INT | 4RUSMOS | | 2.8+07 | Jour | IZV,81,744 | 17 | V.V.Varlamov+ | M0938 |
| * | $\gamma$,x+$n$ | inclusive | CS | 4RUSMOS | 9.1+06 | 2.8+07 | Jour | IZV,81,744 | 17 | V.V.Varlamov+ | M0938 |
| * | $\gamma$,x+$n$ | inclusive | INT | 4RUSMOS | | 2.8+07 | Jour | IZV,81,744 | 17 | V.V.Varlamov+ | M0938 |
| * | $n$,$\gamma$ | $^{187}$W | CS | 3EGYCAI | 2.5-02 | 2.5-02 | Jour | RCA,105,347 | 17 | M.Al-Abyad+ | 31773 |
| * | $n$,$\gamma$ | $^{187}$W | RI | 3EGYCAI | 5.5-01 | | Jour | RCA,105,347 | 17 | M.Al-Abyad+ | 31773 |
| * | $^{34}$S,fis | Many | FY | 2JPNJAE | 1.5+08 | 1.8+08 | Jour | JP/CS,420,012126 | 13 | C.J.Lin+ | S0082 |
| * | $^{34}$S,fis | Many | KE | 2JPNJAE | 1.5+08 | 1.8+08 | Jour | JP/CS,420,012126 | 13 | C.J.Lin+ | S0082 |

## 79 Gold 197

| | Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Min | Max | | Ref Vol Page | | | |
| * | $^{6}$He,x | $^{199}$Au | CS | 4ZZZDUB | 4.4+07 | 5.6+07 | Jour | EPJ/A,31,185 | 07 | Yu.E.Penionzhkevich+ | F0837 |

## 82 Lead 208

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $^{7}$Li,$^{6}$He | $^{209}$Bi | DAP | 3CPRAEP | 2.6+07 | 4.3+07 | Jour | PR/C,89,044615 | 14 | L.Yang+ | S0096 |
| * | $^{7}$Li,el | $^{208}$Pb | DA | 3CPRAEP | 2.6+07 | 4.3+07 | Jour | PR/C,89,044615 | 14 | L.Yang+ | S0096 |
| | $^{40}$Ca,x | Many | CS | 2ITYPAD | 2.4+08 | 2.5+08 | Jour | PR/C,71,044610 | 05 | S.Szilner+ | D0845 |
| | $^{40}$Ca,x | Many | DA | 2ITYPAD | 2.4+08 | 2.5+08 | Jour | PR/C,71,044610 | 05 | S.Szilner+ | D0845 |
| * | $^{59}$Co,$n$ | $^{266}$Mt | CS | 1USABRK | 2.9+08 | 2.9+08 | Jour | PR/C,79,027605 | 09 | S.L.Nelson+ | C0958 |
| | $^{58}$Ni,x | Many | CS | 2ITYPAD | 3.3+08 | 3.3+08 | Jour | PR/C,66,024606 | 02 | L.Corradi+ | D0843 |
| | $^{58}$Ni,x | Many | DA | 2ITYPAD | 3.3+08 | 3.3+08 | Jour | PR/C,66,024606 | 02 | L.Corradi+ | D0843 |

## 83 Bismuth 209

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $^{56}$Fe,x | Many | CS | 1USABRK | 4.6+08 | 4.6+08 | Jour | PR/C,22,122 | 80 | V.E.Violajr+ | C0782 |

