EXFOR News (September 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	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 dΩ_1/dΩ_2/dE'	NUD	Delayed fission neutron multiplicity $\bar{\nu_d}$
D3E	Triple differential dΩ/dE'_1/dE'_2	NUF	Fragment neutrons
D4A	Quadruple diff. dΩ_1/dΩ_2/dE'_1/dE'_2	POL	Polarization
DA	Differential d/dΩ	POD	Differential polarization
DAA	Double differential dΩ_1/dΩ_2	PY	Product yield (other than fission)
DAE	Double differential dΩ/dE'	RI	Resonance integral
DAP	Partial differential d/dΩ	RP	Resonance parameter
DAT	Temperature-dependent Legendre coefficient	RR	Reaction rate
DE	Differential d/dE'	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, d/dΩ
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 #
	^{208}Pb,tcc		?	2ZZZCER	3.3+13	3.3+13	Jour	PR/C,70,014902	04	C.Scheidenberger+	D0810
	^{208}Pb,x	Many	?	2ZZZCER	3.3+13	3.3+13	Jour	PR/C,70,014902	04	C.Scheidenberger+	D0810

1 Hydrogen 2

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	γ,n	^{1}H	CS	2JPNJSR	3.6+06	3.6+06	Jour	PR/C,92,064323	15	H.Utsunomiya+	K2499
*	n,γ	^{3}H	CS	2GERMUN	2.5-02	2.5-02	Jour	PR/C,93,044311	16	R.B.Firestone+	23296
*	n,γ	^{3}H	CSP	2GERMUN	2.5-02	2.5-02	Jour	PR/C,93,044311	16	R.B.Firestone+	23296
*	d,x+p	inclusive	DAE	4UKRIJD	3.7+07	3.7+07	Jour	YFE,16,(4),343	15	O.O.Belyuskina+	D5127
*	^{14}C,α	^{12}B	?	1USAANL	2.4+08	2.4+08	Jour	PR/C,90,061301	14	A.H.Wuosmaa+	C2144
*	^{15}C,α	^{13}B	?	1USAANL	2.4+08	2.4+08	Jour	PR/C,90,061301	14	A.H.Wuosmaa+	C2144

2 Helium 3

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	γ,n+p	^{1}H	CS	1USADKE	1.6+07	1.6+07	Jour	PL/B,750,547	15	G.Laskaris+	L0212
*	γ,n+p	^{1}H	DA	1USADKE	1.6+07	1.6+07	Jour	PL/B,750,547	15	G.Laskaris+	L0212
*	γ,n+p	^{1}H	DAE	1USADKE	1.6+07	1.6+07	Jour	PL/B,750,547	15	G.Laskaris+	L0212
	^{7}Li,0		RP	3BZLUSP			Jour	RBF,34,933	04	R.Kuramoto+	D0811

2 Helium 8

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	0,B-	^{8}Li	NUD	2ZZZCER	Spont		Jour	NP/A,366,461	81	T.Bjoernstad+	23273

3 Lithium 6

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,γ	^{7}Li	CS	3HUNKFI	2.5-02	2.5-02	Jour	PR/C,93,054306	16	R.B.Firestone+	31768
*	n,γ	^{7}Li	CSP	3HUNKFI	2.5-02	2.5-02	Jour	PR/C,93,054306	16	R.B.Firestone+	31768
*	n,γ	^{7}Li	SPC	3HUNKFI	2.5-02	2.5-02	Jour	PR/C,93,054306	16	R.B.Firestone+	31768
*	p,el	^{6}Li	DA	4KASKAZ	5.9+05	1.2+06	Jour	PAN,74,984	11	S.B.Dubovichenko+	D0800

3 Lithium 7

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,γ	^{8}Li	CS	3HUNKFI	2.5-02	2.5-02	Jour	PR/C,93,054306	16	R.B.Firestone+	31768
*	n,γ	^{8}Li	CSP	3HUNKFI	2.5-02	2.5-02	Jour	PR/C,93,054306	16	R.B.Firestone+	31768

3 Lithium 9

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	0,B-	^{9}Be	NUD	2ZZZCER	Spont		Jour	NP/A,510,189	90	G.Nyman+	23275

3 Lithium

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{7}Li,x+n	inclusive	PY	4KASKAZ	5.0+06	9.3+06	Jour	PPN/L,13,198	16	K.B.Gikal+	D0804
*	^{12}C,x+n	inclusive	PY	4KASKAZ	1.6+07	2.1+07	Jour	PPN/L,13,198	16	K.B.Gikal+	D0804
*	^{14}N,x+n	inclusive	PY	4KASKAZ	9.8+06	2.3+07	Jour	PPN/L,13,198	16	K.B.Gikal+	D0804

3 Lithium 11

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	0,B-	^{11}Be	NUD	2ZZZCER	Spont		Jour	PRL,43,1652	79	R.E.Azuma+	23274

4 Beryllium 7

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,p	^{7}Li	CS	2UK HAR	2.5-02	2.5-02	Jour	PM,46,381	55	R.C.Hanna	23291
	n,x+α	inclusive	CS	2UK HAR	2.5-02	2.5-02	Jour	PM,46,381	55	R.C.Hanna	23291

4 Beryllium 9

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	γ,0		RP	2JPNJSR			Jour	PR/C,92,064323	15	H.Utsunomiya+	K2499
*	γ,x+n	inclusive	CS	2JPNJSR	1.7+06	1.6+07	Jour	PR/C,92,064323	15	H.Utsunomiya+	K2499
*	n,γ	^{10}Be	CS	3HUNKFI	2.5-02	2.5-02	Jour	PR/C,93,054306	16	R.B.Firestone+	31768
*	n,γ	^{10}Be	CSP	3HUNKFI	2.5-02	2.5-02	Jour	PR/C,93,054306	16	R.B.Firestone+	31768
*	n,γ	^{10}Be	SPC	3HUNKFI	2.5-02	2.5-02	Jour	PR/C,93,054306	16	R.B.Firestone+	31768
	d,p	^{10}Be	CSP	1USALAS	1.0+05	2.0+05	Rept	LA-1578	53	G.A.Sawyer+	F0003
*	^{7}Li,x+n	inclusive	PY	4KASKAZ	5.0+06	9.3+06	Jour	PPN/L,13,198	16	K.B.Gikal+	D0804
*	^{12}C,x+n	inclusive	PY	4KASKAZ	1.6+07	2.1+07	Jour	PPN/L,13,198	16	K.B.Gikal+	D0804

*	^{14}N,x+n	inclusive	PY	4KASKAZ	9.8+06	2.3+07	Jour	PPN/L,13,198	16	K.B.Gikal+	D0804
*	^{15}N,el	^{9}Be	DA	3POLWWA	8.4+07	8.4+07	Jour	NP/A,947,161	16	A.T.Rudchik+	D5126
*	^{15}N,inel	^{9}Be	DAP	3POLWWA	8.4+07	8.4+07	Jour	NP/A,947,161	16	A.T.Rudchik+	D5126

5 Boron 10

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,γ	^{11}B	CS	3HUNKFI	2.5-02	2.5-02	Jour	PR/C,93,054306	16	R.B.Firestone+	31768
*	n,γ	^{11}B	CSP	3HUNKFI	2.5-02	2.5-02	Jour	PR/C,93,054306	16	R.B.Firestone+	31768
*	n,γ	^{11}B	SPC	3HUNKFI	2.5-02	2.5-02	Jour	PR/C,93,054306	16	R.B.Firestone+	31768
	p,α	^{7}Be	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488
*	p,γ	^{11}C	CS	1USATNL	1.6+06	5.4+06	Jour	PR/C,89,014601	14	A.Kafkarkou+	C2209
	p,γ	^{11}C	RR	1USACLU	Maxwl		Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488
	α,n	^{13}N	PY	1USACLU	3.2+06	1.4+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
	α,n	^{13}N	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584

5 Boron 11

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,γ	^{12}B	CS	3HUNKFI	2.5-02	2.5-02	Jour	PR/C,93,054306	16	R.B.Firestone+	31768
*	n,γ	^{12}B	CSP	3HUNKFI	2.5-02	2.5-02	Jour	PR/C,93,054306	16	R.B.Firestone+	31768
*	n,γ	^{12}B	SPC	3HUNKFI	2.5-02	2.5-02	Jour	PR/C,93,054306	16	R.B.Firestone+	31768
*	^{108}Sn,x	^{107}Sn	CS	1USAMSU	8.6+09	8.6+09	Jour	PR/C,93,021601	16	G.Cerizza+	C2210
*	^{108}Sn,x	^{107}Sn	CSP	1USAMSU	8.6+09	8.6+09	Jour	PR/C,93,021601	16	G.Cerizza+	C2210

5 Boron 15

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	0,B-	^{15}C	NUD	2FR CAE	Spont		Jour	NIM/A,455,412	00	A.Buta+	23276

