# EXFOR News (March 2016)

## 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 # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,$\gamma$ | $^{2}$H | CSP | 4ZZZDUB | 3.0-02 | 3.0-02 | Jour | FCY/L,12,(4),837 | 15 | S.B.Borzakov+ | 41609 |
| | $p$,el | $^{1}$H | DA | 4RUSLIN | 1.0+09 | 1.0+09 | Jour | PL/B,42,121 | 72 | G.D.Alkhazov+ | F0690 |

## 1 Hydrogen 2

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,el | $^{2}$H | POD | 1USATNL | 2.1+07 | 2.1+07 | Jour | JP/G,42,085106 | 15 | G.J.Weisel+ | 14439 |
| | $p$,el | $^{2}$H | POD | 4RUSLIN | 1.0+09 | 1.0+09 | Jour | PL/B,42,121 | 72 | G.D.Alkhazov+ | F0690 |

## 2 Helium 3

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $\gamma$,$p$ | $^{2}$H | CS | 1USARUT | 1.6+07 | 1.6+07 | Jour | NP/A,223,(2),221 | 74 | J.L.Matthews+ | L0211 |
| $\gamma$,$p$ | $^{2}$H | CS | 1USATNL | 8.8+06 | 1.1+07 | Jour | PR/C,19,(3),601 | 79 | D.M.Skopik+ | L0210 |
| $\gamma$,$p$ | $^{2}$H | DA | 1USARUT | 1.6+07 | 1.6+07 | Jour | NP/A,223,(2),221 | 74 | J.L.Matthews+ | L0211 |
| $\gamma$,$p$ | $^{2}$H | DA | 1USATNL | 7.4+06 | 1.5+07 | Jour | PR/C,19,(3),601 | 79 | D.M.Skopik+ | L0210 |

## 2 Helium 4

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $p$,$d$ | $^{3}$He | CS | 2JPNTOK | 5.5+07 | 5.5+07 | Jour | JPJ,19,2004 | 64 | S.Hayakawa+ | E2243 |
| $p$,$d$ | $^{3}$He | DA | 2JPNTOK | 5.5+07 | 5.5+07 | Jour | JPJ,19,2004 | 64 | S.Hayakawa+ | E2243 |
| $p$,el | $^{4}$He | DA | 2JPNTOK | 5.5+07 | 5.5+07 | Jour | JPJ,19,2004 | 64 | S.Hayakawa+ | E2243 |

## 3 Lithium 6

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $n$,$t$ | $^{4}$He | CS | 1USALAS | 1.2+07 | 1.2+07 | Jour | NSE,,, | | M.Drosg | 14440 |
| $n$,$t$ | $^{4}$He | DA | 1USALAS | 2.3+06 | 1.2+07 | Jour | NSE,,, | | M.Drosg | 14440 |
| $n$,tot | | CS | 1USAORL | 8.5-03 | 5.3+05 | Priv | HARVEY | 72 | J.A.Harvey | 13772 |

## 3 Lithium 7

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

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $\gamma$,$d$ | $^{5}$He | CSP | 1USATNL | 1.2+07 | 1.5+07 | Jour | PR/C,92,044603 | 15 | W.A.Wurtz+ | L0209 |
| * | $\gamma$,$n$ | $^{6}$Li | CSP | 1USATNL | 1.3+07 | 1.5+07 | Jour | PR/C,92,044603 | 15 | W.A.Wurtz+ | L0209 |

## 4 Beryllium 9

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $p$,$p$+$\alpha$ | $^{5}$He | ? | 2JPNTOK | 5.5+07 | 5.5+07 | Jour | JPJ,26,1078 | 69 | S.Yamashita+ | E2272 |
| $\alpha$,$d$ | $^{11}$B | CSP | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,20,1967 | 65 | S.Kakigi | E2248 |
| $\alpha$,$d$ | $^{11}$B | DAP | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,20,1967 | 65 | S.Kakigi | E2248 |
| $\alpha$,el | $^{9}$Be | DA | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,23,911 | 67 | K.Fukunaga+ | E2259 |
| $\alpha$,inel | $^{9}$Be | CSP | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,23,911 | 67 | K.Fukunaga+ | E2259 |
| $\alpha$,inel | $^{9}$Be | DAP | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,23,911 | 67 | K.Fukunaga+ | E2259 |
| $\alpha$,$t$ | $^{10}$B | CSP | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,20,1967 | 65 | S.Kakigi | E2248 |
| $\alpha$,$t$ | $^{10}$B | DAP | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,20,1967 | 65 | S.Kakigi | E2248 |

## 5 Boron

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $\alpha$,el | $^{nat}$B | DA | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,22,685 | 67 | H.Nakamura | E2255 |
| $\alpha$,x+$n$ | inclusive | PY | 2ZZZGEL | 4.0+06 | 5.5+06 | Jour | ANE,10,541 | 83 | G.J.H.Jacobs+ | F0341 |

## 5 Boron 11

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $\alpha$,inel | $^{11}$B | DAP | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,22,685 | 67 | H.Nakamura | E2255 |

## 6 Carbon 12

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $p$,$d$ | $^{11}$C | DAP | 2JPNTOK | 5.7+07 | 5.7+07 | Jour | JPJ,20,2118 | 65 | Y.Ishizaki+ | E2249 |
| $p$,el | $^{12}$C | DA | 4RUSLIN | 1.0+09 | 1.0+09 | Jour | PL/B,42,121 | 72 | G.D.Alkhazov+ | F0690 |
| $p$,x+$d$ | inclusive | DAE | 2JPNTOK | 5.7+07 | 5.7+07 | Jour | JPJ,20,2118 | 65 | Y.Ishizaki+ | E2249 |
| $d$,$p$ | $^{13}$C | DAP | 2JPNTOH | 5.2+05 | 8.4+05 | Jour | JPJ,9,447 | 54 | S.Takemoto+ | E2203 |
| $\alpha$,el | $^{12}$C | DA | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,22,685 | 67 | H.Nakamura | E2255 |
| $\alpha$,inel | $^{12}$C | DAP | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,22,685 | 67 | H.Nakamura | E2255 |
| $^{12}$C,el | $^{12}$C | DA | 2JPNIPC | 7.0+07 | 7.0+07 | Jour | JPJ,30,910 | 71 | I.Kohno+ | E2300 |
| $^{12}$C,inel | $^{12}$C | DAP | 2JPNIPC | 7.0+07 | 7.0+07 | Jour | JPJ,30,910 | 71 | I.Kohno+ | E2300 |
| $^{12}$C,x+$\alpha$ | inclusive | DA | 3CPRIMP | 7.0+07 | 7.0+07 | Jour | PHE,9,71 | 85 | Xieyuanxiang+ | S0125 |
| $^{12}$C,x+$\alpha$ | inclusive | DAE | 3CPRIMP | 7.0+07 | 7.0+07 | Jour | PHE,9,71 | 85 | Xieyuanxiang+ | S0125 |
| $^{14}$N,el | $^{12}$C | DA | 2JPNIPC | 6.5+07 | 8.8+07 | Jour | JPJ,30,910 | 71 | I.Kohno+ | E2300 |
| $^{14}$N,inel | $^{12}$C | DAP | 2JPNIPC | 6.5+07 | 8.8+07 | Jour | JPJ,30,910 | 71 | I.Kohno+ | E2300 |

## 7 Nitrogen 14

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $d$,$n$ | $^{15}$O | DAP | 2JPNKYU | 1.8+06 | 1.8+06 | Jour | JPJ,11,1 | 56 | I.Nonaka+ | E2204 |
| $d$,$p$ | $^{15}$N | CSP | 2JPNKYU | 1.4+06 | 3.2+06 | Jour | JPJ,16,157 | 61 | N.Kawai | E2222 |
| $d$,$p$ | $^{15}$N | DAP | 2JPNKYU | 1.4+06 | 3.2+06 | Jour | JPJ,16,157 | 61 | N.Kawai | E2222 |

## 7 Nitrogen 17

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,B- | $^{17}$O | NUD | 2GERMNZ | Spont | | Jour | NP/A,274,45 | 76 | H.Ohm+ | 23240 |

## 8 Oxygen

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $\alpha$,x+$n$ | inclusive | PY | 2ZZZGEL | 4.0+06 | 5.5+06 | Jour | ANE,10,541 | 83 | G.J.H.Jacobs+ | F0341 |

## 8 Oxygen 16

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $n$,tot | | KER | 2GERPTB | 5.0+06 | 6.6+07 | Jour | PMB,45,651 | 00 | U.J.Schrewe+ | 22507 |
| $t$,el | $^{16}$O | DA | 2JPNNIG | 1.4+06 | 3.5+06 | Jour | JPJ,24,422 | 68 | K.Etoh+ | E2260 |
| $\alpha$,el | $^{16}$O | DA | 2JPNKTO | 2.7+07 | 2.7+07 | Jour | JPJ,20,475 | 65 | J.Kokame+ | E2246 |
| $\alpha$,inel | $^{16}$O | DAP | 2JPNKTO | 2.7+07 | 2.7+07 | Jour | JPJ,20,475 | 65 | J.Kokame+ | E2246 |

## 8 Oxygen 18

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $\alpha$,inel | $^{18}$O | DAP | 4RUSSUL | 2.4+07 | 2.4+07 | Jour | IZV,48,(5),995 | 84 | V.S.Sadkovskiy+ | F0496 |

## 9 Fluorine

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $\alpha$,x+$n$ | inclusive | PY | 2ZZZGEL | 4.0+06 | 5.5+06 | Jour | ANE,10,541 | 83 | G.J.H.Jacobs+ | F0341 |

## 9 Fluorine 19

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $\gamma$,$\alpha$ | $^{15}$N | CS | 1USATNL | 9.9+05 | 1.9+06 | Jour | NIM/A,781,96 | 15 | B.Digiovine+ | L0208 |
| | $\alpha$,$d$ | $^{21}$Ne | CSP | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,20,1967 | 65 | S.Kakigi | E2248 |
| | $\alpha$,$d$ | $^{21}$Ne | DAP | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,20,1967 | 65 | S.Kakigi | E2248 |
| | $\alpha$,inel | $^{19}$F | DAP | 4RUSSUL | 2.4+07 | 2.4+07 | Jour | IZV,48,(5),995 | 84 | V.S.Sadkovskiy+ | F0496 |
| | $\alpha$,$t$ | $^{20}$Ne | CSP | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,20,1967 | 65 | S.Kakigi | E2248 |
| | $\alpha$,$t$ | $^{20}$Ne | DAP | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,20,1967 | 65 | S.Kakigi | E2248 |