## 90 Thorium 232

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,fis | | ? | 3ISLHFA | Fiss | | Jour | NSE,51,52 | 73 | S.Shalev+ | 31774 |
| * | $n$,fis | $^{131}$Sb | CS | 3CPRNPC | 1.4+07 | 1.5+07 | Jour | IPC,135,1 | 17 | Yizhang+ | 32750 |
| * | $p$,x | $^{99}$Mo | CS | 1USALAS | 7.8+07 | 1.9+08 | Jour | ARI,118,366 | 16 | J.R.Griswold+ | C2251 |
| * | $p$,x | $^{140}$Ba | CS | 1USALAS | 7.8+07 | 1.9+08 | Jour | ARI,118,366 | 16 | J.R.Griswold+ | C2251 |
| * | $p$,x | $^{139}$Ce | CS | 1USALAS | 7.8+07 | 1.9+08 | Jour | ARI,118,366 | 16 | J.R.Griswold+ | C2251 |
| * | $p$,x | $^{141}$Ce | CS | 1USALAS | 9.0+07 | 1.9+08 | Jour | ARI,118,366 | 16 | J.R.Griswold+ | C2251 |
| * | $p$,x | $^{143}$Ce | CS | 1USALAS | 7.8+07 | 1.9+08 | Jour | ARI,118,366 | 16 | J.R.Griswold+ | C2251 |
| * | $p$,x | $^{144}$Ce | CS | 1USALAS | 7.8+07 | 1.9+08 | Jour | ARI,118,366 | 16 | J.R.Griswold+ | C2251 |
| * | $p$,x | $^{225}$Ac | CS | 1USALAS | 7.8+07 | 1.9+08 | Jour | ARI,118,366 | 16 | J.R.Griswold+ | C2251 |
| * | $p$,x | $^{226}$Ac | CS | 1USALAS | 1.3+08 | 1.9+08 | Jour | ARI,118,366 | 16 | J.R.Griswold+ | C2251 |
| * | $p$,x | $^{227}$Ac | CS | 1USALAS | 7.8+07 | 1.9+08 | Jour | ARI,118,366 | 16 | J.R.Griswold+ | C2251 |
| * | $p$,x | $^{227}$Th | CS | 1USALAS | 7.8+07 | 1.9+08 | Jour | ARI,118,366 | 16 | J.R.Griswold+ | C2251 |
| * | $p$,x | $^{228}$Th | CS | 1USALAS | 7.8+07 | 1.9+08 | Jour | ARI,118,366 | 16 | J.R.Griswold+ | C2251 |
| | $\alpha$,2$n$ | $^{234}$U | ? | 1USALAS | 2.0+07 | 2.9+07 | Jour | PR/C,4,1444 | 71 | H.C.Britt+ | C0810 |

## 92 Uranium 233

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,abs | | ? | 1USAINL | Maxwl | | Jour | ANS,4,270 | 61 | D.R.Deboisblanc+ | 14293 |
| | $n$,fis | | ? | 3ISLHFA | Maxwl | | Jour | NSE,51,52 | 73 | S.Shalev+ | 31774 |
| | $\alpha$,2$n$ | $^{235}$Pu | ? | 1USALAS | 2.0+07 | 2.9+07 | Jour | PR/C,4,1444 | 71 | H.C.Britt+ | C0810 |

## 92 Uranium 234

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $\alpha$,$n$ | $^{237}$Pu | ? | 1USALAS | 2.0+07 | 2.9+07 | Jour | PR/C,4,1444 | 71 | H.C.Britt+ | C0810 |

## 92 Uranium 235

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $n$,fis | | ? | 3ISLHFA | Maxwl | | Jour | NSE,51,52 | 73 | S.Shalev+ | 31774 |
| $\alpha$,2$n$ | $^{237}$Pu | ? | 1USALAS | 2.0+07 | 2.9+07 | Jour | PR/C,4,1444 | 71 | H.C.Britt+ | C0810 |

## 92 Uranium 236

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $\alpha$,2$n$ | $^{238}$Pu | ? | 1USALAS | 2.0+07 | 2.9+07 | Jour | PR/C,4,1444 | 71 | H.C.Britt+ | C0810 |
| $\alpha$,$n$ | $^{239}$Pu | ? | 1USALAS | 2.0+07 | 2.9+07 | Jour | PR/C,4,1444 | 71 | H.C.Britt+ | C0810 |

## 92 Uranium 238

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $n$,fis | | ? | 3ISLHFA | Fiss | | Jour | NSE,51,52 | 73 | S.Shalev+ | 31774 |
| $\alpha$,2$n$ | $^{240}$Pu | ? | 1USALAS | 2.0+07 | 2.9+07 | Jour | PR/C,4,1444 | 71 | H.C.Britt+ | C0810 |
| $\alpha$,3$n$ | $^{239}$Pu | ? | 1USALAS | 2.0+07 | 2.9+07 | Jour | PR/C,4,1444 | 71 | H.C.Britt+ | C0810 |
| $\alpha$,$n$ | $^{241}$Pu | ? | 1USALAS | 2.0+07 | 2.9+07 | Jour | PR/C,4,1444 | 71 | H.C.Britt+ | C0810 |