6 Carbon

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{7}Li,x+n	inclusive	PY	4KASKAZ	5.0+06	9.3+06	Jour	PPN/L,13,198	16	K.B.Gikal+	D0804
*	^{12}C,x+n	inclusive	PY	4KASKAZ	1.6+07	2.1+07	Jour	PPN/L,13,198	16	K.B.Gikal+	D0804
*	^{14}N,x+n	inclusive	PY	4KASKAZ	1.4+07	2.3+07	Jour	PPN/L,13,198	16	K.B.Gikal+	D0804
*	^{22}O,abs		CS	2GERGSI	2.0+10	2.0+10	Jour	PR/C,84,061304	11	R.Kanungo+	D0806
*	^{23}O,abs		CS	2GERGSI	2.1+10	2.1+10	Jour	PR/C,84,061304	11	R.Kanungo+	D0806
	^{208}Pb,tcc		CS	2ZZZCER	3.3+13	3.3+13	Jour	PR/C,70,014902	04	C.Scheidenberger+	D0810
	^{208}Pb,x	Many	CS	2ZZZCER	3.3+13	3.3+13	Jour	PR/C,70,014902	04	C.Scheidenberger+	D0810
	α,x+n	inclusive	PY	1USAANL	5.3+06	8.8+06	Jour	JGR,73,(10),3135	68	Y.Feige+	C1011

6 Carbon 12

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,γ	^{13}C	CS	3HUNKFI	2.5-02	2.5-02	Jour	PR/C,93,054306	16	R.B.Firestone+	31768
*	n,γ	^{13}C	CSP	3HUNKFI	2.5-02	2.5-02	Jour	PR/C,93,054306	16	R.B.Firestone+	31768
*	n,p	^{12}B	RI	2ZZZCER	1.0+10	1.4+07	Jour	EPJ/A,52,101	16	P.Zugec+	23259
	p,γ	^{13}N	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

6 Carbon 13

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,γ	^{14}C	CS	2GERKFK	1.3+05	1.8+05	Jour	PR/C,93,045803	16	A.Wallner+	23295
*	n,γ	^{14}C	CS	3HUNKFI	2.5-02	2.5-02	Jour	PR/C,93,054306	16	R.B.Firestone+	31768
*	n,γ	^{14}C	CS	2GERKFK	Maxwl		Jour	PR/C,93,045803	16	A.Wallner+	23295
*	n,γ	^{14}C	CS	2AUSVIE	Maxwl		Jour	PR/C,93,045803	16	A.Wallner+	23295
*	n,γ	^{14}C	CSP	3HUNKFI	2.5-02	2.5-02	Jour	PR/C,93,054306	16	R.B.Firestone+	31768

7 Nitrogen 14

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,γ	^{15}N	CS	3HUNKFI	2.5-02	2.5-02	Jour	PR/C,93,054306	16	R.B.Firestone+	31768
*	n,γ	^{15}N	CSP	3HUNKFI	2.5-02	2.5-02	Jour	PR/C,93,054306	16	R.B.Firestone+	31768
*	n,γ	^{15}N	SPC	3HUNKFI	2.5-02	2.5-02	Jour	PR/C,93,054306	16	R.B.Firestone+	31768
*	n,p	^{14}C	CS	2GERKFK	Maxwl	1.8+05	Jour	PR/C,93,045803	16	A.Wallner+	23295
*	n,p	^{14}C	CS	2AUSVIE	Maxwl		Jour	PR/C,93,045803	16	A.Wallner+	23295
	p,γ	^{15}O	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488
	α,γ	^{18}F	PY	1USACLU	6.2+06	7.3+06	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
	α,n	^{17}F	PY	1USACLU	6.2+06	1.7+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
	α,n	^{17}F	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584

7 Nitrogen 15

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,γ	^{16}N	CS	3HUNKFI	2.5-02	2.5-02	Jour	PR/C,93,054306	16	R.B.Firestone+	31768
*	n,γ	^{16}N	CSP	3HUNKFI	2.5-02	2.5-02	Jour	PR/C,93,054306	16	R.B.Firestone+	31768
*	n,γ	^{16}N	SPC	3HUNKFI	2.5-02	2.5-02	Jour	PR/C,93,054306	16	R.B.Firestone+	31768
	α,n	^{18}F	PY	1USACLU	8.4+06	1.7+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
	α,n	^{18}F	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584

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	2FR CAE	Spont		Jour	NIM/A,455,412	00	A.Buta+	23276

8 Oxygen

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,x+n	inclusive	PY	1USAANL	5.3+06	8.8+06	Jour	JGR,73,(10),3135	68	Y.Feige+	C1011

8 Oxygen 16

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,γ	^{17}O	CS	2JPNTIT	1.6+05	5.6+05	Thes	KINOSHITA	Feb 99	M.Kinoshita+	23297
*	n,γ	^{17}O	CS	2GERMUN	2.5-02	2.5-02	Jour	PR/C,93,044311	16	R.B.Firestone+	23296
	n,γ	^{17}O	CS	2JPNTIT	Maxwl		Jour	AJ,441,L89	Oct 95	M.Igashira+	22356
	n,γ	^{17}O	CSP	2JPNTIT	1.6+05	5.6+05	Thes	KINOSHITA	Feb 99	M.Kinoshita+	23297
*	n,γ	^{17}O	CSP	2GERMUN	2.5-02	2.5-02	Jour	PR/C,93,044311	16	R.B.Firestone+	23296
	n,γ	^{17}O	CSP	2JPNTIT	3.9+05	5.5+05	Thes	MATSUSHIMA	Mar 03	T.Matsushima+	23298
*	n,γ	^{17}O	?	2GERMUN	2.5-02	2.5-02	Jour	PR/C,93,044311	16	R.B.Firestone+	23296

8 Oxygen 17

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,γ	^{18}O	CS	2GERMUN	2.5-02	2.5-02	Jour	PR/C,93,044311	16	R.B.Firestone+	23296
*	n,γ	^{18}O	CSP	2GERMUN	2.5-02	2.5-02	Jour	PR/C,93,044311	16	R.B.Firestone+	23296
*	n,γ	^{18}O	?	2GERMUN	2.5-02	2.5-02	Jour	PR/C,93,044311	16	R.B.Firestone+	23296

8 Oxygen 18

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,γ	^{19}O	CS	2GERMUN	2.5-02	2.5-02	Jour	PR/C,93,044311	16	R.B.Firestone+	23296
*	n,γ	^{19}O	CSP	2GERMUN	2.5-02	2.5-02	Jour	PR/C,93,044311	16	R.B.Firestone+	23296
*	n,γ	^{19}O	?	2GERMUN	2.5-02	2.5-02	Jour	PR/C,93,044311	16	R.B.Firestone+	23296
*	α,n	^{21}Ne	CSP	1USANOT	9.3+05	1.9+06	Jour	PR/C,87,045806	13	A.Best+	C2009
*	α,n	^{21}Ne	PY	1USANOT	1.1+06	2.3+09	Jour	PR/C,87,045806	13	A.Best+	C2009

9 Fluorine 19

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	α,x+n	inclusive	PY	1USAWAU	3.5+06	1.0+07	Jour	ARI,103,177	15	E.B.Norman+	C1433
	α,x+n	inclusive	PY	1USAANL	5.3+06	8.8+06	Jour	JGR,73,(10),3135	68	Y.Feige+	C1011

10 Neon 20

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	p,d	^{19}Ne	DAP	1USAORL	3.0+07	3.0+07	Jour	PL/B,751,311	15	D.W.Bardayan+	C2202

11 Sodium

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,x+n	inclusive	PY	1USAANL	4.8+06	8.8+06	Jour	JGR,73,(10),3135	68	Y.Feige+	C1011

11 Sodium 23

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,2n	^{22}Na	CS	3CZRUJV		1.3+07	Jour	ARI,111,1	16	M.Kostal+	31766
	α,x+n	inclusive	PY	1USAANL	5.3+06	8.8+06	Jour	JGR,73,(10),3135	68	Y.Feige+	C1011

11 Sodium 27

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	0,B-	^{27}Mg	NUD	2ZZZCER	Spont		Rept	CERN-81-09,327	81	W.Ziegert+	23290

11 Sodium 28

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	0,B-	^{28}Mg	NUD	2ZZZCER	Spont		Rept	CERN-81-09,327	81	W.Ziegert+	23290

11 Sodium 29

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	0,B-	^{29}Mg	NUD	2ZZZCER	Spont		Rept	CERN-81-09,327	81	W.Ziegert+	23290

11 Sodium 30

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	0,B-	^{30}Mg	NUD	2ZZZCER	Spont		Rept	CERN-81-09,327	81	W.Ziegert+	23290

11 Sodium 31

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	0,B-	^{31}Mg	NUD	2ZZZCER	Spont		Rept	CERN-81-09,327	81	W.Ziegert+	23290

12 Magnesium

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,x+n	inclusive	PY	1USAANL	4.8+06	8.8+06	Jour	JGR,73,(10),3135	68	Y.Feige+	C1011

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	4UKRUFT	1.5+06	4.2+06	Jour	ZET,44,57	63	A.K.Valter+	D5125

12 Magnesium 25

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,p	^{28}Al	PY	1USACLU	3.4+06	1.3+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
	α,p	^{28}Al	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584

12 Magnesium 26

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,p	^{29}Al	PY	1USACLU	3.9+06	1.3+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
	α,p	^{29}Al	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584