## 10 Neon 20

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $p$,el | $^{20}$Ne | DA | 2JPNOSA | 4.6+06 | 5.5+06 | Jour | JPJ,13,771 | 58 | M.Kondo+ | E2209 |
| $p$,inel | $^{20}$Ne | CSP | 2JPNOSA | 4.7+06 | 5.5+06 | Jour | JPJ,13,771 | 58 | M.Kondo+ | E2209 |
| $p$,inel | $^{20}$Ne | DAP | 2JPNOSA | 4.6+06 | 5.5+06 | Jour | JPJ,13,771 | 58 | M.Kondo+ | E2209 |
| $\alpha$,el | $^{20}$Ne | DA | 2JPNKTO | 2.7+07 | 2.7+07 | Jour | JPJ,20,475 | 65 | J.Kokame+ | E2246 |
| $\alpha$,inel | $^{20}$Ne | DAP | 4RUSSUL | 2.4+07 | 2.4+07 | Jour | IZV,48,(5),995 | 84 | V.S.Sadkovskiy+ | F0496 |
| $\alpha$,inel | $^{20}$Ne | DAP | 2JPNKTO | 2.7+07 | 2.7+07 | Jour | JPJ,20,475 | 65 | J.Kokame+ | E2246 |

## 12 Magnesium 24

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $p$,inel | $^{24}$Mg | CSP | 2JPNOSA | 4.8+06 | 5.7+06 | Jour | JPJ,13,777 | 58 | S.Yamabe+ | E2210 |
| $p$,inel | $^{24}$Mg | DAP | 2JPNOSA | 4.8+06 | 4.8+06 | Jour | JPJ,13,777 | 58 | S.Yamabe+ | E2210 |
| $p$,inel | $^{24}$Mg | DAP | 2JPNOSA | 4.8+06 | 5.7+06 | Jour | JPJ,13,237 | 58 | S.Yamabe | E2207 |
| $p$,inel | $^{24}$Mg | DAP | 2JPNOSA | 4.8+06 | 5.7+06 | Jour | JPJ,13,777 | 58 | S.Yamabe+ | E2210 |
| $p$,inel | $^{24}$Mg | DAP | 2JPNOSA | 5.1+06 | 5.1+06 | Jour | JPJ,13,237 | 58 | S.Yamabe | E2207 |
| $p$,inel | $^{24}$Mg | DAP | 2JPNOSA | 5.1+06 | 5.1+06 | Jour | JPJ,13,777 | 58 | S.Yamabe+ | E2210 |
| $p$,inel | $^{24}$Mg | DAP | 2JPNOSA | 5.4+06 | 5.4+06 | Jour | JPJ,13,237 | 58 | S.Yamabe | E2207 |
| $p$,inel | $^{24}$Mg | DAP | 2JPNOSA | 5.4+06 | 5.7+06 | Jour | JPJ,13,777 | 58 | S.Yamabe+ | E2210 |
| $p$,inel | $^{24}$Mg | DAP | 4RUSSUL | 5.9+06 | 6.1+06 | Jour | IZV,56,(3),197 | 92 | V.V.Lazarev+ | F0762 |
| $\alpha$,el | $^{24}$Mg | DA | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,20,475 | 65 | J.Kokame+ | E2246 |
| $\alpha$,inel | $^{24}$Mg | DAP | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,20,475 | 65 | J.Kokame+ | E2246 |
| $\alpha$,inel | $^{24}$Mg | DAP | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,22,685 | 67 | H.Nakamura | E2255 |

## 13 Aluminium 27

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $p$,$d$ | $^{26}$Al | DAP | 2JPNTOK | 5.7+07 | 5.7+07 | Jour | JPJ,20,2118 | 65 | Y.Ishizaki+ | E2249 |
| $p$,x+$d$ | inclusive | DAE | 2JPNTOK | 5.7+07 | 5.7+07 | Jour | JPJ,20,2118 | 65 | Y.Ishizaki+ | E2249 |
| $\alpha$,$d$ | $^{29}$Si | CSP | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,20,1967 | 65 | S.Kakigi | E2248 |
| $\alpha$,$d$ | $^{29}$Si | DAP | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,20,1967 | 65 | S.Kakigi | E2248 |
| $\alpha$,el | $^{27}$Al | DA | 2JPNOSA | 2.2+07 | 2.2+07 | Jour | JPJ,29,815 | 70 | T.Wakatsuki+ | E2279 |
| $\alpha$,inel | $^{27}$Al | DAP | 2JPNOSA | 2.2+07 | 2.2+07 | Jour | JPJ,29,815 | 70 | T.Wakatsuki+ | E2279 |
| $\alpha$,$t$ | $^{28}$Si | CSP | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,20,1967 | 65 | S.Kakigi | E2248 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| $\alpha$,$t$ | $^{28}$Si | DAP | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,20,1967 | 65 | S.Kakigi | E2248 |
| $^{12}$C,fus | | CS | 3CPRIMP | 4.5+07 | 7.2+07 | Jour | PHE,2,151 | 78 | Sunchichang+ | S0112 |
| $^{12}$C,fus | | DA | 3CPRIMP | 4.5+07 | 7.2+07 | Jour | PHE,2,151 | 78 | Sunchichang+ | S0112 |
| $^{12}$C,x | Many | DA | 3CPRIMP | 6.2+07 | 6.2+07 | Jour | PHE,10,323 | 86 | Fengenpu+ | S0134 |
| $^{12}$C,x | Many | DA | 3CPRIMP | 6.8+07 | 6.8+07 | Jour | PHE,8,748 | 84 | Xieyuanxiang+ | S0124 |
| $^{12}$C,x | Many | DA | 3CPRIMP | 7.2+07 | 7.2+07 | Jour | PHE,5,364 | 81 | Wuzhongli+ | S0116 |
| $^{12}$C,x | Many | DAE | 3CPRIMP | 7.2+07 | 7.2+07 | Jour | PHE,5,364 | 81 | Wuzhongli+ | S0116 |
| $^{12}$C,x | Many | DAP | 3CPRIMP | 7.2+07 | 7.2+07 | Jour | PHE,5,364 | 81 | Wuzhongli+ | S0116 |
| $^{12}$C,x+$\alpha$ | inclusive | DA | 3CPRIMP | 6.8+07 | 6.8+07 | Jour | PHE,9,71 | 85 | Xieyuanxiang+ | S0125 |
| $^{12}$C,x+$\alpha$ | inclusive | DAE | 3CPRIMP | 6.8+07 | 6.8+07 | Jour | PHE,9,71 | 85 | Xieyuanxiang+ | S0125 |
| $^{14}$N,el | $^{27}$Al | DA | 2JPNIPC | 6.5+07 | 8.8+07 | Jour | JPJ,30,910 | 71 | I.Kohno+ | E2300 |

## 14 Silicon 28

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $p$,el | $^{28}$Si | DA | 2JPNOSA | 5.0+06 | 5.4+06 | Jour | JPJ,14,1255 | 59 | Y.Oda+ | E2211 |
| $p$,inel | $^{28}$Si | CSP | 2JPNOSA | 5.0+06 | 5.4+06 | Jour | JPJ,14,1255 | 59 | Y.Oda+ | E2211 |
| $p$,inel | $^{28}$Si | CSP | 2JPNOSA | 5.3+06 | 5.5+06 | Jour | JPJ,13,777 | 58 | S.Yamabe+ | E2210 |
| $p$,inel | $^{28}$Si | CSP | 2JPNOSA | 5.4+06 | 5.4+06 | Jour | JPJ,13,541 | 58 | E.Okada+ | E2208 |
| $p$,inel | $^{28}$Si | DAP | 2JPNOSA | 2.2+06 | 5.7+06 | Jour | JPJ,13,541 | 58 | E.Okada+ | E2208 |
| $p$,inel | $^{28}$Si | DAP | 2JPNOSA | 4.8+06 | 5.7+06 | Jour | JPJ,13,777 | 58 | S.Yamabe+ | E2210 |
| $p$,inel | $^{28}$Si | DAP | 2JPNOSA | 5.0+06 | 5.2+06 | Jour | JPJ,14,1255 | 59 | Y.Oda+ | E2211 |
| $p$,inel | $^{28}$Si | DAP | 2JPNOSA | 5.3+06 | 5.5+06 | Jour | JPJ,13,777 | 58 | S.Yamabe+ | E2210 |
| $p$,inel | $^{28}$Si | DAP | 2JPNOSA | 5.4+06 | 5.4+06 | Jour | JPJ,13,541 | 58 | E.Okada+ | E2208 |
| $p$,inel | $^{28}$Si | DAP | 2JPNOSA | 5.4+06 | 5.4+06 | Jour | JPJ,13,777 | 58 | S.Yamabe+ | E2210 |
| $p$,inel | $^{28}$Si | DAP | 2JPNOSA | 5.4+06 | 5.4+06 | Jour | JPJ,14,1255 | 59 | Y.Oda+ | E2211 |
| $p$,inel | $^{28}$Si | DAP | 2JPNOSA | 5.5+06 | 5.5+06 | Jour | JPJ,13,777 | 58 | S.Yamabe+ | E2210 |
| $^{3}$He,$d$ | $^{29}$P | DAP | 2JPNTOK | 2.4+07 | 2.4+07 | Jour | JPJ,21,2110 | 66 | H.Ejiri+ | E2251 |
| $\alpha$,el | $^{28}$Si | DA | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,20,475 | 65 | J.Kokame+ | E2246 |
| $\alpha$,inel | $^{28}$Si | DAP | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,20,475 | 65 | J.Kokame+ | E2246 |
| $\alpha$,inel | $^{28}$Si | DAP | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,22,685 | 67 | H.Nakamura | E2255 |
| $^{12}$C,el | $^{28}$Si | DA | 2JPNIPC | 4.9+07 | 4.9+07 | Jour | JPJ,30,910 | 71 | I.Kohno+ | E2300 |
| $^{12}$C,el | $^{28}$Si | DA | 3CPRIMP | 5.6+07 | 7.0+07 | Jour | PHE,8,628 | 84 | Shenwenqing+ | S0123 |
| $^{12}$C,el | $^{28}$Si | DA | 2JPNIPC | 7.0+07 | 8.4+07 | Jour | JPJ,30,910 | 71 | I.Kohno+ | E2300 |
| $^{12}$C,fus | | CS | 3CPRIMP | 4.3+07 | 7.0+07 | Jour | PHE,10,704 | 86 | Zhengjiwen+ | S0137 |
| $^{12}$C,inel | $^{28}$Si | DAP | 2JPNIPC | 7.0+07 | 7.0+07 | Jour | JPJ,30,910 | 71 | I.Kohno+ | E2300 |
| $^{14}$N,el | $^{28}$Si | DA | 2JPNIPC | 8.4+07 | 8.4+07 | Jour | JPJ,30,910 | 71 | I.Kohno+ | E2300 |