## 93 Neptunium 237

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $d$,2$n$ | $^{237}$Pu | ? | 1USALAS | 9.0+06 | 1.4+07 | Jour | PR/C,4,1444 | 71 | H.C.Britt+ | C0810 |
| $\alpha$,2$n$ | $^{239}$Am | ? | 1USALAS | 2.0+07 | 2.9+07 | Jour | PR/C,4,1444 | 71 | H.C.Britt+ | C0810 |

## 94 Plutonium 239

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $n$,fis | | ? | 3ISLHFA | Maxwl | | Jour | NSE,51,52 | 73 | S.Shalev+ | 31774 |
| $d$,2$n$ | $^{239}$Am | ? | 1USALAS | 9.0+06 | 1.4+07 | Jour | PR/C,4,1444 | 71 | H.C.Britt+ | C0810 |
| $\alpha$,2$n$ | $^{241}$Cm | ? | 1USALAS | 2.0+07 | 2.9+07 | Jour | PR/C,4,1444 | 71 | H.C.Britt+ | C0810 |

## 94 Plutonium 240

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $d$,2$n$ | $^{240}$Am | ? | 1USALAS | 9.0+06 | 1.4+07 | Jour | PR/C,4,1444 | 71 | H.C.Britt+ | C0810 |
| $\alpha$,2$n$ | $^{242}$Cm | ? | 1USALAS | 2.0+07 | 2.9+07 | Jour | PR/C,4,1444 | 71 | H.C.Britt+ | C0810 |

## 94 Plutonium 241

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $n$,tot | | CS | 1USAMTR | 2.5-02 | 2.5-02 | Prog | IN-1317,11 | Jan 70 | J.R.Smith+ | 13019 |

## 94 Plutonium 242

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $d$,2$n$ | $^{242}$Am | ? | 1USALAS | 9.0+06 | 1.4+07 | Jour | PR/C,4,1444 | 71 | H.C.Britt+ | C0810 |
| $\alpha$,2$n$ | $^{244}$Cm | ? | 1USALAS | 2.0+07 | 2.9+07 | Jour | PR/C,4,1444 | 71 | H.C.Britt+ | C0810 |
| $\alpha$,3$n$ | $^{243}$Cm | ? | 1USALAS | 2.0+07 | 2.9+07 | Jour | PR/C,4,1444 | 71 | H.C.Britt+ | C0810 |

## 94 Plutonium 244

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $d$,2$n$ | $^{244}$Am | ? | 1USALAS | 9.0+06 | 1.4+07 | Jour | PR/C,4,1444 | 71 | H.C.Britt+ | C0810 |
| $\alpha$,2$n$ | $^{246}$Cm | ? | 1USALAS | 2.0+07 | 2.9+07 | Jour | PR/C,4,1444 | 71 | H.C.Britt+ | C0810 |
| $\alpha$,3$n$ | $^{245}$Cm | ? | 1USALAS | 2.0+07 | 2.9+07 | Jour | PR/C,4,1444 | 71 | H.C.Britt+ | C0810 |

## 99 Einsteinium 254

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $^{13}$C,x | Many | CS | 1USABRK | 7.2+07 | 7.2+07 | Jour | PR/C,41,152 | 90 | K.J.Moody+ | C0898 |
| $^{18}$O,x | Many | CS | 1USABRK | 1.0+08 | 1.0+08 | Jour | NP/A,563,21 | 93 | K.J.Moody+ | C0937 |
| $^{22}$Ne,x | Many | CS | 1USABRK | 1.3+08 | 1.3+08 | Jour | NP/A,563,21 | 93 | K.J.Moody+ | C0937 |

## 100 Fermium 256

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,fis | Many | FY | 1USABRK | Spont | | Jour | NP/A,563,21 | 93 | K.J.Moody+ | 14283 |