13 Aluminium

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,x+n	inclusive	PY	1USAANL	5.3+06	8.8+06	Jour	JGR,73,(10),3135	68	Y.Feige+	C1011
*	^{7}Li,x+n	inclusive	PY	4KASKAZ	5.0+06	9.3+06	Jour	PPN/L,13,198	16	K.B.Gikal+	D0804
*	^{12}C,x+n	inclusive	PY	4KASKAZ	1.8+07	2.1+07	Jour	PPN/L,13,198	16	K.B.Gikal+	D0804
*	^{14}N,x+n	inclusive	PY	4KASKAZ	1.4+07	2.3+07	Jour	PPN/L,13,198	16	K.B.Gikal+	D0804

13 Aluminium 26

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	d,p	^{27}Al	DAP	1USAORL	1.2+08	1.2+08	Jour	PRL,114,212501	15	S.D.Pain+	C2167

13 Aluminium 27

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	d,n+p	^{27}Al	DAA	4UKRIFU	1.4+07	1.4+07	Jour	IZV,34,1714	70	O.F.Nemets+	D5116
	α,n	^{30}P	PY	1USACLU	3.2+06	3.6+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
	α,n	^{30}P	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
	α,x+n	inclusive	PY	1USAANL	4.8+06	8.8+06	Jour	JGR,73,(10),3135	68	Y.Feige+	C1011
*	^{7}Li,x+n	inclusive	PY	4KASKAZ	5.0+06	9.3+06	Jour	PPN/L,13,198	16	K.B.Gikal+	D0804
*	^{12}C,x+n	inclusive	PY	4KASKAZ	1.6+07	2.1+07	Jour	PPN/L,13,198	16	K.B.Gikal+	D0804
*	^{14}N,x+n	inclusive	PY	4KASKAZ	1.4+07	2.3+07	Jour	PPN/L,13,198	16	K.B.Gikal+	D0804
	^{208}Pb,tcc		CS	2ZZZCER	3.3+13	3.3+13	Jour	PR/C,70,014902	04	C.Scheidenberger+	D0810
	^{208}Pb,x	Many	CS	2ZZZCER	3.3+13	3.3+13	Jour	PR/C,70,014902	04	C.Scheidenberger+	D0810

14 Silicon

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,x+n	inclusive	PY	1USAANL	4.8+06	8.8+06	Jour	JGR,73,(10),3135	68	Y.Feige+	C1011

14 Silicon 28

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,γ	^{29}P	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

14 Silicon 29

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,γ	^{30}P	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

14 Silicon 30

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{28}Si,fus		CS	1USAANL	2.5+07	3.6+07	Jour	PR/C,78,017601	08	C.L.Jiang+	C2208

19 Potassium

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
α,x+n	inclusive	PY	1USAANL	5.3+06	8.8+06	Jour	JGR,73,(10),3135	68	Y.Feige+	C1011
α,x+n	inclusive	PY	1USAANL	4.8+06	8.8+06	Jour	JGR,73,(10),3135	68	Y.Feige+	C1011

20 Calcium

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
α,x+n	inclusive	PY	1USAANL	5.3+06	8.8+06	Jour	JGR,73,(10),3135	68	Y.Feige+	C1011

20 Calcium 40

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,γ	^{41}Sc	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488
α,p	^{43}Sc	PY	1USACLU	4.9+06	3.5+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
α,p	^{43}Sc	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584

20 Calcium 48

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
α,n	^{51}Ti	PY	1USACLU	4.9+06	3.4+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
α,n	^{51}Ti	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584

22 Titanium

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
α,x+n	inclusive	PY	1USAANL	5.3+06	8.8+06	Jour	JGR,73,(10),3135	68	Y.Feige+	C1011
α,x+n	inclusive	PY	1USAANL	5.3+06	8.8+06	Jour	JGR,73,(10),3135	68	Y.Feige+	C1011

22 Titanium 46

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,γ	^{47}V	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488
α,n	^{49}Cr	PY	1USACLU	5.4+06	3.5+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
α,n	^{49}Cr	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584

22 Titanium 47

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,γ	^{48}V	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

22 Titanium 48

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
α,n	^{51}Cr	PY	1USACLU	6.0+06	3.5+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
α,n	^{51}Cr	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584

22 Titanium 49

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
α,p	^{52}V	PY	1USACLU	5.8+06	3.5+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
α,p	^{52}V	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584

22 Titanium 50

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
α,p	^{53}V	PY	1USACLU	8.9+06	3.4+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
α,p	^{53}V	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584

23 Vanadium 51

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
α,n	^{54}Mn	PY	1USACLU	5.4+06	1.4+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
α,n	^{54}Mn	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584

24 Chromium 50

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,γ	^{51}Mn	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488
α,n	^{53}Fe	PY	1USACLU	5.8+06	3.5+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
α,n	^{53}Fe	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584

24 Chromium 53

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,p	^{56}Mn	PY	1USACLU	6.2+06	3.5+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
	α,p	^{56}Mn	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584

25 Manganese 52

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	0,0		NQ	1USAOHO	Spont		Jour	PR/C,92,014303	15	A.P.D.Ramirez+	C2164

25 Manganese 54

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	0,0		NQ	1USAOHO	Spont		Jour	PR/C,92,014303	15	A.P.D.Ramirez+	C2164

25 Manganese 55

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,2n	^{57}Co	PY	1USACLU	1.3+07	3.5+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
	α,n	^{58}Co	PY	1USACLU	5.4+06	3.5+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
	α,n	^{58}Co	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
	α,n+α	^{54}Mn	PY	1USACLU	1.9+07	3.5+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584

26 Iron

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	d,non		CS	4UKRIJD	1.4+07	1.4+07	Jour	IZV,36,158	72	L.V.Dubar+	D5124
	α,x+n	inclusive	PY	1USAANL	5.3+06	8.8+06	Jour	JGR,73,(10),3135	68	Y.Feige+	C1011

26 Iron 54

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,γ	^{55}Co	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488
*	d,α	^{52}Mn	DAP	1USAOHO	9.0+06	9.0+06	Jour	PR/C,92,014303	15	A.P.D.Ramirez+	C2164
*	d,el	^{54}Fe	DA	1USAOHO	5.0+06	9.0+06	Jour	PR/C,92,014303	15	A.P.D.Ramirez+	C2164
*	d,p	^{55}Fe	DAP	1USAOHO	9.0+06	9.0+06	Jour	PR/C,92,014303	15	A.P.D.Ramirez+	C2164
*	d,x+α	inclusive	DAE	1USAOHO	7.0+06	9.0+06	Jour	PR/C,92,014303	15	A.P.D.Ramirez+	C2164
*	d,x+n	inclusive	DAE	1USAOHO	7.0+06	7.0+06	Jour	PR/C,92,014303	15	A.P.D.Ramirez+	C2164
*	d,x+p	inclusive	DAE	1USAOHO	7.0+06	9.0+06	Jour	PR/C,92,014303	15	A.P.D.Ramirez+	C2164

	α,n	^{57}Ni	PY	1USACLU	6.5+06	3.5+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
	α,n	^{57}Ni	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
	α,p	^{57}Co	PY	1USACLU	7.0+06	2.8+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
	α,p	^{57}Co	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584

26 Iron 55

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	0,0		NQ	1USAOHO	Spont		Jour	PR/C,92,014303	15	A.P.D.Ramirez+	C2164

26 Iron 56

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,γ	^{57}Co	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488
*	d,α	^{54}Mn	DAP	1USAOHO	9.0+06	9.0+06	Jour	PR/C,92,014303	15	A.P.D.Ramirez+	C2164
*	d,el	^{56}Fe	DA	1USAOHO	5.0+06	9.0+06	Jour	PR/C,92,014303	15	A.P.D.Ramirez+	C2164
*	d,p	^{57}Fe	DAP	1USAOHO	9.0+06	9.0+06	Jour	PR/C,92,014303	15	A.P.D.Ramirez+	C2164
*	d,x+α	inclusive	DAE	1USAOHO	7.0+06	9.0+06	Jour	PR/C,92,014303	15	A.P.D.Ramirez+	C2164
*	d,x+p	inclusive	DAE	1USAOHO	7.0+06	9.0+06	Jour	PR/C,92,014303	15	A.P.D.Ramirez+	C2164

26 Iron 57

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	0,0		NQ	1USAOHO	Spont		Jour	PR/C,92,014303	15	A.P.D.Ramirez+	C2164

26 Iron 58

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	d,α	^{56}Mn	DAP	1USAOHO	9.0+06	9.0+06	Jour	PR/C,92,014303	15	A.P.D.Ramirez+	C2164
*	d,el	^{58}Fe	DA	1USAOHO	5.0+06	9.0+06	Jour	PR/C,92,014303	15	A.P.D.Ramirez+	C2164
*	d,p	^{59}Fe	DAP	1USAOHO	9.0+06	9.0+06	Jour	PR/C,92,014303	15	A.P.D.Ramirez+	C2164
*	d,x+α	inclusive	DAE	1USAOHO	7.0+06	9.0+06	Jour	PR/C,92,014303	15	A.P.D.Ramirez+	C2164
*	d,x+n	inclusive	DAE	1USAOHO	7.0+06	7.0+06	Jour	PR/C,92,014303	15	A.P.D.Ramirez+	C2164
*	d,x+p	inclusive	DAE	1USAOHO	7.0+06	9.0+06	Jour	PR/C,92,014303	15	A.P.D.Ramirez+	C2164

