EXFOR News (May 2013)

New experimental data available from Nuclear Reaction Data Centres

EXFOR is a world-wide data library for experimental neutron induced, charged-particle induced and photonuclear reaction data compiled by the International Network of the Nuclear Reaction Data Centres (NRDC)[a] coordinated by the IAEA Nuclear Data Section. Regularly updated retrieval database is available at NNDC, NEADB, IAEA-NDS, JAEA, JCPRG and CDFE. Please send an email to n.otsuka@iaea.org if you would prefer to be advised electronically when EXFOR News is released.

Quantity codes

ALF	α-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 $\mathrm{d}\Omega_1/\mathrm{d}\Omega_2/\mathrm{d}E'$	NUD	Delayed fission neutron multiplicity $\bar{\nu}_d$
D3E	Triple differential $\mathrm{d}\Omega/\mathrm{d}E'_1/\mathrm{d}E'_2$	NUF	Fragment neutrons
D4A	Quadruple diff. $\mathrm{d}\Omega_1/\mathrm{d}\Omega_2/\mathrm{d}E'_1/\mathrm{d}E'_2$	POL	Polarization
DA	Differential $\mathrm{d}/\mathrm{d}\Omega$	POD	Differential polarization
DAA	Double differential $\mathrm{d}\Omega_1/\mathrm{d}\Omega_2$	PY	Product yield (other than fission)
DAE	Double differential $\mathrm{d}\Omega/\mathrm{d}E'$	RI	Resonance integral
DAP	Partial differential $\mathrm{d}/\mathrm{d}\Omega$	RP	Resonance parameter
DAT	Temperature-dependent Legendre coefficient	RR	Reaction rate
DE	Differential $\mathrm{d}/\mathrm{d}E'$	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	η-value $\bar{\nu}\sigma_{\rm fis}/(\sigma_{\rm capt}+\sigma_{\rm fis})$	TTD	Differential thick target yield, $\mathrm{d}/\mathrm{d}\Omega$
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), CAJaD (Russia), 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 #
p,el	^{1}H	DA	2UK HAR	1.5+08	1.5+08	Jour	PPS/A,69,495	56	J.M.Cassels	O2057
^{8}He,t	^{6}He	?	2FR GAN	1.2+08	1.2+08	Jour	PL/B,718,441	12	X.Mougeot+	O2122

1 Hydrogen 2

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
^{86}Kr,p	^{87}Kr	?	1USAANL	8.6+08	8.6+08	Jour	PR/C,87,014312	13	D.K.Sharp+	C1975

2 Helium 3

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
α,γ	^{7}Be	CS	2SPNSPN	1.1+06	2.8+06	Jour	PR/C,86,032801	12	M.Carmona-Gallardo+	O2058

3 Lithium 6

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,inel	^{6}Li	CSP	2UK HAR	1.5+08	1.5+08	Jour	PPS,78,681	61	A.B.Clegg+	O2067
d,p	^{7}Li	DAP	2UK LVP	8.0+06	8.0+06	Jour	PPS/A,66,1032	53	J.R.Holt+	O2075

3 Lithium 7

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,α	^{4}He	DAP	2GRCATH	1.5+06	7.0+06	Jour	NIM/B,288,53	12	V.Paneta+	O2061
p,el	^{7}Li	DA	2GRCATH	1.5+06	7.0+06	Jour	NIM/B,288,53	12	V.Paneta+	O2061
p,inel	^{7}Li	DAP	2GRCATH	1.5+06	5.9+06	Jour	NIM/B,288,53	12	V.Paneta+	O2061
p,x	^{6}Li	CSP	2UK HAR	1.4+08	1.4+08	Jour	PPS,78,681	61	A.B.Clegg+	O2067
d,p	^{8}Li	DAP	2UK LVP	8.0+06	8.0+06	Jour	PPS/A,66,1032	53	J.R.Holt+	O2075
d,t	^{6}Li	DAP	2UK LVP	8.0+06	8.0+06	Jour	PPS/A,66,1032	53	J.R.Holt+	O2075
d,x+n	inclusive	DAE	2UK CAV	9.3+05	9.3+05	Jour	PPS/A,63,494	50	W.M.Gibson+	O2092
d,x+n	inclusive	DAE	2UK CAV	9.3+05	9.3+05	Jour	PPS/A,62,407	49	L.L.Green+	O2093

4 Beryllium 9

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

p,x	^{8}Li	CSP	2UK HAR	1.4+08	1.4+08	Jour	PPS,78,681	61	A.B.Clegg+	O2067
p,x	^{7}Be	CS	2UK HAR	3.2+07	1.6+08	Jour	PM,44,1305	53	D.C.Salter+	O2062
p,x	^{7}Be	?	2UK HAR	1.6+08	1.6+08	Jour	PM,42,665	51	T.C.Randle+	O1987
p,x+n	inclusive	PY	2ITYLNS	6.2+07	6.2+07	Prog	A-LNS-2010,56	10	A.Celentano+	O2088
p,x+n	inclusive	?	2ITYLNS	6.2+07	6.2+07	Prog	A-LNS-2010,56	10	A.Celentano+	O2088
d,α	^{7}Li	DAP	2UK LVP	9.0+06	9.0+06	Jour	PPS/A,69,28	56	T.S.Green+	O2094
d,el	^{9}Be	DA	2UK LVP	7.7+06	7.7+06	Jour	PPS/A,65,64	52	F.A.El-Bedewi	O2083
d,inel	^{9}Be	DAP	2UK LVP	9.0+06	9.0+06	Jour	PPS/A,69,28	56	T.S.Green+	O2094
d,p	^{10}Be	DAP	2UK LVP	7.7+06	7.7+06	Jour	PPS/A,65,64	52	F.A.El-Bedewi	O2083
d,p	^{10}Be	DAP	2UK LVP	8.0+06	8.0+06	Jour	PPS/A,66,1032	53	J.R.Holt+	O2075
d,p	^{10}Be	DAP	2UK LVP	9.0+06	9.0+06	Jour	PPS/A,69,28	56	T.S.Green+	O2094
d,t	^{8}Be	DAP	2UK LVP	7.7+06	7.7+06	Jour	PPS/A,64,947	51	F.A.El-Bedewi	O2082
d,t	^{8}Be	DAP	2UK LVP	8.0+06	8.0+06	Jour	PPS/A,66,1032	53	J.R.Holt+	O2075
^{3}He,t	^{9}B	DAP	2UK ALD	5.7+06	5.7+06	Jour	PPS,74,196	59	S.Hinds+	O2091
^{238}U,x	Many	?	2GERGSI	2.4+11	2.4+11	Jour	PL/B,717,371	12	J.Kurcewicz+	O2068