## 16 Sulphur 32

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $p$,el | $^{32}$S | DA | 2JPNOSA | 5.0+06 | 5.4+06 | Jour | JPJ,14,1255 | 59 | Y.Oda+ | E2211 |
| $p$,inel | $^{32}$S | CSP | 2JPNOSA | 5.0+06 | 5.4+06 | Jour | JPJ,14,1255 | 59 | Y.Oda+ | E2211 |
| $p$,inel | $^{32}$S | DAP | 2JPNOSA | 5.0+06 | 5.4+06 | Jour | JPJ,14,1255 | 59 | Y.Oda+ | E2211 |

## 16 Sulphur 34

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $\alpha$,inel | $^{34}$S | DAP | 2SF ABA | 1.3+07 | 1.5+07 | Jour | NP/A,574,397 | 94 | A.Bredback+ | F0461 |

## 19 Potassium 39

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $p$,el | $^{39}$K | DA | 4RUSLIN | 1.0+09 | 1.0+09 | Jour | PL/B,42,121 | 72 | G.D.Alkhazov+ | F0690 |

## 20 Calcium

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $^{12}$C,x | Many | DA | 3CPRIMP | 6.9+07 | 6.9+07 | Jour | PHE,8,748 | 84 | Xieyuanxiang+ | S0124 |
| $^{12}$C,x+$\alpha$ | inclusive | DA | 3CPRIMP | 6.9+07 | 6.9+07 | Jour | PHE,9,71 | 85 | Xieyuanxiang+ | S0125 |

## 20 Calcium 40

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $p$,el | $^{40}$Ca | DA | 4RUSLIN | 1.0+09 | 1.0+09 | Jour | PL/B,42,121 | 72 | G.D.Alkhazov+ | F0690 |
| $^{12}$C,x+$\alpha$ | inclusive | DAE | 3CPRIMP | 6.9+07 | 6.9+07 | Jour | PHE,9,71 | 85 | Xieyuanxiang+ | S0125 |

## 20 Calcium 48

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $p$,el | $^{48}$Ca | DA | 4RUSLIN | 1.0+09 | 1.0+09 | Jour | PL/B,42,121 | 72 | G.D.Alkhazov+ | F0690 |

## 22 Titanium

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $p$,el | $^{nat}$Ti | DA | 2JPNOSA | 5.7+06 | 5.7+06 | Jour | JPJ,13,231 | 58 | M.Kondo+ | E2206 |
| $\alpha$,el | $^{nat}$Ti | DA | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,21,413 | 66 | I.Kumabe+ | E2250 |
| $\alpha$,inel | $^{nat}$Ti | DAP | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,21,413 | 66 | I.Kumabe+ | E2250 |

## 24 Chromium

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

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| $p$,el | $^{nat}$Cr | DA | 2JPNOSA | 5.7+06 | 5.7+06 | Jour | JPJ,13,231 | 58 | M.Kondo+ | E2206 |

## 24 Chromium 52

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $n$,0 | | RP | 1USAORL | | 1.0+06 | Jour | PR/C,62,014608 | Jul 00 | R.F.Carlton+ | 13840 |
| $n$,tot | | CS | 1USAORL | 6.7+04 | 6.9+07 | Jour | PR/C,62,014608 | Jul 00 | R.F.Carlton+ | 13840 |

## 24 Chromium 54

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $n$,$\alpha$ | $^{51}$Ti | CS | 2GERJUL | 1.5+07 | 1.5+07 | Jour | NP/A,283,269 | Jun 77 | N.I.Molla+ | 20721 |

## 25 Manganese 55

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $p$,$n$ | $^{55}$Fe | CSP | 2JPNISS | 2.3+06 | 2.8+06 | Jour | JPJ,21,2115 | 66 | A.Uchida+ | E2252 |
| $p$,$n$ | $^{55}$Fe | DAP | 2JPNISS | 2.3+06 | 2.8+06 | Jour | JPJ,21,2115 | 66 | A.Uchida+ | E2252 |

## 26 Iron

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $p$,el | $^{nat}$Fe | DA | 2JPNOSA | 5.7+06 | 5.7+06 | Jour | JPJ,13,231 | 58 | M.Kondo+ | E2206 |

## 26 Iron 54

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $n$,$\alpha$ | $^{51}$Cr | CS | 2GERKFK | 1.2+07 | 1.2+07 | Conf | 76GARMIS,,589 | Jun 76 | S.M.Qaim+ | 23277 |
| $n$,$p$ | $^{54}$Mn | CS | 2GERKFK | 1.2+07 | 1.2+07 | Conf | 76GARMIS,,589 | Jun 76 | S.M.Qaim+ | 23277 |

## 26 Iron 56

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $n$,$p$ | $^{56}$Mn | CS | 2GERKFK | 2.0+06 | 1.2+07 | Conf | 76GARMIS,,589 | Jun 76 | S.M.Qaim+ | 23277 |
| $n$,x+$\alpha$ | inclusive | CS | 1USALAS | 4.3+06 | 2.9+07 | Conf | 94GATLIN,1,314 | 94 | S.M.Sterbenz+ | 14433 |
| $n$,x+$\alpha$ | inclusive | DA | 1USALAS | 1.4+07 | 1.4+07 | Conf | 94GATLIN,1,314 | 94 | S.M.Sterbenz+ | 14433 |
| $n$,x+$\alpha$ | inclusive | DE | 1USALAS | 1.4+07 | 1.4+07 | Conf | 94GATLIN,1,314 | 94 | S.M.Sterbenz+ | 14433 |

## 27 Cobalt 59

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,2$n$ | $^{58}$Co | CS | 2GERKFK | 2.0+06 | 1.2+07 | Conf | 76GARMIS,,589 | Jun 76 | S.M.Qaim+ | 23277 |
| | $n$,$\alpha$ | $^{56}$Mn | CS | 2GERKFK | 2.0+06 | 1.2+07 | Conf | 76GARMIS,,589 | Jun 76 | S.M.Qaim+ | 23277 |

## 28 Nickel

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $p$,el | $^{nat}$Ni | DA | 2JPNOSA | 5.7+06 | 5.7+06 | Jour | JPJ,12,561 | 57 | M.Takeda+ | E2205 |

## 28 Nickel 58

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,2$n$ | $^{57}$Ni | CS | 2GERKFK | 2.0+06 | 1.2+07 | Conf | 76GARMIS,,589 | Jun 76 | S.M.Qaim+ | 23277 |
| | $n$,$p$ | $^{58}$Co | CS | 2GERKFK | 2.0+06 | 1.2+07 | Conf | 76GARMIS,,589 | Jun 76 | S.M.Qaim+ | 23277 |
| | $p$,$d$ | $^{57}$Ni | DAP | 2JPNTOK | 5.7+07 | 5.7+07 | Jour | JPJ,20,2118 | 65 | Y.Ishizaki+ | E2249 |
| | $p$,x+$d$ | inclusive | DAE | 2JPNTOK | 5.7+07 | 5.7+07 | Jour | JPJ,20,2118 | 65 | Y.Ishizaki+ | E2249 |
| | $^{12}$C,x | Many | DA | 3CPRIMP | 5.5+08 | 5.5+08 | Jour | PHE,16,364 | 92 | Yinshuzhi+ | S0154 |
| | $^{12}$C,x | Many | DA | 3CPRIMP | 5.6+08 | 5.6+08 | Jour | PHE,17,276 | 93 | Liuguanhua+ | S0160 |
| | $^{12}$C,x | Many | DA | 3CPRIMP | 5.6+08 | 5.6+08 | Jour | PHE,18,673 | 94 | Yinshuzhi+ | S0166 |
| | $^{12}$C,x | $^{6}$Li | DA | 3CPRIMP | 5.5+08 | 5.5+08 | Jour | PHE,16,364 | 92 | Yinshuzhi+ | S0154 |
| | $^{12}$C,x | $^{7}$Li | DA | 3CPRIMP | 5.5+08 | 5.5+08 | Jour | PHE,16,364 | 92 | Yinshuzhi+ | S0154 |
| | $^{12}$C,x | $^{7}$Be | DA | 3CPRIMP | 5.5+08 | 5.5+08 | Jour | PHE,16,364 | 92 | Yinshuzhi+ | S0154 |
| | $^{12}$C,x | $^{9}$Be | ? | 3CPRIMP | 5.5+08 | 5.5+08 | Jour | PHE,16,364 | 92 | Yinshuzhi+ | S0154 |
| | $^{12}$C,x+$\alpha$ | inclusive | DA | 3CPRIMP | 5.6+08 | 5.6+08 | Jour | PHE,16,1022 | 92 | Zhaoyouxiong+ | S0159 |
| | $^{12}$C,x+$\alpha$ | inclusive | DAE | 3CPRIMP | 5.6+08 | 5.6+08 | Jour | PHE,16,1022 | 92 | Zhaoyouxiong+ | S0159 |
| | $^{14}$N,el | $^{58}$Ni | DA | 2JPNIPC | 8.4+07 | 8.4+07 | Jour | JPJ,30,910 | 71 | I.Kohno+ | E2300 |

## 28 Nickel 60

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,$p$ | $^{60}$Co | CS | 2GERKFK | 2.0+06 | 1.2+07 | Conf | 76GARMIS,,589 | Jun 76 | S.M.Qaim+ | 23277 |
| * | $n$,x | $^{54}$Fe | CSP | 1USALAS | 4.3+07 | 2.4+08 | Jour | PR/C,91,064614 | 15 | N.Fotiades+ | 14359 |
| * | $n$,x | $^{55}$Fe | CSP | 1USALAS | 3.0+07 | 2.4+08 | Jour | PR/C,91,064614 | 15 | N.Fotiades+ | 14359 |
| * | $n$,x | $^{55}$Fe | ? | 1USALAS | 3.0+07 | 2.4+08 | Jour | PR/C,91,064614 | 15 | N.Fotiades+ | 14359 |
| * | $n$,x | $^{56}$Fe | CSP | 1USALAS | 1.2+07 | 2.4+08 | Jour | PR/C,91,064614 | 15 | N.Fotiades+ | 14359 |

## 28 Nickel 63

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

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,$\gamma$ | $^{64}$Ni | CS | 1USALAS | Maxwl | 7.4+05 | Jour | PR/C,92,045810 | 15 | M.Weigand+ | 14446 |