27 Cobalt 55

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	0,0		NQ	1USAOHO	Spont		Jour	PR/C,92,014303	15	A.P.D.Ramirez+	C2164

27 Cobalt 57

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	0,0		NQ	1USAOHO	Spont		Jour	PR/C,92,014303	15	A.P.D.Ramirez+	C2164

27 Cobalt 59

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,2n	^{58}Co	CS	3CZRUJF	1.7+07	3.6+07	Jour	NP/A,953,139	16	M.Majerle+	31767
*	n,3n	^{57}Co	CS	3CZRUJF	2.2+07	3.6+07	Jour	NP/A,953,139	16	M.Majerle+	31767
*	n,4n	^{56}Co	CS	3CZRUJF	3.3+07	3.6+07	Jour	NP/A,953,139	16	M.Majerle+	31767
*	n,p	^{59}Fe	CS	3CZRUJF	1.7+07	3.6+07	Jour	NP/A,953,139	16	M.Majerle+	31767
*	n,x	^{54}Mn	CS	3CZRUJF	2.8+07	3.6+07	Jour	NP/A,953,139	16	M.Majerle+	31767
*	n,x	^{56}Mn	CS	3CZRUJF	1.7+07	3.6+07	Jour	NP/A,953,139	16	M.Majerle+	31767
	d,non		CS	4UKRIJD	1.4+07	1.4+07	Jour	IZV,36,158	72	L.V.Dubar+	D5124
	α,n	^{62}Cu	PY	1USACLU	5.7+06	3.4+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
	α,n	^{62}Cu	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584

28 Nickel

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	d,non		CS	4UKRIJD	1.4+07	1.4+07	Jour	IZV,36,158	72	L.V.Dubar+	D5124

28 Nickel 58

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,γ	^{59}Cu	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488
	d,n+p	^{58}Ni	D3A	4UKRIFU	1.4+07	1.4+07	Jour	IZV,34,1714	70	O.F.Nemets+	D5116
	d,n+p	^{58}Ni	DAA	4UKRIFU	1.4+07	1.4+07	Jour	IZV,34,1714	70	O.F.Nemets+	D5116
	α,d+d	^{58}Ni	D3A	4UKRIJD	9.6+07	9.6+07	Jour	IZV,52,(5),907	88	V.I.Medvedev+	D5114
	α,p	^{61}Cu	PY	1USACLU	6.1+06	3.4+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
	α,p	^{61}Cu	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
	^{28}Si,el	^{58}Ni	DA	3BZLUSP	7.4+07	7.7+07	Jour	PR/C,67,067603	03	L.R.Gasques+	D0812

28 Nickel 60

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	p,α	^{57}Co	CS	2GERJUL	6.5+06	1.6+07	Jour	PR/C,93,044606	16	M.S.Uddin+	D0808
*	p,γ	^{61}Cu	CS	3BANSAV	1.3+06	3.9+06	Jour	PR/C,93,044606	16	M.S.Uddin+	D0808
*	p,γ	^{61}Cu	CS	2GERJUL	2.7+06	1.6+07	Jour	PR/C,93,044606	16	M.S.Uddin+	D0808
	p,γ	^{61}Cu	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488
*	p,n	^{60}Cu	CS	2GERJUL	7.1+06	1.6+07	Jour	PR/C,93,044606	16	M.S.Uddin+	D0808

d,n+p	^{60}Ni	DAA	4UKRIFU	1.4+07	1.4+07	Jour	IZV,34,1714	70	O.F.Nemets+	D5116
α,n	^{63}Zn	PY	1USACLU	9.5+06	2.2+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
α,n	^{63}Zn	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584

28 Nickel 61

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,γ	^{62}Cu	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488
d,n+p	^{61}Ni	DAA	4UKRIFU	1.4+07	1.4+07	Jour	IZV,34,1714	70	O.F.Nemets+	D5116

28 Nickel 62

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
d,n+p	^{62}Ni	D3A	4UKRIFU	1.4+07	1.4+07	Jour	IZV,34,1714	70	O.F.Nemets+	D5116
d,n+p	^{62}Ni	DAA	4UKRIFU	1.4+07	1.4+07	Jour	IZV,34,1714	70	O.F.Nemets+	D5116

28 Nickel 64

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
d,n+p	^{64}Ni	D3A	4UKRIFU	1.4+07	1.4+07	Jour	IZV,34,1714	70	O.F.Nemets+	D5116
d,n+p	^{64}Ni	DAA	4UKRIFU	1.4+07	1.4+07	Jour	IZV,34,1714	70	O.F.Nemets+	D5116
α,d+d	^{64}Ni	D3A	4UKRIJD	9.6+07	9.6+07	Jour	IZV,52,(5),907	88	V.I.Medvedev+	D5114

29 Copper

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	d,n+p	^{nat}Cu	DAA	4UKRIFU	1.4+07	1.4+07	Jour	IZV,34,1714	70	O.F.Nemets+	D5116
*	^{7}Li,x+n	inclusive	PY	4KASKAZ	9.3+06	9.3+06	Jour	PPN/L,13,198	16	K.B.Gikal+	D0804
*	^{14}N,x+n	inclusive	PY	4KASKAZ	2.3+07	2.3+07	Jour	PPN/L,13,198	16	K.B.Gikal+	D0804
	^{208}Pb,tcc		CS	2ZZZCER	3.3+13	3.3+13	Jour	PR/C,70,014902	04	C.Scheidenberger+	D0810
	^{208}Pb,x	Many	CS	2ZZZCER	3.3+13	3.3+13	Jour	PR/C,70,014902	04	C.Scheidenberger+	D0810

29 Copper 63

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
d,n+p	^{63}Cu	DAA	4UKRIFU	1.4+07	1.4+07	Jour	IZV,34,1714	70	O.F.Nemets+	D5116
α,n	^{66}Ga	PY	1USACLU	8.5+06	2.5+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
α,n	^{66}Ga	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584

29 Copper 65

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
d,non		CS	4UKRIJD	1.4+07	1.4+07	Jour	IZV,36,158	72	L.V.Dubar+	D5124
α,n	^{68}Ga	PY	1USACLU	6.5+06	3.4+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
α,n	^{68}Ga	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584

30 Zinc

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
d,non		CS	4UKRIJD	1.4+07	1.4+07	Jour	IZV,36,158	72	L.V.Dubar+	D5124

30 Zinc 64

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,γ	^{65}Ga	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488
α,n	^{67}Ge	PY	1USACLU	1.0+07	2.9+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
α,n	^{67}Ge	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
α,p	^{67}Ga	PY	1USACLU	8.0+06	1.4+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
α,p	^{67}Ga	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584

30 Zinc 66

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
α,n	^{69}Ge	PY	1USACLU	8.9+06	2.9+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
α,n	^{69}Ge	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584

30 Zinc 67

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,γ	^{68}Ga	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

30 Zinc 68

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,n	^{68}Ga	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

32 Germanium 70

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,γ	^{71}As	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488
	α,n	^{73}Se	PY	1USACLU	8.9+06	3.5+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
	α,n	^{73}Se	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584

32 Germanium 72

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,n	^{75}Se	PY	1USACLU	8.5+06	3.5+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
	α,n	^{75}Se	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584

32 Germanium 74

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,n	^{74}As	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488
*	α,γ	^{78}Se	CS	1USANOT	8.5+06	1.1+07	Jour	PR/C,92,045805	15	S.J.Quinn+	C2196
	α,n	^{77}Se	PY	1USACLU	8.2+06	3.5+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
	α,n	^{77}Se	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584

32 Germanium 76

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,n	^{76}As	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488
	α,n	^{79}Se	PY	1USACLU	7.9+06	2.4+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
	α,n	^{79}Se	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584

34 Selenium 77

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	γ,n	^{76}Se	CS	2JPNAIS	7.7+06	1.4+07	Jour	NST,53,475	16	F.Kitatani+	K2497

38 Strontium 84

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,γ	^{85}Sr	CS	3SLNIJS	Fiss		Jour	ARI,101,101	15	S.Manojlovic+	31770

38 Strontium 87

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,γ	^{88}Y	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488
	p,n	^{87}Y	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

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	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

40 Zirconium

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,x+n	inclusive	PY	1USAANL	5.5+06	6.0+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072

40 Zirconium 90

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,γ	^{91}Nb	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488
*	α,γ	^{94}Mo	CS	1USANOT	9.0+06	1.1+07	Jour	PR/C,92,045805	15	S.J.Quinn+	C2196
*	α,inel	^{90}Zr	DAE	1USATAM	2.4+08	2.4+08	Jour	PR/C,92,044323	15	Krishichayan+	C2194
*	α,inel	^{90}Zr	DAP	1USATAM	2.4+08	2.4+08	Jour	PR/C,92,044323	15	Krishichayan+	C2194

40 Zirconium 92

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	α,γ	^{96}Mo	CS	1USANOT	1.0+07	1.1+07	Jour	PR/C,92,045805	15	S.J.Quinn+	C2196
*	α,inel	^{92}Zr	DAE	1USATAM	2.4+08	2.4+08	Jour	PR/C,92,044323	15	Krishichayan+	C2194
*	α,inel	^{92}Zr	DAP	1USATAM	2.4+08	2.4+08	Jour	PR/C,92,044323	15	Krishichayan+	C2194