4 Beryllium 10

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
d,el	^{10}Be	DA	2ITYLNS	1.1+08	1.1+08	Jour	JP/CS,381,012088	12	L.Grassi+	O2069

5 Boron

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
d,x+n	inclusive	DAE	2UK CAV	9.3+05	9.3+05	Jour	PPS/A,62,586	49	W.M.Gibson	O2090

5 Boron 10

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,inel	^{10}B	CSP	2UK HAR	1.5+08	1.5+08	Jour	PPS,78,681	61	A.B.Clegg+	O2067
d,p	^{11}B	DAP	2UK LVP	8.0+06	8.0+06	Jour	PPS/A,66,1032	53	J.R.Holt+	O2075
d,x+n	inclusive	DAE	2UK CAV	9.3+05	9.3+05	Jour	PPS/A,62,586	49	W.M.Gibson	O2090

5 Boron 11

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,inel	^{11}B	CSP	2UK HAR	1.5+08	1.5+08	Jour	PPS,78,681	61	A.B.Clegg+	O2067
p,x	^{10}Be	CSP	2UK HAR	1.5+08	1.5+08	Jour	PPS,78,681	61	A.B.Clegg+	O2067
p,x	^{10}B	CSP	2UK HAR	1.5+08	1.5+08	Jour	PPS,78,681	61	A.B.Clegg+	O2067
d,n	^{12}C	DAP	2UK LVP	8.7+05	8.7+05	Jour	PPS/A,68,393	55	M.A.Ihsan	O2076
d,p	^{12}B	DAP	2UK LVP	8.0+06	8.0+06	Jour	PPS/A,66,1032	53	J.R.Holt+	O2075
d,x+n	inclusive	DAE	2UK CAV	9.3+05	9.3+05	Jour	PPS/A,62,586	49	W.M.Gibson	O2090

5 Boron 13

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
d,el	^{13}B	DA	2ITYLNS	1.0+08	1.0+08	Jour	JP/CS,381,012088	12	L.Grassi+	O2069

6 Carbon

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,inel	^{nat}C	CS	2UK BIR	9.0+08	9.0+08	Jour	PPS/A,70,209	57	N.E.Booth+	O2097
p,x	^{10}C	?	2UK BIR	3.6+08	9.8+08	Jour	PPS/A,70,824	57	J.L.Symonds+	O2065
p,x	^{11}C	CS	2UK BIR	2.4+08	9.5+08	Jour	PPS/A,68,1001	55	W.E.Burcham+	O2064
p,x	^{11}C	CS	2UK BIR	7.1+08	9.8+08	Jour	PPS/A,70,824	57	J.L.Symonds+	O2065