## 28 Nickel 64

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $^{12}$C,x | Many | DA | 3CPRIMP | 5.5+08 | 5.5+08 | Jour | PHE,16,364 | 92 | Yinshuzhi+ | S0154 |
| $^{12}$C,x | $^{6}$Li | DA | 3CPRIMP | 5.5+08 | 5.5+08 | Jour | PHE,16,364 | 92 | Yinshuzhi+ | S0154 |
| $^{12}$C,x | $^{6}$Li | DAE | 3CPRIMP | 5.5+08 | 5.5+08 | Jour | PHE,16,364 | 92 | Yinshuzhi+ | S0154 |
| $^{12}$C,x | $^{7}$Li | DA | 3CPRIMP | 5.5+08 | 5.5+08 | Jour | PHE,16,364 | 92 | Yinshuzhi+ | S0154 |
| $^{12}$C,x | $^{7}$Li | DAE | 3CPRIMP | 5.5+08 | 5.5+08 | Jour | PHE,16,364 | 92 | Yinshuzhi+ | S0154 |
| $^{12}$C,x | $^{7}$Be | DA | 3CPRIMP | 5.5+08 | 5.5+08 | Jour | PHE,16,364 | 92 | Yinshuzhi+ | S0154 |
| $^{12}$C,x | $^{9}$Be | ? | 3CPRIMP | 5.5+08 | 5.5+08 | Jour | PHE,16,364 | 92 | Yinshuzhi+ | S0154 |
| $^{12}$C,x+$\alpha$ | inclusive | CS | 3CPRIMP | 3.6+07 | 6.9+07 | Jour | PHE,11,92 | 87 | Wangdayan+ | S0138 |
| $^{12}$C,x+$\alpha$ | inclusive | DA | 3CPRIMP | 3.6+07 | 5.3+07 | Jour | PHE,11,92 | 87 | Wangdayan+ | S0138 |
| $^{12}$C,x+$\alpha$ | inclusive | DA | 3CPRIMP | 5.6+07 | 5.6+07 | Jour | PHE,10,583 | 86 | Zhangli+ | S0135 |
| $^{12}$C,x+$\alpha$ | inclusive | DA | 3CPRIMP | 5.7+07 | 6.4+07 | Jour | PHE,11,92 | 87 | Wangdayan+ | S0138 |
| $^{12}$C,x+$\alpha$ | inclusive | DA | 3CPRIMP | 6.9+07 | 6.9+07 | Jour | PHE,10,583 | 86 | Zhangli+ | S0135 |
| $^{12}$C,x+$\alpha$ | inclusive | DA | 3CPRIMP | 6.9+07 | 6.9+07 | Jour | PHE,11,92 | 87 | Wangdayan+ | S0138 |
| $^{12}$C,x+$\alpha$ | inclusive | DAE | 3CPRIMP | 3.6+07 | 5.3+07 | Jour | PHE,11,92 | 87 | Wangdayan+ | S0138 |
| $^{12}$C,x+$\alpha$ | inclusive | DAE | 3CPRIMP | 5.6+07 | 5.6+07 | Jour | PHE,10,583 | 86 | Zhangli+ | S0135 |
| $^{12}$C,x+$\alpha$ | inclusive | DAE | 3CPRIMP | 5.7+07 | 6.4+07 | Jour | PHE,11,92 | 87 | Wangdayan+ | S0138 |
| $^{12}$C,x+$\alpha$ | inclusive | DAE | 3CPRIMP | 6.9+07 | 6.9+07 | Jour | PHE,10,583 | 86 | Zhangli+ | S0135 |
| $^{12}$C,x+$\alpha$ | inclusive | DAE | 3CPRIMP | 6.9+07 | 6.9+07 | Jour | PHE,11,92 | 87 | Wangdayan+ | S0138 |
| $^{12}$C,x+$d$ | inclusive | DA | 3CPRIMP | 5.6+07 | 6.9+07 | Jour | PHE,10,583 | 86 | Zhangli+ | S0135 |
| $^{12}$C,x+$d$ | inclusive | DAE | 3CPRIMP | 5.6+07 | 5.6+07 | Jour | PHE,10,583 | 86 | Zhangli+ | S0135 |
| $^{12}$C,x+$^{3}$He | inclusive | DA | 3CPRIMP | 5.6+07 | 6.9+07 | Jour | PHE,10,583 | 86 | Zhangli+ | S0135 |
| $^{12}$C,x+$^{3}$He | inclusive | DAE | 3CPRIMP | 6.9+07 | 6.9+07 | Jour | PHE,10,583 | 86 | Zhangli+ | S0135 |
| $^{12}$C,x+$p$ | inclusive | DA | 3CPRIMP | 5.6+07 | 6.9+07 | Jour | PHE,10,583 | 86 | Zhangli+ | S0135 |
| $^{12}$C,x+$p$ | inclusive | DAE | 3CPRIMP | 5.6+07 | 6.9+07 | Jour | PHE,10,583 | 86 | Zhangli+ | S0135 |
| $^{12}$C,x+$t$ | inclusive | DA | 3CPRIMP | 5.6+07 | 6.9+07 | Jour | PHE,10,583 | 86 | Zhangli+ | S0135 |

## 29 Copper

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $p$,el | $^{nat}$Cu | DA | 2JPNOSA | 5.7+06 | 5.7+06 | Jour | JPJ,12,561 | 57 | M.Takeda+ | E2205 |
| $\alpha$,el | $^{nat}$Cu | DA | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,21,413 | 66 | I.Kumabe+ | E2250 |
| $\alpha$,inel | $^{nat}$Cu | DAP | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,21,413 | 66 | I.Kumabe+ | E2250 |
| $^{12}$C,x | Many | CS | 3CPRIMP | 5.3+08 | 5.3+08 | Jour | PHE,14,745 | 90 | Liwenxin+ | S0149 |

## 30 Zinc 79

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,B- | $^{79}$Ga | ? | 2SWDSWR | Spont | | Jour | NSE,64,749 | 77 | G.Rudstam+ | 23246 |

## 31 Gallium 80

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0,B- | $^{80}$Ge | NUD | 2SWDSWR | Spont | | Jour | NSE,64,749 | 77 | G.Rudstam+ | 23246 |

## 31 Gallium 81

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0,B- | $^{81}$Ge | NUD | 2SWDSWR | Spont | | Jour | NSE,64,749 | 77 | G.Rudstam+ | 23246 |

## 32 Germanium 76

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,inel | $^{76}$Ge | CSP | 1USAKTY | 4.3+06 | 4.9+06 | Jour | PR/C,92,034310 | 15 | B.P.Crider+ | 14442 |
| * | $n$,inel | $^{76}$Ge | ? | 1USAKTY | 4.3+06 | 4.9+06 | Jour | PR/C,92,034310 | 15 | B.P.Crider+ | 14442 |

## 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 | NP/A,317,335 | 79 | K.-L.Kratz+ | 23241 |
| | 0,B- | $^{85}$Se | NUD | 2SWDSWR | Spont | | Jour | NP/A,230,153 | 74 | S.Shalev+ | 23244 |
| | 0,B- | $^{85}$Se | ? | 2GERMNZ | Spont | | Jour | NP/A,317,335 | 79 | K.-L.Kratz+ | 23241 |

## 34 Selenium 74

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,0 | | RP | 2JPNJAE | | | Jour | NDS,119,128 | 14 | J.Hori+ | 23261 |
| * | $n$,$\gamma$ | $^{75}$Se | SPC | 2JPNJAE | 2.7+04 | 2.7+04 | Jour | NDS,119,128 | 14 | J.Hori+ | 23261 |

## 34 Selenium 77

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,$\gamma$ | $^{78}$Se | SPC | 2JPNJAE | 1.1+02 | 8.6+02 | Jour | NDS,119,128 | 14 | J.Hori+ | 23261 |

## 35 Bromine 79

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

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| $n$,inel | $^{79}$Br | CS | 1USABNL | 2.5-02 | 2.5-02 | Jour | PR,95,613(G12) | Jul 54 | G.Scharff-Goldhaber+ | 11565 |

**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 | NUD | 2SWDSWR | Spont | | Jour | NP/A,230,153 | 74 | S.Shalev+ | 23244 |

**35 Bromine** 88

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,B- | $^{88}$Kr | NUD | 2SWDSWR | Spont | | Jour | NP/A,230,153 | 74 | S.Shalev+ | 23244 |

**35 Bromine** 89

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,B- | $^{89}$Kr | NUD | 2SWDSWR | Spont | | Jour | NP/A,235,397 | 74 | G.Rudstam+ | 23245 |

**35 Bromine** 90

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,B- | $^{90}$Kr | NUD | 2SWDSWR | Spont | | Jour | NP/A,230,153 | 74 | S.Shalev+ | 23244 |

**35 Bromine** 91

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,B- | $^{91}$Kr | NUD | 2SWDSWR | Spont | | Jour | NP/A,235,397 | 74 | G.Rudstam+ | 23245 |

**36 Krypton** 86

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,2$n$ | $^{85}$Kr | CS | 1USATNL | 1.1+07 | 1.5+07 | Jour | PR/C,92,014624 | 15 | Meghabhike+ | 14429 |
| * | $n$,$\gamma$ | $^{87}$Kr | CS | 1USATNL | 3.7+05 | 1.5+07 | Jour | PR/C,92,014624 | 15 | Meghabhike+ | 14429 |

## 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 | 2SWDSWR | Spont | | Jour | NP/A,235,397 | 74 | G.Rudstam+ | 23245 |

## 37 Rubidium 94

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,B- | $^{94}$Sr | NUD | 2SWDSWR | Spont | | Jour | NSE,64,749 | 77 | G.Rudstam+ | 23246 |

## 37 Rubidium 95

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,B- | $^{95}$Sr | NUD | 2FR ILL | Spont | | Jour | ZP/A,312,43 | 83 | K.-L.Kratz+ | 23242 |
| 0,B- | $^{95}$Sr | NUD | 2SWDSWR | Spont | | Jour | NSE,64,749 | 77 | G.Rudstam+ | 23246 |

## 37 Rubidium 97

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

## 39 Yttrium 89

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $p$,el | $^{89}$Y | DA | 2JPNTOK | 1.5+07 | 1.5+07 | Jour | JPJ,23,673 | 67 | Y.Awaya | E2257 |
| $p$,inel | $^{89}$Y | DAP | 2JPNTOK | 1.5+07 | 1.5+07 | Jour | JPJ,23,673 | 67 | Y.Awaya | E2257 |
| $^{12}$C,x+$\alpha$ | inclusive | CS | 3CPRIMP | 7.2+07 | 7.2+07 | Jour | PHE,7,86 | 83 | Daiguangxi+ | S0122 |
| $^{12}$C,x+$\alpha$ | inclusive | DA | 3CPRIMP | 7.2+07 | 7.2+07 | Jour | PHE,7,86 | 83 | Daiguangxi+ | S0122 |
| $^{12}$C,x+$\alpha$ | inclusive | DAE | 3CPRIMP | 7.2+07 | 7.2+07 | Jour | PHE,7,86 | 83 | Daiguangxi+ | S0122 |
| $^{12}$C,x+$d$ | inclusive | DA | 3CPRIMP | 7.2+07 | 7.2+07 | Jour | PHE,7,86 | 83 | Daiguangxi+ | S0122 |
| $^{12}$C,x+$p$ | inclusive | DA | 3CPRIMP | 7.2+07 | 7.2+07 | Jour | PHE,7,86 | 83 | Daiguangxi+ | S0122 |