40 Zirconium 94

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,n	^{94}Nb	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488
*	α,inel	^{94}Zr	DAE	1USATAM	2.4+08	2.4+08	Jour	PR/C,92,044323	15	Krishichayan+	C2194
*	α,inel	^{94}Zr	DAP	1USATAM	2.4+08	2.4+08	Jour	PR/C,92,044323	15	Krishichayan+	C2194

40 Zirconium 96

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,n	^{96}Nb	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

41 Niobium 93

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,2n	^{92}Nb	CS	3CZRUJF	1.7+07	3.6+07	Jour	NP/A,953,139	16	M.Majerle+	31767
*	n,3n	^{91}Nb	CS	3CZRUJF	2.2+07	3.6+07	Jour	NP/A,953,139	16	M.Majerle+	31767
*	n,4n	^{90}Nb	CS	3CZRUJF	3.0+07	3.6+07	Jour	NP/A,953,139	16	M.Majerle+	31767
*	n,x	^{88}Y	CS	3CZRUJF	2.4+07	3.6+07	Jour	NP/A,953,139	16	M.Majerle+	31767
*	n,x	^{90}Y	CS	3CZRUJF	1.7+07	3.6+07	Jour	NP/A,953,139	16	M.Majerle+	31767
*	n,x	^{91}Y	CS	3CZRUJF	2.4+07	3.6+07	Jour	NP/A,953,139	16	M.Majerle+	31767
	p,x+n	inclusive	PY	1USAANL	6.0+06	6.5+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072
*	^{16}O,x+α	inclusive	DE	3INDTRM	5.4+07	7.5+07	Jour	PR/C,82,064608	10	E.T.Mirgule+	D6140

42 Molybdenum

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	p,x	^{88}Zr	CS	3CZRUJF	2.0+07	3.6+07	Jour	NIM/B,380,32	16	J.Cervenak+	D0805
*	p,x	^{89}Zr	CS	3CZRUJF	9.5+06	3.6+07	Jour	NIM/B,380,32	16	J.Cervenak+	D0805
*	p,x	^{88}Nb	CS	3CZRUJF	3.0+07	3.6+07	Jour	NIM/B,380,32	16	J.Cervenak+	D0805
*	p,x	^{89}Nb	CS	3CZRUJF	6.8+06	3.6+07	Jour	NIM/B,380,32	16	J.Cervenak+	D0805
*	p,x	^{90}Nb	CS	3CZRUJF	2.2+07	3.6+07	Jour	NIM/B,380,32	16	J.Cervenak+	D0805
*	p,x	^{91}Nb	CS	3CZRUJF	1.5+07	3.6+07	Jour	NIM/B,380,32	16	J.Cervenak+	D0805
*	p,x	^{92}Nb	CS	3CZRUJF	6.8+06	3.6+07	Jour	NIM/B,380,32	16	J.Cervenak+	D0805
*	p,x	^{95}Nb	CS	3CZRUJF	9.5+06	3.6+07	Jour	NIM/B,380,32	16	J.Cervenak+	D0805
*	p,x	^{96}Nb	CS	3CZRUJF	6.8+06	3.6+07	Jour	NIM/B,380,32	16	J.Cervenak+	D0805
*	p,x	^{97}Nb	CS	3CZRUJF	9.5+06	3.6+07	Jour	NIM/B,380,32	16	J.Cervenak+	D0805
*	p,x	^{90}Mo	CS	3CZRUJF	2.2+07	3.6+07	Jour	NIM/B,380,32	16	J.Cervenak+	D0805
*	p,x	^{93}Mo	CS	3CZRUJF	1.7+07	3.6+07	Jour	NIM/B,380,32	16	J.Cervenak+	D0805
*	p,x	^{99}Mo	CS	3CZRUJF	1.2+07	3.6+07	Jour	NIM/B,380,32	16	J.Cervenak+	D0805
*	p,x	^{93}Tc	CS	3CZRUJF	6.8+06	3.6+07	Jour	NIM/B,380,32	16	J.Cervenak+	D0805
*	p,x	^{94}Tc	CS	3CZRUJF	6.8+06	3.6+07	Jour	NIM/B,380,32	16	J.Cervenak+	D0805
*	p,x	^{95}Tc	CS	3CZRUJF	6.8+06	3.6+07	Jour	NIM/B,380,32	16	J.Cervenak+	D0805
*	p,x	^{96}Tc	CS	3CZRUJF	5.0+06	3.8+07	Jour	NIM/B,380,32	16	J.Cervenak+	D0805
*	p,x	^{97}Tc	CS	3CZRUJF	6.8+06	3.6+07	Jour	NIM/B,380,32	16	J.Cervenak+	D0805
*	p,x	^{99}Tc	CS	3CZRUJF	6.8+06	3.6+07	Jour	NIM/B,380,32	16	J.Cervenak+	D0805
	p,x+n	inclusive	PY	1USAANL	5.5+06	6.5+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072

42 Molybdenum 92

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,γ	^{93}Tc	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488
	α,n	^{95}Ru	PY	1USACLU	9.2+06	2.2+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584

α,n	^{95}Ru	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584

42 Molybdenum 94

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,n	^{97}Ru	PY	1USACLU	9.2+06	2.5+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
	α,n	^{97}Ru	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584

42 Molybdenum 95

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,γ	^{96}Tc	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488
	p,n	^{95}Tc	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

42 Molybdenum 96

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,n	^{96}Tc	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

42 Molybdenum 98

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,γ	^{99}Tc	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488
	α,p	^{101}Tc	PY	1USACLU	7.9+06	2.5+07	Jour	AND,28,(2),341	83	N.A.Roughton+	C1584
	α,p	^{101}Tc	RR	1USACLU			Jour	AND,28,(2),341	83	N.A.Roughton+	C1584

42 Molybdenum 100

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	γ,n	^{99}Mo	CS	2JPNJSR	1.2+07	1.6+07	Jour	JPJ,80,094202	11	H.Ejiri+	K2373
*	p,2n	^{99}Tc	CS	3CZRUJF	8.0+06	3.8+07	Jour	NIM/B,380,32	16	J.Cervenak+	D0805
	p,γ	^{101}Tc	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488
*	p,x	^{99}Mo	CS	3CZRUJF	1.1+07	3.8+07	Jour	NIM/B,380,32	16	J.Cervenak+	D0805

45 Rhodium 103

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,x+n	inclusive	PY	1USAANL	5.5+06	6.5+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072

46 Palladium

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x+n	inclusive	PY	1USAANL	5.5+06	6.5+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072

46 Palladium 102

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,γ	^{103}Ag	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

46 Palladium 104

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,n	^{104}Ag	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

46 Palladium 105

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,n	^{105}Ag	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

46 Palladium 106

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,n	^{106}Ag	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

47 Silver

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x+n	inclusive	PY	1USAANL	5.5+06	6.5+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072
d,n+p	^{nat}Ag	DAA	4UKRIFU	1.4+07	1.4+07	Jour	IZV,34,1714	70	O.F.Nemets+	D5116

48 Cadmium

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

	p,x+n	inclusive	PY	1USAANL	5.5+06	6.5+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072

48 Cadmium 106

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,γ	^{107}In	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488
*	α,el	^{106}Cd	DA	3HUNDEB	1.6+07	1.9+07	Jour	NP/A,940,194	15	A.Ornelas+	D4340

48 Cadmium 108

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,γ	^{109}In	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

48 Cadmium 114

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,γ	^{115}In	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

48 Cadmium 116

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,γ	^{117}In	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488
p,n	^{116}In	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

49 Indium

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x+n	inclusive	PY	1USAANL	6.0+06	7.0+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072

50 Tin

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x+n	inclusive	PY	1USAANL	6.5+06	7.0+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072
^{208}Pb,tcc		CS	2ZZZCER	3.3+13	3.3+13	Jour	PR/C,70,014902	04	C.Scheidenberger+	D0810
^{208}Pb,x	Many	CS	2ZZZCER	3.3+13	3.3+13	Jour	PR/C,70,014902	04	C.Scheidenberger+	D0810

50 Tin 112

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,γ	^{113}Sb	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

50 Tin 115

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,n	^{115}Sb	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

50 Tin 117

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,n	^{117}Sb	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

50 Tin 120

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,n	^{120}Sb	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

50 Tin 122

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,n	^{122}Sb	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

50 Tin 124

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,n	^{124}Sb	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488
*	d,el	^{124}Sn	DA	4UKRIJD	4.0+06	5.5+06	Jour	YFE,16,(1),15	15	Yu.N.Pavlenko+	D5122
*	d,p	^{125}Sn	DA	4UKRIJD	4.0+06	5.0+06	Jour	YFE,16,(1),15	15	Yu.N.Pavlenko+	D5122

51 Antimony

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	p,x	^{121}Te	CS	3HUNDEB	4.3+06	1.7+07	Jour	RCA,104,221	16	A.Elbinawi+	D4350
*	p,x	^{123}Te	CS	3HUNDEB	4.3+06	1.7+07	Jour	RCA,104,221	16	A.Elbinawi+	D4350

p,x+n	inclusive	PY	1USAANL	6.0+06	7.0+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072