6 Carbon 12

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,inel	^{12}C	CSP	2UK HAR	1.4+08	1.4+08	Jour	PPS,78,681	61	A.B.Clegg+	O2067
p,inel	^{12}C	?	2UK HAR	1.4+08	1.4+08	Jour	PPS,78,681	61	A.B.Clegg+	O2067
p,x	^{6}Li	CS	2FR PAR	1.5+08	1.5+08	Jour	NIM,53,216	67	R.Klapisch+	O2106
p,x	^{9}Li	CS	2FR PAR	1.5+08	1.5+08	Jour	NIM,53,216	67	R.Klapisch+	O2106
p,x	^{7}Be	CS	2UK HAR	3.0+07	1.6+08	Jour	PPS/A,64,902	51	J.M.Dickson+	O2060
p,x	^{10}B	CSP	2UK HAR	1.3+08	1.4+08	Jour	PPS,78,681	61	A.B.Clegg+	O2067
p,x	^{10}C	CS	2UK HAR	1.4+08	1.4+08	Jour	PPS,78,681	61	A.B.Clegg+	O2067
p,x	^{11}C	?	2UK HAR	1.4+08	1.4+08	Jour	PPS,78,681	61	A.B.Clegg+	O2067
d,inel	^{12}C	DAP	2UK LVP	9.0+06	9.0+06	Jour	PPS/A,69,28	56	T.S.Green+	O2094
d,n	^{13}N	DAP	2UK LVP	8.0+06	8.0+06	Jour	PPS/A,66,95	53	R.Middleton+	O2080
d,p		RP	2NOROSL	1.4+06	3.1+06	Jour	NP/A,251,206	75	S.Tryti+	O2121
d,p	^{13}C	CSP	2NOROSL	7.5+05	3.2+06	Jour	NP/A,251,206	75	S.Tryti+	O2121
d,p	^{13}C	DAP	2NOROSL	1.4+06	3.2+06	Jour	NP/A,251,206	75	S.Tryti+	O2121
d,p	^{13}C	DAP	2UK LVP	9.0+06	9.0+06	Jour	PPS/A,69,28	56	T.S.Green+	O2094
α,el	^{12}C	DA	1USANOT	2.6+06	6.6+06	Jour	PR/C,79,055803	09	P.Tischhauser+	C1461
α,el	^{12}C	DA	1USANOT	6.6+06	8.2+06	Jour	PR/C,85,045804	12	R.J.Deboer+	C1921
α,inel	^{12}C	DAP	1USANOT	8.0+06	8.2+06	Jour	PR/C,85,045804	12	R.J.Deboer+	C1921
α,p	^{15}N	DA	1USANOT	7.8+06	8.2+06	Jour	PR/C,85,045804	12	R.J.Deboer+	C1921
^{12}C,x	^{6}Li	DA	2ITYLNS	7.4+08	7.4+08	Jour	PMB,57,7651	12	M.Denapoli+	O2089
^{12}C,x	^{6}Li	DAE	2ITYLNS	7.4+08	7.4+08	Jour	PMB,57,7651	12	M.Denapoli+	O2089
^{12}C,x	^{7}Li	DA	2ITYLNS	7.4+08	7.4+08	Jour	PMB,57,7651	12	M.Denapoli+	O2089
^{12}C,x	^{7}Li	DAE	2ITYLNS	7.4+08	7.4+08	Jour	PMB,57,7651	12	M.Denapoli+	O2089
^{12}C,x	^{7}Be	DA	2ITYLNS	7.4+08	7.4+08	Jour	PMB,57,7651	12	M.Denapoli+	O2089
^{12}C,x	^{7}Be	DAE	2ITYLNS	7.4+08	7.4+08	Jour	PMB,57,7651	12	M.Denapoli+	O2089
^{12}C,x	^{9}Be	DA	2ITYLNS	7.4+08	7.4+08	Jour	PMB,57,7651	12	M.Denapoli+	O2089
^{12}C,x	^{9}Be	DAE	2ITYLNS	7.4+08	7.4+08	Jour	PMB,57,7651	12	M.Denapoli+	O2089
^{12}C,x	^{10}B	DA	2ITYLNS	7.4+08	7.4+08	Jour	PMB,57,7651	12	M.Denapoli+	O2089
^{12}C,x	^{10}B	DAE	2ITYLNS	7.4+08	7.4+08	Jour	PMB,57,7651	12	M.Denapoli+	O2089
^{12}C,x	^{11}B	DA	2ITYLNS	7.4+08	7.4+08	Jour	PMB,57,7651	12	M.Denapoli+	O2089
^{12}C,x	^{11}B	DAE	2ITYLNS	7.4+08	7.4+08	Jour	PMB,57,7651	12	M.Denapoli+	O2089
^{12}C,x+α	inclusive	DA	2ITYLNS	7.4+08	7.4+08	Jour	PMB,57,7651	12	M.Denapoli+	O2089
^{12}C,x+α	inclusive	DAE	2ITYLNS	7.4+08	7.4+08	Jour	PMB,57,7651	12	M.Denapoli+	O2089

^{12}C,x+d	inclusive	DA	2ITYLNS	7.4+08	7.4+08	Jour	PMB,57,7651	12	M.Denapoli+	O2089
^{12}C,x+d	inclusive	DAE	2ITYLNS	7.4+08	7.4+08	Jour	PMB,57,7651	12	M.Denapoli+	O2089
^{12}C,x+p	inclusive	DA	2ITYLNS	7.4+08	7.4+08	Jour	PMB,57,7651	12	M.Denapoli+	O2089
^{12}C,x+p	inclusive	DAE	2ITYLNS	7.4+08	7.4+08	Jour	PMB,57,7651	12	M.Denapoli+	O2089
^{12}C,x+t	inclusive	DA	2ITYLNS	7.4+08	7.4+08	Jour	PMB,57,7651	12	M.Denapoli+	O2089
^{12}C,x+t	inclusive	DAE	2ITYLNS	7.4+08	7.4+08	Jour	PMB,57,7651	12	M.Denapoli+	O2089
^{16}O,2p	^{26}Mg	DAP	2GRCATH	3.5+07	3.5+07	Jour	JP/G,3,L85	77	A.D.Panagiotou+	O2113
^{16}O,^{8}Be	^{20}Ne	DAP	2UK HAR	1.0+07	1.5+07	Jour	JP/G,2,L55	76	D.A.Viggars+	O2109
^{16}O,α	^{24}Mg	DAP	2GRCATH	1.1+07	1.1+07	Jour	JP/G,5,309	79	N.Cindro+	O2123

6 Carbon 16

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,el	^{16}C	DA	2ITYLNS	5.0+07	5.0+07	Jour	JP/CS,381,012088	12	L.Grassi+	O2069
d,el	^{16}C	DA	2ITYLNS	1.0+08	1.0+08	Jour	JP/CS,381,012088	12	L.Grassi+	O2069

7 Nitrogen

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x	^{11}C	CS	2UK BIR	4.2+08	9.8+08	Jour	PPS/A,70,824	57	J.L.Symonds+	O2065
p,x	^{13}N	CS	2UK BIR	4.2+08	9.8+08	Jour	PPS/A,70,824	57	J.L.Symonds+	O2065
p,x	^{13}N	?	2UK BIR	4.2+08	9.8+08	Jour	PPS/A,70,824	57	J.L.Symonds+	O2065