## 40 Zirconium 90

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $n$,2$n$ | $^{89}$Zr | CS | 2GERKFK | 2.0+06 | 1.2+07 | Conf | 76GARMIS,,589 | Jun 76 | S.M.Qaim+ | 23277 |
| $n$,$\alpha$ | $^{87}$Sr | CS | 2GERKFK | 2.0+06 | 1.2+07 | Conf | 76GARMIS,,589 | Jun 76 | S.M.Qaim+ | 23277 |
| $n$,$p$ | $^{90}$Y | CS | 2GERKFK | 2.0+06 | 1.2+07 | Conf | 76GARMIS,,589 | Jun 76 | S.M.Qaim+ | 23277 |

## 41 Niobium 93

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,2$n$ | $^{92}$Nb | CS | 2GERKFK | 2.0+06 | 1.2+07 | Conf | 76GARMIS,,589 | Jun 76 | S.M.Qaim+ | 23277 |
| | $n$,$\alpha$ | $^{90}$Y | CS | 2GERKFK | 2.0+06 | 1.2+07 | Conf | 76GARMIS,,589 | Jun 76 | S.M.Qaim+ | 23277 |
| | $^{12}$C,x | Many | CS | 3CPRAEP | 2.8+07 | 4.6+07 | Jour | PHE,19,603 | 83 | Qianxing+ | S0169 |

## 42 Molybdenum 92

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,$\alpha$ | $^{89}$Zr | CS | 2GERKFK | 2.0+06 | 1.2+07 | Conf | 76GARMIS,,589 | Jun 76 | S.M.Qaim+ | 23277 |
| | $n$,$p$ | $^{92}$Nb | CS | 2GERKFK | 2.0+06 | 1.2+07 | Conf | 76GARMIS,,589 | Jun 76 | S.M.Qaim+ | 23277 |
| | $\alpha$,el | $^{92}$Mo | DA | 2JPNIPC | 3.1+07 | 3.1+07 | Jour | JPJ,33,298 | 72 | K.Matsuda+ | E2310 |
| | $\alpha$,inel | $^{92}$Mo | DAP | 2JPNIPC | 3.1+07 | 3.1+07 | Jour | JPJ,33,298 | 72 | K.Matsuda+ | E2310 |

## 42 Molybdenum 94

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\alpha$,el | $^{94}$Mo | DA | 2JPNIPC | 3.1+07 | 3.1+07 | Jour | JPJ,33,298 | 72 | K.Matsuda+ | E2310 |
| | $\alpha$,inel | $^{94}$Mo | DAP | 2JPNIPC | 3.1+07 | 3.1+07 | Jour | JPJ,33,298 | 72 | K.Matsuda+ | E2310 |

## 42 Molybdenum 95

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,0 | | RP | 1USARPI | 1.8+05 | 5.9+05 | Jour | PR/C,92,024601 | 15 | R.Bahran+ | 14421 |
| | $n$,$p$ | $^{95}$Nb | CS | 2GERKFK | 2.0+06 | 1.2+07 | Conf | 76GARMIS,,589 | Jun 76 | S.M.Qaim+ | 23277 |
| * | $n$,tot | | CS | 1USARPI | 1.8+05 | 5.6+05 | Jour | PR/C,92,024601 | 15 | R.Bahran+ | 14421 |

## 42 Molybdenum 96

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\alpha$,el | $^{96}$Mo | DA | 2JPNIPC | 3.1+07 | 3.1+07 | Jour | JPJ,33,298 | 72 | K.Matsuda+ | E2310 |
| | $\alpha$,inel | $^{96}$Mo | DAP | 2JPNIPC | 3.1+07 | 3.1+07 | Jour | JPJ,33,298 | 72 | K.Matsuda+ | E2310 |

## 42 Molybdenum 98

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\alpha$,el | $^{98}$Mo | DA | 2JPNIPC | 3.1+07 | 3.1+07 | Jour | JPJ,33,298 | 72 | K.Matsuda+ | E2310 |
| | $\alpha$,inel | $^{98}$Mo | DAP | 2JPNIPC | 3.1+07 | 3.1+07 | Jour | JPJ,33,298 | 72 | K.Matsuda+ | E2310 |

## 42 Molybdenum 100

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $n$,2$n$ | $^{99}$Mo | CS | 2GERKFK | 2.0+06 | 1.2+07 | Conf | 76GARMIS,,589 | Jun 76 | S.M.Qaim+ | 23277 |
| $\alpha$,el | $^{100}$Mo | DA | 2JPNIPC | 3.1+07 | 3.1+07 | Jour | JPJ,33,298 | 72 | K.Matsuda+ | E2310 |
| $\alpha$,inel | $^{100}$Mo | DAP | 2JPNIPC | 3.1+07 | 3.1+07 | Jour | JPJ,33,298 | 72 | K.Matsuda+ | E2310 |

## 47 Silver

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $p$,x+$d$ | inclusive | DAE | 2JPNTOK | 5.7+07 | 5.7+07 | Jour | JPJ,20,2118 | 65 | Y.Ishizaki+ | E2249 |
| $\alpha$,el | $^{nat}$Ag | DA | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,21,413 | 66 | I.Kumabe+ | E2250 |
| $\alpha$,inel | $^{nat}$Ag | DAP | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,21,413 | 66 | I.Kumabe+ | E2250 |
| $^{12}$C,x+$\alpha$ | inclusive | CS | 3CPRIMP | 7.2+07 | 7.2+07 | Jour | PHE,7,86 | 83 | Daiguangxi+ | S0122 |
| $^{12}$C,x+$\alpha$ | inclusive | DA | 3CPRIMP | 7.2+07 | 7.2+07 | Jour | PHE,7,86 | 83 | Daiguangxi+ | S0122 |
| $^{12}$C,x+$\alpha$ | inclusive | DAE | 3CPRIMP | 7.2+07 | 7.2+07 | Jour | PHE,7,86 | 83 | Daiguangxi+ | S0122 |

## 48 Cadmium

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $\alpha$,el | $^{nat}$Cd | DA | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,21,413 | 66 | I.Kumabe+ | E2250 |
| $\alpha$,inel | $^{nat}$Cd | DAP | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,21,413 | 66 | I.Kumabe+ | E2250 |

## 49 Indium 115

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $n$,$\gamma$ | $^{116}$In | CS | 2NEDAMS | Fiss | | Rept | INDC-430 | 70 | H.Pauw | 20868 |
| $n$,inel | $^{115}$In | CS | 2NEDAMS | Fiss | | Rept | INDC-430 | 70 | H.Pauw | 20868 |
| $^{12}$C,x | Many | CS | 3CPRIMP | 5.0+08 | 5.0+08 | Jour | PHE,17,979 | 93 | Yinxinmin+ | S0163 |
| $^{12}$C,x | Many | DA | 3CPRIMP | 5.6+08 | 5.6+08 | Jour | PHE,17,276 | 93 | Liuguanhua+ | S0160 |
| $^{12}$C,x | Many | DA | 3CPRIMP | 5.6+08 | 5.6+08 | Jour | PHE,18,673 | 94 | Yinshuzhi+ | S0166 |
| $^{12}$C,x | $^{117}$Sb | CS | 3CPRIMP | 4.3+07 | 7.2+07 | Jour | PHE,11,660 | 87 | Suntongyu+ | S0142 |
| $^{12}$C,x | $^{117}$Sb | DA | 3CPRIMP | 6.9+07 | 6.9+07 | Jour | PHE,11,660 | 87 | Suntongyu+ | S0142 |
| $^{12}$C,x | $^{118}$Sb | DA | 3CPRIMP | 6.9+07 | 6.9+07 | Jour | PHE,11,660 | 87 | Suntongyu+ | S0142 |
| $^{12}$C,x | $^{121}$I | CS | 3CPRIMP | 3.9+07 | 7.2+07 | Jour | PHE,11,660 | 87 | Suntongyu+ | S0142 |
| $^{12}$C,x | $^{121}$I | DA | 3CPRIMP | 6.6+07 | 7.2+07 | Jour | PHE,11,660 | 87 | Suntongyu+ | S0142 |
| $^{12}$C,x+$\alpha$ | inclusive | DAE | 3CPRIMP | 5.6+08 | 5.6+08 | Jour | PHE,16,1022 | 92 | Zhaoyouxiong+ | S0159 |

## 49 Indium 129

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0,B- | $^{129}$Sn | NUD | 2SWDSWR | Spont | | Jour | NSE,64,749 | 77 | G.Rudstam+ | 23246 |

## 49 Indium 130

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0,B- | $^{130}$Sn | NUD | 2SWDSWR | Spont | | Jour | NSE,64,749 | 77 | G.Rudstam+ | 23246 |

## 50 Tin

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $p$,x+$d$ | inclusive | DAE | 2JPNTOK | 5.7+07 | 5.7+07 | Jour | JPJ,20,2118 | 65 | Y.Ishizaki+ | E2249 |
| | $\alpha$,el | $^{nat}$Sn | DA | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,21,413 | 66 | I.Kumabe+ | E2250 |
| | $\alpha$,inel | $^{nat}$Sn | DAP | 2JPNKTO | 2.8+07 | 2.8+07 | Jour | JPJ,21,413 | 66 | I.Kumabe+ | E2250 |

## 50 Tin 112

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,0 | | RP | 2JPNJAE | | | Jour | NDS,119,150 | 14 | A.Kimura+ | 23262 |
| | $^{12}$C,x | Many | CS | 3CPRIMP | 7.0+07 | 7.0+07 | Jour | PHE,10,68 | 86 | Wangdayan+ | S0133 |
| | $^{12}$C,x | Many | DA | 3CPRIMP | 7.0+07 | 7.0+07 | Jour | PHE,10,68 | 86 | Wangdayan+ | S0133 |
| | $^{12}$C,x+$\alpha$ | inclusive | CS | 3CPRIMP | 7.0+07 | 7.0+07 | Jour | PHE,10,68 | 86 | Wangdayan+ | S0133 |
| | $^{12}$C,x+$\alpha$ | inclusive | DA | 3CPRIMP | 7.0+07 | 7.0+07 | Jour | PHE,10,68 | 86 | Wangdayan+ | S0133 |
| | $^{12}$C,x+$\alpha$ | inclusive | DAE | 3CPRIMP | 7.0+07 | 7.0+07 | Jour | PHE,10,68 | 86 | Wangdayan+ | S0133 |

## 50 Tin 118

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,0 | | RP | 2JPNJAE | | | Jour | NDS,119,150 | 14 | A.Kimura+ | 23262 |