52 Tellurium

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x+n	inclusive	PY	1USAANL	6.0+06	7.0+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072

52 Tellurium 123

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,n	^{123}I	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

52 Tellurium 126

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,n	^{126}I	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

52 Tellurium 128

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,n	^{128}I	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

52 Tellurium 130

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,n	^{130}I	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

53 Iodine 129

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,tot		CS	1USAORL	2.5-02	2.5-02	Jour	NSE,8,112	60	R.C.Block+	12024

55 Caesium 133

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

p,x+n	inclusive	?	1USAANL	7.0+06	7.5+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072

56 Barium

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x+n	inclusive	PY	1USAANL	6.5+06	7.5+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072

56 Barium 134

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,γ	^{135}Ba	CS	2GERKFK	Maxwl		Jour	PR/C,50,(5),2582	Nov 94	F.Voss+	22307
p,n	^{134}La	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

56 Barium 136

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,γ	^{137}Ba	CS	2GERKFK	Maxwl		Jour	PR/C,50,(5),2582	Nov 94	F.Voss+	22307
p,n	^{136}La	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

56 Barium 137

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,γ	^{138}Ba	CS	2GERKFK	Maxwl		Jour	PR/C,50,(5),2582	Nov 94	F.Voss+	22307

57 Lanthanum

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x+n	inclusive	PY	1USAANL	6.5+06	7.5+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072

59 Praseodymium 141

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x+n	inclusive	PY	1USAANL	6.5+06	7.5+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072

60 Neodymium

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x+n	inclusive	PY	1USAANL	6.5+06	7.5+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072

60 Neodymium 143

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,n	^{143}Pm	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

60 Neodymium 144

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,n	^{144}Pm	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

60 Neodymium 146

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,n	^{146}Pm	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

60 Neodymium 148

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,n	^{148}Pm	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

60 Neodymium 150

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,n	^{150}Pm	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

62 Samarium

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x+n	inclusive	PY	1USAANL	7.0+06	8.0+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072

62 Samarium 144

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,γ	^{145}Eu	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

62 Samarium 147

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,n	^{147}Eu	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

62 Samarium 148

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,n	^{148}Eu	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

62 Samarium 149

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,n	^{149}Eu	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

62 Samarium 150

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,n	^{150}Eu	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

62 Samarium 152

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,n	^{152}Eu	RR	1USACLU			Jour	AND,23,177	Feb 79	N.A.Roughton+	C0488

63 Europium 151

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,γ	^{152}Eu	CS	1CANCRC	Maxwl		Jour	JIN,29,2671	67	G.H.E.Sims+	12090

63 Europium 153

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,γ	^{154}Eu	CS	1CANCRC	Maxwl		Jour	JIN,29,2671	67	G.H.E.Sims+	12090

64 Gadolinium

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,x+n	inclusive	PY	1USAANL	7.0+06	8.0+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072
*	d,x	^{155}Tb	CS	3HUNDEB	6.5+06	2.1+07	Jour	JRN,307,1877	16	F.Szelecsenyi+	D4348
*	d,x	^{156}Tb	CS	3HUNDEB	6.5+06	2.1+07	Jour	JRN,307,1877	16	F.Szelecsenyi+	D4348
*	d,x	^{160}Tb	CS	3HUNDEB	4.2+06	1.8+07	Jour	JRN,307,1877	16	F.Szelecsenyi+	D4348
*	d,x	^{161}Tb	CS	3HUNDEB	4.2+06	2.1+07	Jour	JRN,307,1877	16	F.Szelecsenyi+	D4348

64 Gadolinium 152

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	p,γ	^{153}Tb	CS	3HUNDEB	3.5+06	7.9+06	Jour	PR/C,91,055809	15	R.T.Guray+	D4329
*	p,n	^{152}Tb	CS	3HUNDEB	5.0+06	7.9+06	Jour	PR/C,91,055809	15	R.T.Guray+	D4329

64 Gadolinium 158

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{44}Ca,3n	^{199}Po	CS	1USATAM	1.8+08	2.0+08	Jour	PR/C,92,054617	15	T.A.Werke+	C2206
*	^{44}Ca,4n	^{198}Po	CS	1USATAM	1.8+08	2.0+08	Jour	PR/C,92,054617	15	T.A.Werke+	C2206
*	^{44}Ca,5n	^{197}Po	CS	1USATAM	1.8+08	2.0+08	Jour	PR/C,92,054617	15	T.A.Werke+	C2206
*	^{44}Ca,6n	^{196}Po	CS	1USATAM	2.0+08	2.0+08	Jour	PR/C,92,054617	15	T.A.Werke+	C2206

64 Gadolinium 160

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{50}Ti,5n	^{205}Rn	?	1USATAM	2.0+08	2.2+08	Jour	PR/C,92,054601	15	D.A.Mayorov+	C2203

65 Terbium 159

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	p,n	^{159}Dy	CS	1USALAS	3.8+07	7.8+07	Jour	NIM/B,366,206	16	J.W.Engle+	C2200
*	p,x	^{145}Eu	CS	1USALAS	1.2+08	2.0+08	Jour	NIM/B,366,206	16	J.W.Engle+	C2200
*	p,x	^{146}Eu	CS	1USALAS	1.2+08	2.0+08	Jour	NIM/B,366,206	16	J.W.Engle+	C2200
*	p,x	^{147}Eu	CS	1USALAS	9.7+07	2.0+08	Jour	NIM/B,366,206	16	J.W.Engle+	C2200

*	p,x	^{148}Eu	CS	1USALAS	9.7+07	2.0+08	Jour	NIM/B,366,206	16	J.W.Engle+	C2200
*	p,x	^{149}Eu	CS	1USALAS	6.8+07	2.0+08	Jour	NIM/B,366,206	16	J.W.Engle+	C2200
*	p,x	^{146}Gd	CS	1USALAS	1.2+08	2.0+08	Jour	NIM/B,366,206	16	J.W.Engle+	C2200
*	p,x	^{147}Gd	CS	1USALAS	8.7+07	2.0+08	Jour	NIM/B,366,206	16	J.W.Engle+	C2200
*	p,x	^{149}Gd	CS	1USALAS	7.8+07	2.0+08	Jour	NIM/B,366,206	16	J.W.Engle+	C2200
*	p,x	^{151}Gd	CS	1USALAS	6.0+07	2.0+08	Jour	NIM/B,366,206	16	J.W.Engle+	C2200
*	p,x	^{153}Gd	CS	1USALAS	3.8+07	1.8+08	Jour	NIM/B,366,206	16	J.W.Engle+	C2200
*	p,x	^{151}Tb	CS	1USALAS	7.8+07	2.0+08	Jour	NIM/B,366,206	16	J.W.Engle+	C2200
*	p,x	^{152}Tb	CS	1USALAS	6.8+07	2.0+08	Jour	NIM/B,366,206	16	J.W.Engle+	C2200
*	p,x	^{153}Tb	CS	1USALAS	6.0+07	2.0+08	Jour	NIM/B,366,206	16	J.W.Engle+	C2200
*	p,x	^{154}Tb	CS	1USALAS	6.0+07	2.0+08	Jour	NIM/B,366,206	16	J.W.Engle+	C2200
*	p,x	^{155}Tb	CS	1USALAS	3.8+07	2.0+08	Jour	NIM/B,366,206	16	J.W.Engle+	C2200
*	p,x	^{156}Tb	CS	1USALAS	3.8+07	2.0+08	Jour	NIM/B,366,206	16	J.W.Engle+	C2200
*	p,x	^{158}Tb	CS	1USALAS	3.8+07	7.8+07	Jour	NIM/B,366,206	16	J.W.Engle+	C2200
*	p,x	^{153}Dy	CS	1USALAS	6.8+07	8.7+07	Jour	NIM/B,366,206	16	J.W.Engle+	C2200
*	p,x	^{155}Dy	CS	1USALAS	3.8+07	2.0+08	Jour	NIM/B,366,206	16	J.W.Engle+	C2200
*	p,x	^{157}Dy	CS	1USALAS	3.8+07	1.4+08	Jour	NIM/B,366,206	16	J.W.Engle+	C2200
	p,x+n	inclusive	PY	1USAANL	7.0+06	8.0+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072
*	^{44}Ca,3n	^{200}At	CS	1USATAM	1.8+08	2.0+08	Jour	PR/C,92,054617	15	T.A.Werke+	C2206
*	^{44}Ca,4n	^{199}At	CS	1USATAM	1.8+08	2.0+08	Jour	PR/C,92,054617	15	T.A.Werke+	C2206
*	^{44}Ca,5n	^{198}At	CS	1USATAM	1.9+08	2.1+08	Jour	PR/C,92,054617	15	T.A.Werke+	C2206
*	^{44}Ca,x	^{197}Po	CS	1USATAM	2.1+08	2.1+08	Jour	PR/C,92,054617	15	T.A.Werke+	C2206
*	^{44}Ca,x	^{198}Po	CS	1USATAM	2.0+08	2.1+08	Jour	PR/C,92,054617	15	T.A.Werke+	C2206
*	^{44}Ca,x	^{199}Po	CS	1USATAM	1.9+08	2.1+08	Jour	PR/C,92,054617	15	T.A.Werke+	C2206
*	^{50}Ti,3n	^{206}Fr	CS	1USATAM	2.1+08	2.3+08	Jour	PR/C,92,054601	15	D.A.Mayorov+	C2203
*	^{50}Ti,4n	^{205}Fr	CS	1USATAM	2.1+08	2.3+08	Jour	PR/C,92,054601	15	D.A.Mayorov+	C2203
*	^{50}Ti,5n	^{204}Fr	CS	1USATAM	2.2+08	2.3+08	Jour	PR/C,92,054601	15	D.A.Mayorov+	C2203
*	^{50}Ti,x	^{204}Rn	CS	1USATAM	2.2+08	2.2+08	Jour	PR/C,92,054601	15	D.A.Mayorov+	C2203
*	^{50}Ti,x	^{206}Rn	?	1USATAM	2.1+08	2.1+08	Jour	PR/C,92,054601	15	D.A.Mayorov+	C2203