7 Nitrogen 14

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,inel	^{14}N	CSP	2UK HAR	1.2+08	1.2+08	Jour	PPS,78,681	61	A.B.Clegg+	O2067
p,x	^{7}Be	CS	2FR SAC	1.5+08	6.0+08	Jour	PR/C,9,1385	74	G.M.Raisbeck+	O2056
p,x	^{10}Be	CS	2FR SAC	1.5+08	6.0+08	Jour	PR/C,9,1385	74	G.M.Raisbeck+	O2056
p,x	^{10}Be	?	2FR SAC	1.5+08	6.0+08	Jour	PR/C,9,1385	74	G.M.Raisbeck+	O2056
p,x	^{10}B	CSP	2UK HAR	1.2+08	1.2+08	Jour	PPS,78,681	61	A.B.Clegg+	O2067
p,x	^{11}C	CS	2UK HAR	1.4+08	1.4+08	Jour	PPS,78,681	61	A.B.Clegg+	O2067
p,x	^{11}C	?	2UK HAR	1.2+08	1.2+08	Jour	PPS,78,681	61	A.B.Clegg+	O2067
p,x	^{12}C	CSP	2UK HAR	8.5+07	1.4+08	Jour	PPS,78,681	61	A.B.Clegg+	O2067
p,x	^{13}C	CSP	2UK HAR	1.2+08	1.2+08	Jour	PPS,78,681	61	A.B.Clegg+	O2067
p,x	^{13}N	CS	2UK HAR	1.4+08	1.4+08	Jour	PPS,78,681	61	A.B.Clegg+	O2067
d,α	^{12}C	DAP	2UK LVP	9.0+06	9.0+06	Jour	PPS/A,69,28	56	T.S.Green+	O2094
d,inel	^{14}N	DAP	2UK LVP	9.0+06	9.0+06	Jour	PPS/A,69,28	56	T.S.Green+	O2094
d,n	^{15}O	DAP	2UK LVP	7.7+06	7.7+06	Jour	PPS/A,66,108	53	W.H.Evans+	O2078
d,p	^{15}N	DAP	2UK LVP	9.0+06	9.0+06	Jour	PPS/A,69,28	56	T.S.Green+	O2094

7 Nitrogen 15

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

p,γ	^{16}O	CSP	1USANOT	1.3+02	4.0+02	Jour	PR/C,82,055804	10	P.J.Leblanc+	C1825
p,n	^{15}O	CS	2GERPTB	5.6+06	8.7+06	Thes	Poenitz	10	E.Poenitz	O2099
p,n	^{15}O	DA	2GERPTB	5.6+06	9.1+06	Thes	Poenitz	10	E.Poenitz	O2099

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x	^{11}C	CS	2UK BIR	4.2+08	9.8+08	Jour	PPS/A,70,824	57	J.L.Symonds+	O2065
p,x	^{11}C	?	2UK BIR	4.2+08	9.8+08	Jour	PPS/A,70,824	57	J.L.Symonds+	O2065
p,x	^{13}N	CS	2UK BIR	4.2+08	9.8+08	Jour	PPS/A,70,824	57	J.L.Symonds+	O2065
p,x	^{15}O	CS	2UK BIR	4.2+08	9.8+08	Jour	PPS/A,70,824	57	J.L.Symonds+	O2065
p,x	^{15}O	?	2UK BIR	4.2+08	9.8+08	Jour	PPS/A,70,824	57	J.L.Symonds+	O2065

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
d,α	^{14}N	DAP	2UK LVP	6.8+06	8.9+06	Jour	PPS,71,252	58	A.W.Dalton+	O2086
d,α	^{14}N	DAP	2UK LVP	9.0+06	9.0+06	Jour	PPS/A,69,28	56	T.S.Green+	O2094
d,n	^{17}F	DAP	2UK LVP	8.0+06	8.0+06	Jour	PPS/A,64,756	51	F.A.El-Bedewi+	O2081
d,p	^{17}O	DAP	2UK LVP	9.0+06	9.0+06	Jour	PPS/A,69,28	56	T.S.Green+	O2094
t,n	^{18}F	CS	2GERMUN	3.1+05	2.3+06	Jour	ZN,16,933	61	K.Lorenzen+	O2107
^{3}He,α	^{15}O	DAP	2UK ALD	5.6+06	9.2+06	Jour	PPS,74,775	59	S.Hinds+	O2084
^{3}He,d	^{17}F	DAP	2UK ALD	9.2+06	9.2+06	Jour	PPS,74,775	59	S.Hinds+	O2084
^{3}He,p	^{18}F	DAP	2UK ALD	5.9+06	9.2+06	Jour	PPS,74,762	59	S.Hinds+	O2085

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,0		RP	1USANOT			Jour	PR/C,86,055801	12	A.Kontos+	C1958
p,γ		RP	2ITYLGS	1.8+05	1.8+05	Jour	PRL,109,202501	12	D.A.Scott+	O2098
p,γ		RP	1USANOT	5.9+02	1.1+06	Jour	PR/C,86,055801	12	A.Kontos+	C1958
p,γ	^{18}F	CS	1USANOT	1.0+04	5.0+05	Jour	PR/C,86,055801	12	A.Kontos+	C1958
p,γ	^{18}F	CS	2ITYLGS	2.0+05	3.7+05	Jour	PRL,109,202501	12	D.A.Scott+	O2098
p,γ	^{18}F	DAP	1USANOT	4.5+05	1.6+06	Jour	PR/C,86,055801	12	A.Kontos+	C1958
p,γ	^{18}F	RR	1USANOT	Maxwl		Jour	PR/C,86,055801	12	A.Kontos+	C1958
p,γ	^{18}F	RR	2ITYLGS	Maxwl		Jour	PRL,109,202501	12	D.A.Scott+	O2098

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,γ	^{19}F	RR	1USANOT	Maxwl		Jour	PR/C,86,065804	12	M.Q.Buckner+	C1964