## 50 Tin 119

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $p$,$d$ | $^{118}$Sn | DAP | 2JPNTOK | 5.5+07 | 5.5+07 | Jour | JPJ,24,1167 | 68 | K.Yagi+ | E2263 |

## 50 Tin 124

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $^{12}$C,x | Many | CS | 3CPRIMP | 7.0+07 | 7.0+07 | Jour | PHE,10,68 | 86 | Wangdayan+ | S0133 |
| $^{12}$C,x | Many | DA | 3CPRIMP | 7.0+07 | 7.0+07 | Jour | PHE,10,68 | 86 | Wangdayan+ | S0133 |
| $^{12}$C,x+$\alpha$ | inclusive | CS | 3CPRIMP | 7.0+07 | 7.0+07 | Jour | PHE,10,68 | 86 | Wangdayan+ | S0133 |
| $^{12}$C,x+$\alpha$ | inclusive | DA | 3CPRIMP | 7.0+07 | 7.0+07 | Jour | PHE,10,68 | 86 | Wangdayan+ | S0133 |
| $^{12}$C,x+$\alpha$ | inclusive | DAE | 3CPRIMP | 7.0+07 | 7.0+07 | Jour | PHE,10,68 | 86 | Wangdayan+ | S0133 |

## 50 Tin 134

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,B- | $^{134}$Sb | NUD | 2SWDSWR | Spont | | Jour | NP/A,230,153 | 74 | S.Shalev+ | 23244 |

## 51 Antimony 121

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $n$,el | | RP | 4RUSKUR | | 7.0+02 | Jour | SNP,8,495 | 69 | G.V.Muradyan+ | 40208 |

## 51 Antimony 123

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $n$,el | | RP | 4RUSKUR | | 1.1+03 | Jour | SNP,8,495 | 69 | G.V.Muradyan+ | 40208 |

## 51 Antimony 135

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,B- | $^{135}$Te | NUD | 2GERMNZ | Spont | | Jour | NP/A,317,335 | 79 | K.-L.Kratz+ | 23241 |
| 0,B- | $^{135}$Te | NUD | 2SWDSWR | Spont | | Jour | NP/A,230,153 | 74 | S.Shalev+ | 23244 |
| 0,B- | $^{135}$Te | ? | 2GERMNZ | Spont | | Jour | NP/A,317,335 | 79 | K.-L.Kratz+ | 23241 |

## 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 | 2SWDSWR | Spont | | Jour | NP/A,230,153 | 74 | S.Shalev+ | 23244 |

## 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 | NUD | 2GERMNZ | Spont | | Jour | NP/A,317,335 | 79 | K.-L.Kratz+ | 23241 |
| 0,B- | $^{137}$Xe | NUD | 2SWDSWR | Spont | | Jour | NP/A,230,153 | 74 | S.Shalev+ | 23244 |

## 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 | 2SWDSWR | Spont | | Jour | NP/A,230,153 | 74 | S.Shalev+ | 23244 |

## 53 Iodine 139

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,B- | $^{139}$Xe | NUD | 2SWDSWR | Spont | | Jour | NP/A,235,397 | 74 | G.Rudstam+ | 23245 |

## 53 Iodine 140

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,B- | $^{140}$Xe | NUD | 2SWDSWR | Spont | | Jour | NP/A,230,153 | 74 | S.Shalev+ | 23244 |

## 53 Iodine 141

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,B- | $^{141}$Xe | ? | 2SWDSWR | Spont | | Jour | NP/A,235,397 | 74 | G.Rudstam+ | 23245 |

## 54 Xenon 124

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,2$n$ | $^{123}$Xe | CS | 1USATNL | 1.1+07 | 1.5+07 | Jour | PR/C,91,011601 | 15 | M.Bhike+ | 14443 |
| * | $n$,$\gamma$ | $^{125}$Xe | CS | 1USATNL | 3.7+05 | 7.2+06 | Jour | PR/C,91,011601 | 15 | M.Bhike+ | 14443 |

## 54 Xenon 129

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $n$,$\gamma$ | $^{130}$Xe | ? | 4RUSKUR | 2.5-02 | 2.5-02 | Jour | SNP,13,647 | 71 | L.V.Groshev+ | 40182 |

## 54 Xenon 131

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $n,\gamma$ | $^{132}$Xe | ? | 4RUSKUR | 2.5-02 | 2.5-02 | Jour | SNP,13,647 | 71 | L.V.Groshev+ | 40182 |

## 55 Caesium 133

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $^{12}$C,x | $^{121}$I | CS | 3CPRIMP | 5.6+08 | 5.6+08 | Jour | PHE,17,873 | 93 | Yangweifan+ | S0162 |

## 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 | 2SWDSWR | Spont | | Jour | NP/A,230,153 | 74 | S.Shalev+ | 23244 |

## 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 | 2SWDSWR | Spont | | Jour | NP/A,235,397 | 74 | G.Rudstam+ | 23245 |

## 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 | 2SWDSWR | Spont | | Jour | NP/A,230,153 | 74 | S.Shalev+ | 23244 |

## 58 Cerium 140

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $n,\alpha$ | $^{137}$Ba | CS | 2GERJUL | 1.5+07 | 1.5+07 | Jour | RCA,35,5 | 84 | S.M.Qaim | 21997 |

## 58 Cerium 142

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $n,\alpha$ | $^{139}$Ba | CS | 2GERJUL | 1.5+07 | 1.5+07 | Jour | RCA,35,5 | 84 | S.M.Qaim | 21997 |

## 60 Neodymium 142

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $n,\alpha$ | $^{139}$Ce | CS | 2GERJUL | 1.5+07 | 1.5+07 | Jour | RCA,35,5 | 84 | S.M.Qaim | 21997 |

## 60 Neodymium 143

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,0 | | NQ | 4ZZZDUB | Spont | | Jour | SNP,8,371 | 69 | E.N.Karzhavina+ | 40113 |

## 60 Neodymium 144

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,0 | | NQ | 4ZZZDUB | Spont | | Jour | SNP,8,371 | 69 | E.N.Karzhavina+ | 40113 |
| $n,\alpha$ | $^{141}$Ce | CS | 2GERJUL | 1.5+07 | 1.5+07 | Jour | RCA,35,5 | 84 | S.M.Qaim | 21997 |

## 60 Neodymium 145

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,0 | | NQ | 4ZZZDUB | Spont | | Jour | SNP,8,371 | 69 | E.N.Karzhavina+ | 40113 |

## 60 Neodymium 146

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,0 | | NQ | 4ZZZDUB | Spont | | Jour | SNP,8,371 | 69 | E.N.Karzhavina+ | 40113 |
| $n,\alpha$ | $^{143}$Ce | CS | 2GERJUL | 1.5+07 | 1.5+07 | Jour | RCA,35,5 | 84 | S.M.Qaim | 21997 |

## 60 Neodymium 147

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,0 | | NQ | 4ZZZDUB | Spont | | Jour | SNP,8,371 | 69 | E.N.Karzhavina+ | 40113 |

## 60 Neodymium 149

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

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0,0 | | NQ | 4ZZZDUB | Spont | | Jour | SNP,8,371 | 69 | E.N.Karzhavina+ | 40113 |

**60 Neodymium** 151

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,0 | | NQ | 4ZZZDUB | Spont | | Jour | SNP,8,371 | 69 | E.N.Karzhavina+ | 40113 |

**62 Samarium** 150

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $n,\alpha$ | $^{147}$Nd | CS | 2GERJUL | 1.5+07 | 1.5+07 | Jour | RCA,35,5 | 84 | S.M.Qaim | 21997 |
| $n,p$ | $^{150}$Pm | CS | 2GERJUL | 1.5+07 | 1.5+07 | Jour | RRL,25,335 | Feb 76 | S.M.Qaim | 20716 |

**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 | 2GERJUL | 1.5+07 | 1.5+07 | Jour | RCA,35,5 | 84 | S.M.Qaim | 21997 |

**62 Samarium** 154

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $n,\alpha$ | $^{151}$Nd | CS | 2GERJUL | 1.5+07 | 1.5+07 | Jour | RCA,35,5 | 84 | S.M.Qaim | 21997 |

**63 Europium** 151

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $n,\alpha$ | $^{148}$Pm | CS | 2GERJUL | 1.5+07 | 1.5+07 | Jour | RCA,35,5 | 84 | S.M.Qaim | 21997 |

**63 Europium** 153

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $n,\alpha$ | $^{150}$Pm | CS | 2GERJUL | 1.5+07 | 1.5+07 | Jour | RCA,35,5 | 84 | S.M.Qaim | 21997 |
| $n,p$ | $^{153}$Sm | CS | 2GERJUL | 1.5+07 | 1.5+07 | Jour | RRL,25,335 | Feb 76 | S.M.Qaim | 20716 |

## 64 Gadolinium

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n,\gamma$ | | RI | 1USARPI | 5.0-01 | 2.0+07 | Jour | NSE,180,86 | 15 | Y.-R.Kang+ | 14343 |

## 64 Gadolinium 154

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n,0$ | | RP | 1USARPI | | | Jour | NSE,180,86 | 15 | Y.-R.Kang+ | 14343 |
| * | $n,\gamma$ | $^{155}$Gd | RI | 1USARPI | 5.0-01 | 2.0+07 | Jour | NSE,180,86 | 15 | Y.-R.Kang+ | 14343 |

## 64 Gadolinium 155

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n,0$ | | RP | 1USARPI | | | Jour | NSE,180,86 | 15 | Y.-R.Kang+ | 14343 |
| * | $n,\gamma$ | $^{156}$Gd | RI | 1USARPI | 5.0-01 | 2.0+07 | Jour | NSE,180,86 | 15 | Y.-R.Kang+ | 14343 |

## 64 Gadolinium 156

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n,0$ | | RP | 1USARPI | | | Jour | NSE,180,86 | 15 | Y.-R.Kang+ | 14343 |
| | $n,\alpha$ | $^{153}$Sm | CS | 2GERJUL | 1.5+07 | 1.5+07 | Jour | RCA,35,5 | 84 | S.M.Qaim | 21997 |
| * | $n,\gamma$ | $^{157}$Gd | RI | 1USARPI | 5.0-01 | 2.0+07 | Jour | NSE,180,86 | 15 | Y.-R.Kang+ | 14343 |

## 64 Gadolinium 157

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n,0$ | | RP | 1USARPI | | | Jour | NSE,180,86 | 15 | Y.-R.Kang+ | 14343 |
| * | $n,\gamma$ | $^{158}$Gd | RI | 1USARPI | 5.0-01 | 2.0+07 | Jour | NSE,180,86 | 15 | Y.-R.Kang+ | 14343 |