66 Dysprosium

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,x+n	inclusive	PY	1USAANL	7.0+06	8.0+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{44}Ca,3n	^{203}Rn	CS	1USATAM	1.8+08	2.0+08	Jour	PR/C,92,054617	15	T.A.Werke+	C2206
*	^{44}Ca,4n	^{202}Rn	CS	1USATAM	1.8+08	2.1+08	Jour	PR/C,92,054617	15	T.A.Werke+	C2206
*	^{44}Ca,5n	^{201}Rn	CS	1USATAM	2.0+08	2.1+08	Jour	PR/C,92,054617	15	T.A.Werke+	C2206
*	^{44}Ca,x	^{200}At	CS	1USATAM	2.0+08	2.1+08	Jour	PR/C,92,054617	15	T.A.Werke+	C2206
*	^{44}Ca,x	^{201}At	CS	1USATAM	2.0+08	2.1+08	Jour	PR/C,92,054617	15	T.A.Werke+	C2206
*	^{44}Ca,x	^{202}At	CS	1USATAM	1.9+08	2.1+08	Jour	PR/C,92,054617	15	T.A.Werke+	C2206
*	^{44}Ca,x	^{203}At	CS	1USATAM	2.0+08	2.0+08	Jour	PR/C,92,054617	15	T.A.Werke+	C2206
*	^{50}Ti,3n	^{209}Ra	CS	1USATAM	2.1+08	2.2+08	Jour	PR/C,92,054601	15	D.A.Mayorov+	C2203
*	^{50}Ti,4n	^{208}Ra	?	1USATAM	2.1+08	2.2+08	Jour	PR/C,92,054601	15	D.A.Mayorov+	C2203
*	^{50}Ti,x	^{208}Fr	?	1USATAM	2.1+08	2.2+08	Jour	PR/C,92,054601	15	D.A.Mayorov+	C2203
*	^{54}Cr,5n	^{211}Th	?	1USATAM	2.4+08	2.5+08	Jour	PR/C,92,054601	15	D.A.Mayorov+	C2203
*	^{54}Cr,x	^{212}Ac	?	1USATAM	2.4+08	2.5+08	Jour	PR/C,92,054601	15	D.A.Mayorov+	C2203

67 Holmium 165

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,x+n	inclusive	PY	1USAANL	7.0+06	8.0+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072

68 Erbium

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,x+n	inclusive	PY	1USAANL	7.5+06	8.5+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072

68 Erbium 164

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	α,n	^{167}Yb	CS	3HUNDEB	1.3+07	1.7+07	Jour	JP/G,42,055103	15	G.G.Kiss+	D4341

68 Erbium 166

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	α,n	^{169}Yb	CS	3HUNDEB	1.2+07	1.7+07	Jour	JP/G,42,055103	15	G.G.Kiss+	D4341

69 Thulium 169

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,x+n	inclusive	PY	1USAANL	7.5+06	8.5+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072

70 Ytterbium

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,x+n	inclusive	PY	1USAANL	7.5+06	8.5+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072

71 Lutetium 175

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	^{31}P,fis		CS	3AULCBR	1.1+08	1.4+08	Jour	PR/C,66,044601	02	R.D.Butt+	D0813
	^{31}P,fus		CS	3AULCBR	1.1+08	1.4+08	Jour	PR/C,66,044601	02	R.D.Butt+	D0813

71 Lutetium 176

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,0		RP	1USALAS			Jour	PR/C,93,034602	16	O.Roig+	14244
*	n,γ	^{177}Lu	CS	1USALAS	2.5-02	2.5-02	Jour	PR/C,93,034602	16	O.Roig+	14244
*	n,γ	^{177}Lu	CS	1USALAS	8.5+00	1.0+05	Jour	EPJ/CS,111,02004	16	D.Denis-Petit+	14455
	^{31}P,fis		CS	3AULCBR	1.1+08	1.3+08	Jour	PR/C,66,044601	02	R.D.Butt+	D0813
	^{31}P,fus		CS	3AULCBR	1.1+08	1.3+08	Jour	PR/C,66,044601	02	R.D.Butt+	D0813

72 Hafnium 178

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
^{28}Si,fis		CS	3AULCBR	1.1+08	1.4+08	Jour	PR/C,66,044601	02	R.D.Butt+	D0813
^{28}Si,fus		CS	3AULCBR	1.1+08	1.4+08	Jour	PR/C,66,044601	02	R.D.Butt+	D0813
^{29}Si,fis		CS	3AULCBR	1.1+08	1.4+08	Jour	PR/C,66,044601	02	R.D.Butt+	D0813
^{29}Si,fus		CS	3AULCBR	1.1+08	1.4+08	Jour	PR/C,66,044601	02	R.D.Butt+	D0813

73 Tantalum

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x+n	inclusive	PY	1USAANL	8.0+06	9.0+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072

73 Tantalum 181

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,γ	^{182}Ta	CS	3SLNIJS	Fiss		Jour	ARI,101,101	15	S.Manojlovic+	31770

74 Tungsten

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x+n	inclusive	PY	1USAANL	8.0+06	9.0+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072

75 Rhenium

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x+n	inclusive	PY	1USAANL	8.0+06	9.0+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072

75 Rhenium 185

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,γ	^{186}Re	CS	3HUNKFI	2.5-02	2.5-02	Jour	PR/C,93,054319	16	D.A.Matters+	31769
*	n,γ	^{186}Re	CSP	3HUNKFI	2.5-02	2.5-02	Jour	PR/C,93,054319	16	D.A.Matters+	31769

77 Iridium

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,x+n	inclusive	PY	1USAANL	8.0+06	9.0+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072

78 Platinum

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,x+n	inclusive	PY	1USAANL	8.0+06	9.0+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072

79 Gold 197

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,2n	^{196}Au	CS	3CZRUJF	1.7+07	3.6+07	Jour	NP/A,953,139	16	M.Majerle+	31767
*	n,3n	^{195}Au	CS	3CZRUJF	1.7+07	3.6+07	Jour	NP/A,953,139	16	M.Majerle+	31767
*	n,4n	^{194}Au	CS	3CZRUJF	2.4+07	3.6+07	Jour	NP/A,953,139	16	M.Majerle+	31767
*	n,γ	^{198}Au	CS	3SLNIJS	Fiss		Jour	ARI,101,101	15	S.Manojlovic+	31770
*	p,3n	^{195}Hg	CS	2BLGLVN	1.7+07	6.4+07	Jour	ARI,113,96	16	F.Ditroi+	D4351
*	p,5n	^{193}Hg	CS	2BLGLVN	3.6+07	6.4+07	Jour	ARI,113,96	16	F.Ditroi+	D4351
*	p,6n	^{192}Hg	CS	2BLGLVN	4.5+07	6.4+07	Jour	ARI,113,96	16	F.Ditroi+	D4351
*	p,n	^{197}Hg	CS	2BLGLVN	4.9+06	6.4+07	Jour	ARI,113,96	16	F.Ditroi+	D4351
*	p,x	^{192}Ir	CS	2BLGLVN	4.7+07	6.4+07	Jour	ARI,113,96	16	F.Ditroi+	D4351
*	p,x	^{191}Pt	CS	2BLGLVN	3.8+07	6.4+07	Jour	ARI,113,96	16	F.Ditroi+	D4351
*	p,x	^{191}Au	CS	2BLGLVN	5.8+07	6.4+07	Jour	ARI,113,96	16	F.Ditroi+	D4351
*	p,x	^{194}Au	CS	2BLGLVN	1.0+07	6.4+07	Jour	ARI,113,96	16	F.Ditroi+	D4351
*	p,x	^{195}Au	CS	2BLGLVN	2.0+07	6.4+07	Jour	ARI,113,96	16	F.Ditroi+	D4351
*	p,x	^{196}Au	CS	2BLGLVN	4.9+06	6.4+07	Jour	ARI,113,96	16	F.Ditroi+	D4351
	p,x+n	inclusive	PY	1USAANL	8.0+06	9.0+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072
	d,n+p	^{197}Au	DAA	4UKRIFU	1.4+07	1.4+07	Jour	IZV,34,1714	70	O.F.Nemets+	D5116
	^{208}Pb,tcc		CS	2ZZZCER	3.3+13	3.3+13	Jour	PR/C,70,014902	04	C.Scheidenberger+	D0810
	^{208}Pb,x	Many	CS	2ZZZCER	3.3+13	3.3+13	Jour	PR/C,70,014902	04	C.Scheidenberger+	D0810