9 Fluorine 19

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,α	^{16}O	DAP	2GRCATH	1.5+06	4.3+06	Jour	NIM/B,288,53	12	V.Paneta+	O2061
p,el	^{19}F	DA	2GRCATH	1.5+06	6.1+06	Jour	NIM/B,288,53	12	V.Paneta+	O2061
p,x	^{11}C	CS	2UK BIR	4.2+08	9.8+08	Jour	PPS/A,70,824	57	J.L.Symonds+	O2065
p,x	^{14}O	?	2UK BIR	4.2+08	9.8+08	Jour	PPS/A,70,824	57	J.L.Symonds+	O2065
p,x	^{15}O	CS	2UK BIR	5.2+08	9.8+08	Jour	PPS/A,70,824	57	J.L.Symonds+	O2065
p,x	^{15}O	?	2UK BIR	4.2+08	9.8+08	Jour	PPS/A,70,824	57	J.L.Symonds+	O2065
p,x	^{18}F	CS	2UK BIR	4.2+08	9.8+08	Jour	PPS/A,70,824	57	J.L.Symonds+	O2065
p,x	^{18}F	?	2UK BIR	4.2+08	9.8+08	Jour	PPS/A,70,824	57	J.L.Symonds+	O2065
d,α	^{17}O	DAP	2GRCATH	1.8+06	3.0+06	Jour	NIM/B,290,72	12	V.Paneta+	O2066
d,p	^{20}F	DAP	2GRCATH	1.8+06	3.0+06	Jour	NIM/B,290,72	12	V.Paneta+	O2066

10 Neon 20

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
d,p	^{21}Ne	DAP	3HUNDEB	5.0+05	6.6+05	Jour	JP/G,4,569	78	L.Vegh+	O2116
d,p	^{21}Ne	DAP	2UK LVP	8.5+06	8.5+06	Jour	PPS/A,69,310	56	H.B.Burrows+	O2095

10 Neon 22

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
d,p	^{23}Ne	DAP	2UK LVP	8.5+06	8.5+06	Jour	PPS/A,69,310	56	H.B.Burrows+	O2095

12 Magnesium

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x	^{7}Be	CS	2FR SAC	6.0+08	6.0+08	Jour	PR/C,9,1385	74	G.M.Raisbeck+	O2056
p,x	^{10}Be	CS	2FR SAC	6.0+08	6.0+08	Jour	PR/C,9,1385	74	G.M.Raisbeck+	O2056
p,x	^{10}Be	?	2FR SAC	6.0+08	6.0+08	Jour	PR/C,9,1385	74	G.M.Raisbeck+	O2056
p,x	^{22}Na	CS	2FR SAC	6.0+08	6.0+08	Jour	PR/C,9,1385	74	G.M.Raisbeck+	O2056
^{3}He,x	^{26}Al	CS	2GERMUN	6.3+06	2.0+07	Jour	MPS,46,1427	11	G.F.Herzog+	O2070

12 Magnesium 24

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,el	^{24}Mg	DA	2UK BIR	9.6+06	9.6+06	Jour	PPS/A,69,686	56	G.W.Greenless+	O2096
p,inel	^{24}Mg	CS	2UK BIR	9.6+06	9.6+06	Jour	PPS/A,69,686	56	G.W.Greenless+	O2096
p,inel	^{24}Mg	DAP	2UK BIR	8.9+06	9.6+06	Jour	PPS/A,69,686	56	G.W.Greenless+	O2096
d,p	^{25}Mg	DAP	2UK LVP	8.0+06	8.0+06	Jour	PPS/A,66,258	53	J.R.Holt+	O2072
d,p	^{25}Mg	?	2UK LVP	8.0+06	8.0+06	Jour	PPS/A,66,258	53	J.R.Holt+	O2072

12 Magnesium 25

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
d,p	^{26}Mg	DAP	2UK LVP	8.0+06	8.0+06	Jour	PPS/A,66,258	53	J.R.Holt+	O2072

12 Magnesium 26

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
d,p	^{27}Mg	DAP	2UK LVP	8.0+06	8.0+06	Jour	PPS/A,66,258	53	J.R.Holt+	O2072

13 Aluminium 27

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,α	^{24}Mg	MLT	2UK GLS	5.0+05	7.3+05	Jour	PPS/A,66,800	53	J.G.Rutherglen+	O2079
p,γ		RP	1USANOT	2.3+06	4.0+06	Jour	NIM/A,703,16	13	A.Simon+	C1967
p,γ	^{28}Si	MLT	2UK GLS	5.0+05	7.3+05	Jour	PPS/A,66,800	53	J.G.Rutherglen+	O2079
p,inel	^{27}Al	CS	2UK BIR	9.0+08	9.0+08	Jour	PPS/A,70,209	57	N.E.Booth+	O2097
p,x	^{7}Be	CS	2FR SAC	6.0+08	6.0+08	Jour	PR/C,9,1385	74	G.M.Raisbeck+	O2056
d,p	^{28}Al	DAP	2UK LVP	8.0+06	8.0+06	Jour	PPS/A,66,249	53	J.R.Holt+	O2071
^{3}He,x	^{26}Al	CS	2GERMUN	5.2+06	3.5+07	Jour	MPS,46,1427	11	G.F.Herzog+	O2070

14 Silicon

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x	^{7}Be	CS	2FR SAC	6.0+08	6.0+08	Jour	PR/C,9,1385	74	G.M.Raisbeck+	O2056
p,x	^{10}Be	CS	2FR SAC	6.0+08	6.0+08	Jour	PR/C,9,1385	74	G.M.Raisbeck+	O2056
p,x	^{10}Be	?	2FR SAC	6.0+08	6.0+08	Jour	PR/C,9,1385	74	G.M.Raisbeck+	O2056
p,x	^{22}Na	CS	2FR SAC	6.0+08	6.0+08	Jour	PR/C,9,1385	74	G.M.Raisbeck+	O2056
^{12}B,non		CS	3CPRIMP	6.5+08	6.5+08	Jour	CPH/C,34,(4),452	10	Lijia-Xing+	S0067
^{12}N,non		CS	3CPRIMP	4.2+08	4.2+08	Jour	CPH/C,34,(4),452	10	Lijia-Xing+	S0067