## 64 Gadolinium 158

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n,0$ | | RP | 1USARPI | | | Jour | NSE,180,86 | 15 | Y.-R.Kang+ | 14343 |
| | $n,\alpha$ | $^{155}$Sm | CS | 2GERJUL | 1.5+07 | 1.5+07 | Jour | RCA,35,5 | 84 | S.M.Qaim | 21997 |
| * | $n,\gamma$ | $^{159}$Gd | RI | 1USARPI | 5.0-01 | 2.0+07 | Jour | NSE,180,86 | 15 | Y.-R.Kang+ | 14343 |

## 64 Gadolinium 160

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,0 | | RP | 1USARPI | | | Jour | NSE,180,86 | 15 | Y.-R.Kang+ | 14343 |
| * | $n$,$\gamma$ | $^{161}$Gd | RI | 1USARPI | 5.0-01 | 2.0+07 | Jour | NSE,180,86 | 15 | Y.-R.Kang+ | 14343 |

## 65 Terbium 159

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,$\gamma$ | $^{160}$Tb | CS | 2FR FR | 3.7+06 | 6.8+06 | Jour | NP/A,936,6 | 15 | N.Dzysiuk+ | 23255 |
| | $^{12}$C,fus | | CS | 3CPRIMP | 5.7+07 | 7.2+07 | Jour | PHE,12,372 | 88 | Wangsufang+ | S0143 |
| | $^{12}$C,x+$\alpha$ | inclusive | CS | 3CPRIMP | 7.2+07 | 7.2+07 | Jour | PHE,7,86 | 83 | Daiguangxi+ | S0122 |
| | $^{12}$C,x+$\alpha$ | inclusive | DA | 3CPRIMP | 7.2+07 | 7.2+07 | Jour | PHE,7,86 | 83 | Daiguangxi+ | S0122 |
| | $^{12}$C,x+$\alpha$ | inclusive | DAE | 3CPRIMP | 7.2+07 | 7.2+07 | Jour | PHE,7,86 | 83 | Daiguangxi+ | S0122 |

## 66 Dysprosium 160

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,$p$ | $^{160}$Tb | CS | 2GERJUL | 1.5+07 | 1.5+07 | Jour | RRL,25,335 | Feb 76 | S.M.Qaim | 20716 |

## 66 Dysprosium 161

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,$p$ | $^{161}$Tb | CS | 2GERJUL | 1.5+07 | 1.5+07 | Jour | RRL,25,335 | Feb 76 | S.M.Qaim | 20716 |

## 66 Dysprosium 162

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,$\alpha$ | $^{159}$Gd | CS | 2GERJUL | 1.5+07 | 1.5+07 | Jour | RCA,35,5 | 84 | S.M.Qaim | 21997 |

## 66 Dysprosium 164

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,$\alpha$ | $^{161}$Gd | CS | 2GERJUL | 1.5+07 | 1.5+07 | Jour | RCA,35,5 | 84 | S.M.Qaim | 21997 |

## 67 Holmium 165

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $^{12}$C,fus | | CS | 3CPRIMP | 3.4+07 | 7.2+07 | Jour | PHE,12,372 | 88 | Wangsufang+ | S0143 |

## 68 Erbium 166

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,$p$ | $^{166}$Ho | CS | 2GERJUL | 1.5+07 | 1.5+07 | Jour | RRL,25,335 | Feb 76 | S.M.Qaim | 20716 |

## 69 Thulium 169

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $^{12}$C,fis | | CS | 3CPRIMP | 6.7+07 | 7.3+07 | Jour | PHE,10,597 | 86 | Liuguoxing+ | S0136 |

## 70 Ytterbium 174

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,$\gamma$ | $^{175}$Yb | CS | 2GERKFK | Maxwl | 1.1+05 | Jour | PR/C,90,065801 | 14 | J.Marganiec+ | 23267 |

## 70 Ytterbium 176

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,$\gamma$ | $^{177}$Yb | CS | 2GERKFK | Maxwl | 1.1+05 | Jour | PR/C,90,065801 | 14 | J.Marganiec+ | 23267 |

## 71 Lutetium 175

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,$\alpha$ | $^{172}$Tm | CS | 2GERJUL | 1.5+07 | 1.5+07 | Jour | RCA,35,5 | 84 | S.M.Qaim | 21997 |
| | $^{12}$C,fis | | CS | 3CPRIMP | 6.5+07 | 7.3+07 | Jour | PHE,10,597 | 86 | Liuguoxing+ | S0136 |

## 71 Lutetium 176

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,$\alpha$ | $^{173}$Tm | CS | 2GERJUL | 1.5+07 | 1.5+07 | Jour | RCA,35,5 | 84 | S.M.Qaim | 21997 |

## 72 Hafnium 178

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n,\alpha$ | $^{175}$Yb | CS | 2GERJUL | 1.5+07 | 1.5+07 | Jour | RCA,35,5 | 84 | S.M.Qaim | 21997 |

## 72 Hafnium 180

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n,\alpha$ | $^{177}$Yb | CS | 2GERJUL | 1.5+07 | 1.5+07 | Jour | RCA,35,5 | 84 | S.M.Qaim | 21997 |

## 73 Tantalum 181

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $^{12}$C,fis | | CS | 3CPRIMP | 6.3+07 | 7.3+07 | Jour | PHE,10,597 | 86 | Liuguoxing+ | S0136 |
| | $^{12}$C,x | Many | CS | 3CPRIMP | 5.4+08 | 5.4+08 | Jour | PHE,15,832 | 91 | Liwenxin+ | S0153 |

## 74 Tungsten

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $^{12}$C,fis | | CS | 3CPRIMP | 5.9+07 | 7.3+07 | Jour | PHE,10,597 | 86 | Liuguoxing+ | S0136 |

## 75 Rhenium

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $^{12}$C,fis | | CS | 3CPRIMP | 5.9+07 | 7.3+07 | Jour | PHE,10,597 | 86 | Liuguoxing+ | S0136 |

## 76 Osmium 190

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n,\gamma$ | $^{191}$Os | CS | 2GERKFK | Maxwl | 1.1+05 | Jour | PR/C,90,065801 | 14 | J.Marganiec+ | 23267 |

## 76 Osmium 192

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n,\gamma$ | $^{193}$Os | CS | 2GERKFK | Maxwl | 1.1+05 | Jour | PR/C,90,065801 | 14 | J.Marganiec+ | 23267 |

## 78 Platinum

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $^{12}$C,fis | | CS | 3CPRIMP | 5.7+07 | 7.3+07 | Jour | PHE,10,597 | 86 | Liuguoxing+ | S0136 |

## 78 Platinum 196

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,$\gamma$ | $^{197}$Pt | CS | 2GERKFK | Maxwl | 1.1+05 | Jour | PR/C,90,065801 | 14 | J.Marganiec+ | 23267 |
| * | $n$,$\gamma$ | $^{197}$Pt | CSP | 2GERKFK | 2.5+04 | 1.1+05 | Jour | PR/C,90,065801 | 14 | J.Marganiec+ | 23267 |

## 78 Platinum 198

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,$\gamma$ | $^{199}$Pt | CS | 2GERKFK | Maxwl | 1.1+05 | Jour | PR/C,90,065801 | 14 | J.Marganiec+ | 23267 |

## 79 Gold 197

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $p$,$d$ | $^{196}$Au | DAP | 2JPNTOK | 5.7+07 | 5.7+07 | Jour | JPJ,20,2118 | 65 | Y.Ishizaki+ | E2249 |
| | $p$,x+$d$ | inclusive | DAE | 2JPNTOK | 5.7+07 | 5.7+07 | Jour | JPJ,20,2118 | 65 | Y.Ishizaki+ | E2249 |
| | $^{12}$C,fis | | CS | 3CPRIMP | 5.7+07 | 7.3+07 | Jour | PHE,10,597 | 86 | Liuguoxing+ | S0136 |
| | $^{12}$C,fis | | DA | 3CPRIMP | 6.3+07 | 7.3+07 | Jour | PHE,12,379 | 88 | Liuguoxing+ | S0144 |
| | $^{12}$C,x | Many | DA | 3CPRIMP | 5.6+08 | 5.6+08 | Jour | PHE,17,276 | 93 | Liuguanhua+ | S0160 |
| | $^{12}$C,x | Many | DA | 3CPRIMP | 5.6+08 | 5.6+08 | Jour | PHE,18,673 | 94 | Yinshuzhi+ | S0166 |
| | $^{12}$C,x | $^{9}$Be | DA | 3CPRIMP | 7.2+07 | 7.2+07 | Jour | PHE,6,609 | 82 | Wangdayan+ | S0120 |
| | $^{12}$C,x | $^{9}$Be | DAE | 3CPRIMP | 7.2+07 | 7.2+07 | Jour | PHE,6,609 | 82 | Wangdayan+ | S0120 |
| | $^{12}$C,x | $^{11}$B | DA | 3CPRIMP | 7.2+07 | 7.2+07 | Jour | PHE,6,609 | 82 | Wangdayan+ | S0120 |
| | $^{12}$C,x | $^{11}$B | DAE | 3CPRIMP | 7.2+07 | 7.2+07 | Jour | PHE,6,609 | 82 | Wangdayan+ | S0120 |
| | $^{12}$C,x | $^{184}$Ir | CS | 3CPRIMP | 5.6+08 | 5.6+08 | Jour | PHE,21,402 | 97 | Zhaozhizheng+ | S0173 |
| | $^{12}$C,x | $^{194}$Ir | CS | 3CPRIMP | 5.6+08 | 5.6+08 | Jour | PHE,21,402 | 97 | Zhaozhizheng+ | S0173 |
| | $^{12}$C,x+$\alpha$ | inclusive | DA | 3CPRIMP | 5.6+08 | 5.6+08 | Jour | PHE,16,1022 | 92 | Zhaoyouxiong+ | S0159 |
| | $^{12}$C,x+$\alpha$ | inclusive | DA | 3CPRIMP | 6.4+07 | 7.2+07 | Jour | PHE,6,609 | 82 | Wangdayan+ | S0120 |
| | $^{12}$C,x+$\alpha$ | inclusive | DAE | 3CPRIMP | 5.6+08 | 5.6+08 | Jour | PHE,16,1022 | 92 | Zhaoyouxiong+ | S0159 |
| | $^{12}$C,x+$\alpha$ | inclusive | DAE | 3CPRIMP | 6.4+07 | 7.2+07 | Jour | PHE,6,609 | 82 | Wangdayan+ | S0120 |

## 80 Mercury 202

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,$\gamma$ | $^{203}$Hg | CS | 2GERKFK | Maxwl | 1.1+05 | Jour | PR/C,90,065801 | 14 | J.Marganiec+ | 23267 |

## 80 Mercury 204

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n,\gamma$ | $^{205}$Hg | CS | 2GERKFK | Maxwl | 1.1+05 | Jour | PR/C,90,065801 | 14 | J.Marganiec+ | 23267 |