14 Silicon 28

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x	Many	CS	2FR PAR	1.5+08	1.5+08	Jour	NIM,53,216	67	R.Klapisch+	O2106
p,x	^{20}Na	CS	2FR PAR	1.5+08	1.5+08	Jour	NIM,53,216	67	R.Klapisch+	O2106
d,p	^{29}Si	DAP	2UK LVP	8.0+06	8.0+06	Jour	PPS/A,66,467	53	J.R.Holt+	O2074
^{3}He,α	^{27}Si	DAP	2UK ALD	9.2+06	9.2+06	Jour	PPS,75,444	60	S.Hinds+	O2087
^{3}He,d	^{29}P	DAP	2UK ALD	9.2+06	9.2+06	Jour	PPS,75,444	60	S.Hinds+	O2087

15 Phosphorus 31

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
d,n	^{32}S	DAP	2UK LVP	8.0+06	8.0+06	Jour	PPS/A,68,754	55	F.A.Elbedewi+	O2077

16 Sulphur 32

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
d,n	^{33}Cl	DAP	2UK LVP	8.0+06	8.0+06	Jour	PPS/A,66,95	53	R.Middleton+	O2080
d,p	^{33}S	DAP	2UK LVP	8.0+06	8.0+06	Jour	PPS/A,66,467	53	J.R.Holt+	O2074

16 Sulphur 33

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
α,n	^{36}Ar	DAP	2UK LVP	6.0+06	1.4+07	Jour	JP/G,2,249	76	P.J.Nolan+	O2110
α,n	^{36}Ar	POL	2UK LVP	6.0+06	1.4+07	Jour	JP/G,2,249	76	P.J.Nolan+	O2110
α,p	^{36}Cl	CS	1USANOT	7.4+06	8.2+06	Jour	NIM/B,294,491	13	M.Bowers+	C1968
α,p	^{36}Cl	DAP	2UK LVP	6.0+06	1.4+07	Jour	JP/G,2,249	76	P.J.Nolan+	O2110
α,p	^{36}Cl	POL	2UK LVP	6.0+06	1.4+07	Jour	JP/G,2,249	76	P.J.Nolan+	O2110

18 Argon 38

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
α,p	^{41}K	DAP	2UK LVP	9.5+06	1.1+07	Jour	JP/G,4,907	78	C.J.Lister+	O2118
α,p	^{41}K	?	2UK LVP	9.5+06	1.1+07	Jour	JP/G,4,907	78	C.J.Lister+	O2118

18 Argon 40

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
d,p	^{41}Ar	DAP	2UK LVP	8.5+06	8.5+06	Jour	PPS/A,69,310	56	H.B.Burrows+	O2095

20 Calcium

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
^{3}He,x	^{36}Cl	CS	2GERMUN	2.5+07	3.5+07	Jour	MPS,46,1427	11	G.F.Herzog+	O2070
^{3}He,x	^{41}Ca	CS	2GERMUN	5.2+06	3.5+07	Jour	MPS,46,1427	11	G.F.Herzog+	O2070

20 Calcium 40

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
d,p	^{41}Ca	DAP	2UK LVP	8.0+06	8.0+06	Jour	PPS/A,66,565	53	J.R.Holt+	O2073

23 Vanadium

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x	Many	CS	2SWDUPP	1.9+08	1.9+08	Jour	PM,44,1131	53	S.G.Rudstam	O2063
p,x	^{43}Sc	?	2SWDUPP	1.9+08	1.9+08	Jour	PM,44,1131	53	S.G.Rudstam	O2063

23 Vanadium 51

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x	^{21}Na	CS	2FR PAR	3.0+09	3.0+09	Jour	NIM,53,216	67	R.Klapisch+	O2106

24 Chromium 52

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
d,$2n$	^{52}Mn	CS	3CPRNRS	7.8+06	1.3+07	Jour	ASI,22,(2),250	66	Chengxiaowu+	S0060

25 Manganese 55

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x	Many	?	2SWDUPP	1.9+08	1.9+08	Jour	PM,44,1131	53	S.G.Rudstam	O2063
p,x	^{34}Cl	?	2SWDUPP	1.9+08	1.9+08	Jour	PM,44,1131	53	S.G.Rudstam	O2063
p,x	^{43}Sc	?	2SWDUPP	1.9+08	1.9+08	Jour	PM,44,1131	53	S.G.Rudstam	O2063

27 Cobalt 59

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x	Many	?	2SWDUPP	1.9+08	1.9+08	Jour	PM,44,1131	53	S.G.Rudstam	O2063
p,x	^{43}Sc	?	2SWDUPP	1.9+08	1.9+08	Jour	PM,44,1131	53	S.G.Rudstam	O2063

28 Nickel 58

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

^{3}He,el	^{58}Ni	DA	1USANOT	1.3+07	1.3+07	Jour	PR/C,87,014613	13	E.F.Aguilera+	C1976
^{3}He,fus		CS	1USANOT	1.0+07	1.3+07	Jour	PR/C,87,014613	13	E.F.Aguilera+	C1976
^{3}He,non		CS	1USANOT	1.3+07	1.3+07	Jour	PR/C,87,014613	13	E.F.Aguilera+	C1976
^{3}He,x+p	inclusive	CS	1USANOT	1.0+07	1.3+07	Jour	PR/C,87,014613	13	E.F.Aguilera+	C1976
^{3}He,x+p	inclusive	DA	1USANOT	1.0+07	1.3+07	Jour	PR/C,87,014613	13	E.F.Aguilera+	C1976

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
t,d	^{61}Ni	DAP	2UK MAN	2.5+06	4.8+06	Jour	JP/G,2,951	76	R.Chapman+	O2111
α,n	^{63}Zn	DAP	2UK LVP	9.3+06	1.2+07	Jour	JP/G,4,99	78	O.M.Mustaffa+	O2114
α,n	^{63}Zn	?	2UK LVP	9.3+06	1.0+07	Jour	JP/G,4,99	78	O.M.Mustaffa+	O2114

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
α,n	^{64}Zn	DAP	2UK LVP	7.8+06	7.8+06	Jour	JP/G,4,111	78	D.N.Simister+	O2115
α,n	^{64}Zn	?	2UK LVP	7.8+06	7.8+06	Jour	JP/G,4,111	78	D.N.Simister+	O2115

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
α,n	^{65}Zn	DAP	2UK LVP	8.0+06	1.4+07	Jour	JP/G,4,755	78	A.Kogan+	O2117
α,n	^{65}Zn	?	2UK LVP	8.5+06	1.0+07	Jour	JP/G,4,755	78	A.Kogan+	O2117

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
α,n	^{67}Zn	DAP	2UK LVP	7.4+06	1.0+07	Jour	JP/G,4,923	78	P.R.G.Lornie+	O2119
α,n	^{67}Zn	?	2UK LVP	7.4+06	1.0+07	Jour	JP/G,4,923	78	P.R.G.Lornie+	O2119

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,inel	$^{\mathrm{nat}}$Cu	CS	2UK BIR	9.0+08	9.0+08	Jour	PPS/A,70,209	57	N.E.Booth+	O2097

29 Copper 65

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
d,2n	^{65}Zn	CS	3CPRNRS	4.6+06	1.1+07	Jour	ASI,22,(2),250	66	Chengxiaowu+	S0060

30 Zinc 64

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
d,x	^{65}Zn	CS	3CPRNRS	3.0+06	1.2+07	Jour	ASI,22,(2),250	66	Chengxiaowu+	S0060

32 Germanium 74

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,γ	^{75}As	CS	2GRCATH	2.1+06	3.6+06	Jour	PR/C,86,035802	12	A.Sauerwein+	O2059
p,γ	^{75}As	CSP	2GRCATH	2.1+06	3.6+06	Jour	PR/C,86,035802	12	A.Sauerwein+	O2059

33 Arsenic 75

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,n	^{75}Se	CS	2FR SAC	1.1+07	1.1+07	Jour	NP,47,266	63	J.Delaunay-Olkowsky+	O2103
p,x	Many	CS	2ZZZCER	5.9+08	5.9+08	Jour	JIN,23,161	61	G.Rudstam+	O2105
p,x	Many	?	2ZZZCER	5.9+08	5.9+08	Jour	JIN,23,161	61	G.Rudstam+	O2105
p,x	^{74}As	CS	2FR SAC	1.1+07	1.1+07	Jour	NP,47,266	63	J.Delaunay-Olkowsky+	O2103

38 Strontium 86

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,n	^{86}Y	CS	2FR SAC	1.1+07	1.1+07	Jour	NP,47,266	63	J.Delaunay-Olkowsky+	O2103

38 Strontium 87

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,α	^{84}Rb	CS	2FR SAC	1.1+07	1.1+07	Jour	NP,47,266	63	J.Delaunay-Olkowsky+	O2103

38 Strontium 88

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

p,n	^{88}Y	CS	2FR SAC	1.1+07	1.1+07	Jour	NP,47,266	63	J.Delaunay-Olkowsky+	O2103
d,p	^{89}Sr	DAP	1USAYAL	1.5+07	1.5+07	Jour	PR/C,87,014312	13	D.K.Sharp+	C1975
d,p	^{89}Sr	DAP	2UK LVP	8.0+06	8.0+06	Jour	PPS/A,66,565	53	J.R.Holt+	O2073
α,^{3}He	^{89}Sr	DAP	1USAYAL	5.0+07	5.0+07	Jour	PR/C,87,014312	13	D.K.Sharp+	C1975

39 Yttrium 89

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,n	^{89}Zr	CS	2FR SAC	1.1+07	1.1+07	Jour	NP,47,266	63	J.Delaunay-Olkowsky+	O2103
p,x	^{88}Y	CS	2FR SAC	1.1+07	1.1+07	Jour	NP,47,266	63	J.Delaunay-Olkowsky+	O2103

40 Zirconium 90

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,α	^{87}Y	CS	2FR SAC	1.1+07	1.1+07	Jour	NP,47,266	63	J.Delaunay-Olkowsky+	O2103
p,n	^{90}Nb	CS	2FR SAC	6.9+06	1.1+07	Jour	NP,47,266	63	J.Delaunay-Olkowsky+	O2103
p,x	^{89}Zr	CS	2FR SAC	1.1+07	1.1+07	Jour	NP,47,266	63	J.Delaunay-Olkowsky+	O2103
d,p	^{91}Zr	DAP	1USAYAL	1.5+07	1.5+07	Jour	PR/C,87,014312	13	D.K.Sharp+	C1975
α,^{3}He	^{91}Zr	DAP	1USAYAL	5.0+07	5.0+07	Jour	PR/C,87,014312	13	D.K.Sharp+	C1975

40 Zirconium 91

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,α	^{88}Y	CS	2FR SAC	1.1+07	1.1+07	Jour	NP,47,266	63	J.Delaunay-Olkowsky+	O2103

40 Zirconium 94

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,α	^{91}Y	CS	2FR SAC	1.1+07	1.1+07	Jour	NP,47,266	63	J.Delaunay-Olkowsky+	O2103

42 Molybdenum 92

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
d,p	^{93}Mo	DAP	1USAYAL	1.5+07	1.5+07	Jour	PR/C,87,014312	13	D.K.Sharp+	C1975
α,^{3}He	^{93}Mo	DAP	1USAYAL	5.0+07	5.0+07	Jour	PR/C,87,014312	13	D.K.Sharp+	C1975

42 Molybdenum 94

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,α	^{91}Nb	CS	2FR SAC	1.1+07	1.1+07	Jour	NP,47,266	63	J.Delaunay-Olkowsky+	O2103
p,n	^{94}Tc	CS	2FR SAC	1.1+07	1.1+07	Jour	NP,47,266	63	J.Delaunay-Olkowsky+	O2103
p,x	^{93}Mo	CS	2FR SAC	1.1+07	1.1+07	Jour	NP,47,266	63	J.Delaunay-Olkowsky+	O2103