## 82 Lead

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $^{12}$C,fis | | CS | 3CPRIMP | 5.7+07 | 7.3+07 | Jour | PHE,10,597 | 86 | Liuguoxing+ | S0136 |
| $^{12}$C,fis | | DA | 3CPRIMP | 6.3+07 | 6.7+07 | Jour | PHE,6,737 | 82 | Liuguoxiang+ | S0121 |
| $^{14}$N,fis | | CS | 3CPRIMP | 6.8+07 | 9.7+07 | Jour | PHE,2,151 | 78 | Sunchichang+ | S0112 |
| $^{14}$N,fis | | DA | 3CPRIMP | 7.6+07 | 9.7+07 | Jour | PHE,2,242 | 78 | Liuguoxing+ | S0113 |
| $^{14}$N,fus | | CS | 3CPRIMP | 8.4+07 | 9.7+07 | Jour | PHE,2,151 | 78 | Sunchichang+ | S0112 |
| $^{14}$N,fus | | DA | 3CPRIMP | 8.4+07 | 9.7+07 | Jour | PHE,2,151 | 78 | Sunchichang+ | S0112 |

## 83 Bismuth 209

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $p,d$ | $^{208}$Bi | DAP | 2JPNTOK | 5.7+07 | 5.7+07 | Jour | JPJ,20,2118 | 65 | Y.Ishizaki+ | E2249 |
| $p$,x+$d$ | inclusive | DAE | 2JPNTOK | 5.7+07 | 5.7+07 | Jour | JPJ,20,2118 | 65 | Y.Ishizaki+ | E2249 |
| $^{12}$C,fis | | CS | 3CPRIMP | 5.7+07 | 7.3+07 | Jour | PHE,10,597 | 86 | Liuguoxing+ | S0136 |
| $^{12}$C,fis | | CS | 3CPRIMP | 7.0+07 | 7.3+07 | Jour | PHE,2,151 | 78 | Sunchichang+ | S0112 |
| $^{12}$C,fus | | CS | 3CPRIMP | 7.0+07 | 7.3+07 | Jour | PHE,2,151 | 78 | Sunchichang+ | S0112 |
| $^{12}$C,fus | | DA | 3CPRIMP | 7.0+07 | 7.3+07 | Jour | PHE,2,151 | 78 | Sunchichang+ | S0112 |
| $^{12}$C,x | $^{209}$At | CS | 3CPRIMP | 6.1+07 | 7.2+07 | Jour | PHE,2,143 | 78 | Guojunsheng+ | S0111 |
| $^{12}$C,x | $^{213}$Fr | CS | 3CPRIMP | 6.1+07 | 6.9+07 | Jour | PHE,2,143 | 78 | Guojunsheng+ | S0111 |

## 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 | 1.3+06 | 2.2+08 | Jour | ZEP,102,(4),231 | 15 | A.S.Vorobyev+ | 41608 |
| | $^{12}$C,fis | $^{1}$H | ? | 2ZZZCER | 7.2+08 | 7.2+08 | Jour | PHE,9,200 | 85 | Songshizhan+ | S0127 |
| | $^{12}$C,fis | $^{4}$He | ? | 2ZZZCER | 7.2+08 | 7.2+08 | Jour | PHE,9,200 | 85 | Songshizhan+ | S0127 |

## 92 Uranium

| Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|
| $\alpha$,x+$n$ | inclusive | PY | 2ZZZGEL | 4.0+06 | 5.5+06 | Jour | ANE,10,541 | 83 | G.J.H.Jacobs+ | F0341 |

## 92 Uranium 233

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,fis | Many | FY | 1USAWSU | 7.0+05 | 7.0+05 | Jour | JRN,306,79 | 15 | E.C.Finn+ | 14441 |

## 92 Uranium 235

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,fis | | DA | 4RUSLIN | 5.2+05 | 2.0+08 | Jour | ZEP,102,(4),231 | 15 | A.S.Vorobyev+ | 41608 |
| | $n$,fis | | DEP | 2UK HAR | 2.5-02 | 2.5-02 | Jour | JNE,3,7 | 56 | R.Batchelor+ | 23243 |
| * | $n$,fis | $\gamma$ | FY | 2FR ILL | 2.5-02 | 2.5-02 | Jour | NDS,119,217 | 14 | E.Murray+ | 23263 |
| * | $n$,fis | Many | FY | 1USAWSU | 7.0+05 | 7.0+05 | Jour | JRN,306,79 | 15 | E.C.Finn+ | 14441 |
| * | $n$,fis | Many | FY | 1USATNL | 8.9+06 | 8.9+06 | Jour | PR/C,91,064604 | 15 | C.Bhatia+ | 14423 |
| | $n$,fis | | KE | 2UK HAR | 2.5-02 | 2.5-02 | Jour | JNE,3,7 | 56 | R.Batchelor+ | 23243 |
| | $n$,fis | | KE | 4RUSFEI | 2.5-02 | 2.5-02 | Jour | SNP,10,282 | 70 | V.G.Vorob'Eva+ | 40240 |
| * | $n$,fis | | NUF | 1USALAS | 1.5+06 | 1.5+06 | Jour | NDS,119,213 | 14 | J.P.Lestone+ | 14430 |
| * | $n$,inel | $^{235}$U | CS | 2FR ITL | 1.4+06 | 1.4+06 | Jour | PR/C,91,044605 | 15 | G.Belier+ | 23256 |

## 92 Uranium 238

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,fis | | DA | 4RUSLIN | 1.0+06 | 1.9+08 | Jour | ZEP,102,(4),231 | 15 | A.S.Vorobyev+ | 41608 |
| * | $n$,fis | Many | FY | 1USAWSU | 7.0+05 | 7.0+05 | Jour | JRN,306,79 | 15 | E.C.Finn+ | 14441 |
| * | $n$,fis | Many | FY | 1USATNL | 8.9+06 | 8.9+06 | Jour | PR/C,91,064604 | 15 | C.Bhatia+ | 14423 |
| | $n$,fis | | KE | 4RUSFEI | 1.3+06 | 5.3+06 | Rept | YK-15,3 | Aug 74 | V.G.Vorob'Eva+ | 40342 |
| | $\alpha$,fis | | KE | 2JPNTOK | 2.8+07 | 3.6+07 | Jour | JPJ,20,190 | 65 | M.Seki | E2245 |

## 93 Neptunium 237

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,fis | Many | FY | 1USAWSU | 7.0+05 | 7.0+05 | Jour | JRN,306,79 | 15 | E.C.Finn+ | 14441 |

## 94 Plutonium 238

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,fis | | DA | 4RUSRI | 1.1+06 | 1.1+06 | Jour | BAS,36,201 | 73 | V.A.Nikolaev+ | 40159 |
| | $n$,fis | | KE | 4RUSRI | 2.5-02 | 2.5-02 | Jour | BAS,36,201 | 73 | V.A.Nikolaev+ | 40159 |

## 94 Plutonium 239

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,2$n$ | $^{238}$Pu | CSP | 1USALAS | 1.3+06 | 2.5+07 | Jour | PR/C,65,021601 | 02 | L.A.Bernstein+ | 13787 |
| | $n$,3$n$ | $^{237}$Pu | CSP | 1USALAS | 1.5+06 | 4.0+07 | Jour | PR/C,65,021601 | 02 | L.A.Bernstein+ | 13787 |
| | $n$,fis | | DA | 4RUSFEI | 3.4+05 | 3.3+06 | Jour | SNP,13,547 | 71 | D.L.Shpak+ | 40124 |
| * | $n$,fis | Many | FY | 1USAWSU | 7.0+05 | 7.0+05 | Jour | JRN,306,79 | 15 | E.C.Finn+ | 14441 |
| * | $n$,fis | Many | FY | 1USATNL | 8.9+06 | 8.9+06 | Jour | PR/C,91,064604 | 15 | C.Bhatia+ | 14423 |
| * | $n$,fis | | NUF | 1USALAS | 1.5+06 | 1.5+06 | Jour | NDS,119,213 | 14 | J.P.Lestone+ | 14430 |
| | $n$,inel | $^{239}$Pu | CSP | 1USALAS | 1.3+06 | 1.9+07 | Jour | PR/C,65,021601 | 02 | L.A.Bernstein+ | 13787 |

## 94 Plutonium 240

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,fis | | KE | 4RUSFEI | 8.5+05 | 4.9+06 | Rept | YK-15,3 | Aug 74 | V.G.Vorob'Eva+ | 40342 |

## 94 Plutonium 241

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,fis | | KE | 4RUSFEI | 2.8+05 | 5.0+06 | Rept | YK-15,3 | Aug 74 | V.G.Vorob'Eva+ | 40342 |

## 95 Americium 241

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | $n$,$\gamma$ | $^{242}$Am | CS | 2GERMUN | 2.5-02 | 2.5-02 | Jour | NDS,119,69 | 14 | C.Genreith+ | 23264 |

## 95 Americium 243

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $n$,0 | | RP | 4RUSNIR | 4.0-01 | 3.5+01 | Jour | SJA,40,368 | 76 | T.S.Belanova+ | 40280 |

## 98 Californium 249

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Energy (eV) Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0,fis | | NU | 4RUSFEI | Spont | | Jour | SNP,15,17 | 72 | K.E.Volodin+ | 40125 |
| | $n$,fis | Many | FY | 2SWTWUR | Maxwl | | Jour | JIN,39,1105 | 77 | H.Gaeggeler+ | 23271 |
| | $n$,fis | | NU | 2GERMNZ | 2.5-02 | 2.5-02 | Jour | JIN,39,1105 | 77 | H.Gaeggeler+ | 23271 |
| | $n$,fis | $^{136}$Cs | FY | 2SWTUBE | Maxwl | | Jour | JIN,39,1105 | 77 | H.Gaeggeler+ | 23271 |

| | Reaction | Product | Quant. | Lab. | Energy (eV) Min | Max | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | 0,fis | Many | FY | 1USALAS | Spont | | Jour | NIM/A,788,59 | 15 | K.Meierbachtol+ | 14420 |
| * | 0,fis | Many | KE | 4ZZZDUB | Spont | | Jour | FCY/L,12,(4),846 | 15 | G.S.Ahmadov+ | 41610 |
| * | 0,fis | | NUF | 1USAUSA | Spont | | Rept | INDC(USA)-108 | 15 | N.V.Kornilov | 14431 |
| * | 0,fis | Many | ? | 4ZZZDUB | Spont | | Jour | FCY/L,12,(4),846 | 15 | G.S.Ahmadov+ | 41610 |
| * | 0,fis | $^{4}$He | KE | 4ZZZDUB | Spont | | Jour | FCY/L,12,(4),846 | 15 | G.S.Ahmadov+ | 41610 |