42 Molybdenum 100

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,2n	^{99}Tc	CS	2FR SAC	1.1+07	1.1+07	Jour	NP,47,266	63	J.Delaunay-Olkowsky+	O2103
p,α	^{97}Nb	CS	2FR SAC	1.1+07	1.1+07	Jour	NP,47,266	63	J.Delaunay-Olkowsky+	O2103

44 Ruthenium 102

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
d,inel	^{102}Ru	DAP	2DENNBI	1.2+07	1.2+07	Jour	JP/G,3,411	77	J.Rekstad+	O2112

44 Ruthenium 104

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
d,el	^{104}Ru	DA	2DENNBI	1.2+07	1.2+07	Jour	JP/G,3,411	77	J.Rekstad+	O2112
d,inel	^{104}Ru	DAP	2DENNBI	1.2+07	1.2+07	Jour	JP/G,3,411	77	J.Rekstad+	O2112

46 Palladium 102

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
α,2n	^{104}Cd	DAP	2FR GRE	3.3+07	3.3+07	Jour	JP/G,4,943	78	J.Genevey-Rivier+	O2120
α,n	^{105}Cd	DAP	2FR GRE	2.4+07	2.4+07	Jour	JP/G,4,943	78	J.Genevey-Rivier+	O2120

46 Palladium 104

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
α,3n	^{105}Cd	DAP	2FR GRE	3.7+07	4.8+07	Jour	JP/G,4,943	78	J.Genevey-Rivier+	O2120

47 Silver 109

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
d,p	^{110}Ag	CS	3CPRSIU	3.3+06	1.3+07	Jour	NIM/B,68,145	92	Pengxiufeng+	S0024

48 Cadmium 106

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
^{3}He,α	^{105}Cd	DAP	2UK HAR	1.8+07	1.8+07	Jour	JP/G,1,657	75	R.Chapman+	O2108

51 Antimony

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,inel	^{nat}Sb	CS	2UK BIR	9.0+08	9.0+08	Jour	PPS/A,70,209	57	N.E.Booth+	O2097

59 Praseodymium 141

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,n	^{141}Nd	CS	2FR PAR	5.0+06	1.1+07	Jour	NP,23,164	61	J.Olkowsky+	O2104

73 Tantalum 181

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x	^{24}Na	CS	2FR PAR	3.0+09	3.0+09	Jour	NIM,53,216	67	R.Klapisch+	O2106

79 Gold 197

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,γ	^{198}Au	RR	1USAINL	Fast		Conf	79KNOX,,475	79	R.A.Anderl+	14354
p,3n	^{195}Hg	CS	2ITYMIL	2.7+07	2.8+07	Jour	ARI,35,564	84	C.Birattari+	O2102
p,3n	^{195}Hg	TT	2ITYMIL	1.9+07	4.3+07	Rept	INFN/TC-80/17	80	C.Birattari+	O2100
p,5n	^{193}Hg	TT	2ITYMIL	3.6+07	4.5+07	Rept	INFN/TC-80/17	80	C.Birattari+	O2100
p,n	^{197}Hg	TT	2ITYMIL	7.5+06	3.4+07	Rept	INFN/TC-80/17	80	C.Birattari+	O2100
p,x	^{194}Au	TT	2ITYMIL	3.0+07	4.2+07	Rept	INFN/TC-80/17	80	C.Birattari+	O2100
p,x	^{196}Au	TT	2ITYMIL	1.5+07	4.2+07	Rept	INFN/TC-80/17	80	C.Birattari+	O2100

82 Lead

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,inel	^{nat}Pb	CS	2UK BIR	9.0+08	9.0+08	Jour	PPS/A,70,209	57	N.E.Booth+	O2097

82 Lead 208

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
^{11}Li,el	^{208}Pb	DA	1CANTMF	2.3+07	2.8+07	Jour	PRL,109,262701	12	M.Cubero+	C1974
^{19}F,non		CS	3CPRAEP	8.8+07	1.0+08	Jour	PR/C,63,064606	01	C.J.Lin+	S0051

90 Thorium 232

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,fis		CS	1USAINL	Fast		Conf	79KNOX,,475	79	R.A.Anderl+	14354
n,fis		RR	1USAINL	Fast		Conf	79KNOX,,475	79	R.A.Anderl+	14354
n,γ	^{233}Th	CS	1USAINL	Fast		Conf	79KNOX,,475	79	R.A.Anderl+	14354
n,γ	^{233}Th	RR	1USAINL	Fast		Conf	79KNOX,,475	79	R.A.Anderl+	14354

91 Protactinium 231

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
d,t	^{230}Pa	DAP	2GERLMU	2.2+07	2.2+07	Jour	PL/B,718,460	12	T.Kotthaus+	O2101

92 Uranium 233

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,fis		NU	1USAORL	2.0-02	1.0-01	Jour	NSE,87,381	84	R.Gwin+	12833

92 Uranium 235

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,fis		NU	1USAORL	2.0-02	1.0-01	Jour	NSE,87,381	84	R.Gwin+	12833

92 Uranium 238

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

p,x	Many	CS	2FR PAR	1.5+08	1.5+08	Jour	NIM,53,216	67	R.Klapisch+	O2106
p,x	^{90}Rb	CS	2FR PAR	1.5+08	1.5+08	Jour	NIM,53,216	67	R.Klapisch+	O2106

94 Plutonium 239

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,fis		NU	1USAORL	2.0-02	1.0-01	Jour	NSE,87,381	84	R.Gwin+	12833

94 Plutonium 241

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,fis		NU	1USAORL	2.0-02	1.0-01	Jour	NSE,87,381	84	R.Gwin+	12834

98 Californium 252

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
0,fis		NU	1USAORL	Spont		Jour	NSE,87,381	84	R.Gwin+	12833