80 Mercury

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

*	p,x	^{194}Au	CS	2BLGLVN	2.8+07	6.5+07	Jour	NIM/B,378,12	16	A.Hermanne+	D4346
*	p,x	^{195}Au	CS	2BLGLVN	3.2+07	6.5+07	Jour	NIM/B,378,12	16	A.Hermanne+	D4346
*	p,x	^{196}Au	CS	2BLGLVN	2.0+07	6.5+07	Jour	NIM/B,378,12	16	A.Hermanne+	D4346
*	p,x	^{198}Au	CS	2BLGLVN	3.6+07	6.5+07	Jour	NIM/B,378,12	16	A.Hermanne+	D4346
*	p,x	^{199}Au	CS	2BLGLVN	1.3+07	6.5+07	Jour	NIM/B,378,12	16	A.Hermanne+	D4346
*	p,x	^{195}Hg	CS	2BLGLVN	3.7+07	6.5+07	Jour	NIM/B,378,12	16	A.Hermanne+	D4346
*	p,x	^{197}Hg	CS	2BLGLVN	1.8+07	6.5+07	Jour	NIM/B,378,12	16	A.Hermanne+	D4346
*	p,x	^{203}Hg	CS	2BLGLVN	1.2+07	6.5+07	Jour	NIM/B,378,12	16	A.Hermanne+	D4346
*	p,x	^{196}Tl	CS	2BLGLVN	2.2+07	3.4+07	Jour	NIM/B,378,12	16	A.Hermanne+	D4346
*	p,x	^{197}Tl	CS	2BLGLVN	1.3+07	6.5+07	Jour	NIM/B,378,12	16	A.Hermanne+	D4346
*	p,x	^{198}Tl	CS	2BLGLVN	7.1+06	6.5+07	Jour	NIM/B,378,12	16	A.Hermanne+	D4346
*	p,x	^{199}Tl	CS	2BLGLVN	7.1+06	6.5+07	Jour	NIM/B,378,12	16	A.Hermanne+	D4346
*	p,x	^{200}Tl	CS	2BLGLVN	7.1+06	6.5+07	Jour	NIM/B,378,12	16	A.Hermanne+	D4346
*	p,x	^{201}Tl	CS	2BLGLVN	7.1+06	6.5+07	Jour	NIM/B,378,12	16	A.Hermanne+	D4346
*	p,x	^{202}Tl	CS	2BLGLVN	7.1+06	6.5+07	Jour	NIM/B,378,12	16	A.Hermanne+	D4346
*	d,x	^{194}Au	CS	2BLGLVN	2.2+07	5.0+07	Jour	JRN,308,221	16	A.Hermanne+	D4349
*	d,x	^{195}Au	CS	2BLGLVN	3.8+07	5.0+07	Jour	JRN,308,221	16	A.Hermanne+	D4349
*	d,x	^{196}Au	CS	2BLGLVN	1.5+07	5.0+07	Jour	JRN,308,221	16	A.Hermanne+	D4349
*	d,x	^{198}Au	CS	2BLGLVN	3.0+07	5.0+07	Jour	JRN,308,221	16	A.Hermanne+	D4349
*	d,x	^{199}Au	CS	2BLGLVN	2.2+07	5.0+07	Jour	JRN,308,221	16	A.Hermanne+	D4349
*	d,x	^{195}Hg	CS	2BLGLVN	3.8+07	5.0+07	Jour	JRN,308,221	16	A.Hermanne+	D4349
*	d,x	^{197}Hg	CS	2BLGLVN	2.8+07	4.4+07	Jour	JRN,308,221	16	A.Hermanne+	D4349
*	d,x	^{203}Hg	CS	2BLGLVN	4.8+06	5.0+07	Jour	JRN,308,221	16	A.Hermanne+	D4349
*	d,x	^{196}Tl	CS	2BLGLVN	2.2+07	5.0+07	Jour	JRN,308,221	16	A.Hermanne+	D4349
*	d,x	^{197}Tl	CS	2BLGLVN	1.6+07	5.0+07	Jour	JRN,308,221	16	A.Hermanne+	D4349
*	d,x	^{198}Tl	CS	2BLGLVN	8.5+06	5.0+07	Jour	JRN,308,221	16	A.Hermanne+	D4349
*	d,x	^{199}Tl	CS	2BLGLVN	6.9+06	5.0+07	Jour	JRN,308,221	16	A.Hermanne+	D4349
*	d,x	^{200}Tl	CS	2BLGLVN	6.9+06	5.0+07	Jour	JRN,308,221	16	A.Hermanne+	D4349
*	d,x	^{201}Tl	CS	2BLGLVN	8.5+06	5.0+07	Jour	JRN,308,221	16	A.Hermanne+	D4349
*	d,x	^{202}Tl	CS	2BLGLVN	6.9+06	5.0+07	Jour	JRN,308,221	16	A.Hermanne+	D4349

81 Thallium

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,x+n	inclusive	PY	1USAANL	8.5+06	9.5+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072

82 Lead

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,x	^{203}Hg	CS	3KORKRM	2.6+07	3.7+07	Jour	EPJ/A,51,104	15	M.Zaman+	30836
*	n,x	^{202}Tl	CS	3KORKRM	2.6+07	3.7+07	Jour	EPJ/A,51,104	15	M.Zaman+	30836
*	n,x	^{200}Pb	CS	3KORKRM	3.7+07	3.7+07	Jour	EPJ/A,51,104	15	M.Zaman+	30836
*	n,x	^{201}Pb	CS	3KORKRM	2.6+07	3.7+07	Jour	EPJ/A,51,104	15	M.Zaman+	30836
*	n,x	^{202}Pb	CS	3KORKRM	2.6+07	3.7+07	Jour	EPJ/A,51,104	15	M.Zaman+	30836
*	n,x	^{203}Pb	CS	3KORKRM	1.5+07	3.7+07	Jour	EPJ/A,51,104	15	M.Zaman+	30836
*	n,x	^{204}Pb	CS	3KORKRM	1.5+07	3.7+07	Jour	EPJ/A,51,104	15	M.Zaman+	30836
	p,x+n	inclusive	PY	1USAANL	8.5+06	9.5+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072

82 Lead 208

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{11}Li,x	^{212}At	?	1CANTMF	2.9+07	4.0+07	Jour	PR/C,87,044603	13	A.M.Vinodkumar+	C2020
*	^{11}Li,x	^{213}At	CS	1CANTMF	2.9+07	4.0+07	Jour	PR/C,87,044603	13	A.M.Vinodkumar+	C2020
*	^{11}Li,x	^{214}At	CS	1CANTMF	2.9+07	4.0+07	Jour	PR/C,87,044603	13	A.M.Vinodkumar+	C2020

83 Bismuth 209

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,3n	^{207}Bi	CS	3CZRUJF	2.0+07	3.4+07	Jour	NP/A,953,139	16	M.Majerle+	31767
*	n,4n	^{206}Bi	CS	3CZRUJF	2.4+07	3.4+07	Jour	NP/A,953,139	16	M.Majerle+	31767
*	n,4n	^{206}Bi	CS	3KORKRM	2.6+07	3.7+07	Jour	EPJ/A,51,104	15	M.Zaman+	30836
*	n,5n	^{205}Bi	CS	3CZRUJF	3.4+07	3.4+07	Jour	NP/A,953,139	16	M.Majerle+	31767
*	n,5n	^{205}Bi	CS	3KORKRM	3.7+07	3.7+07	Jour	EPJ/A,51,104	15	M.Zaman+	30836
	p,x+n	inclusive	PY	1USAANL	8.5+06	9.5+06	Jour	PR,145,(3),957	66	A.J.Elwyn+	C1072

88 Radium 226

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,fis		DA	1USAANL	3.2+07	4.2+07	Jour	PR,136,B1333	64	J.E.Gindler+	C0714

92 Uranium

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	α,x+n	inclusive	PY	1USAWAU	3.5+06	1.0+07	Jour	ARI,103,177	15	E.B.Norman+	C1433

92 Uranium 233

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,tot		CS	1USAORL	2.5-02	2.5-02	Jour	NSE,8,112	60	R.C.Block+	12024

92 Uranium 234

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,tot		CS	1USAORL	2.5-02	2.5-02	Jour	NSE,8,112	60	R.C.Block+	12024

92 Uranium 235

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,fis		CS	2ZZZCER	1.0+02	1.0+04	Jour	EPJ/CS,111,02003	16	C.Paradela+	23294
*	n,fis	Many	FY	1USALRL	Fiss		Jour	JRN,307,2221	16	S.Stave+	14453
	n,tot		CS	1USAORL	2.5-02	2.5-02	Jour	NSE,8,112	60	R.C.Block+	12024

92 Uranium 238

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,fis		?	2ZZZCER	2.9+05	3.2+06	Jour	PR/C,91,024602	15	C.Paradela+	23269

93 Neptunium 237

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,γ	^{238}Np	CS	2ZZZCER	1.0+00	2.0+03	Jour	PR/C,85,044616	12	C.Guerrero+	23069

94 Plutonium 240

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,tot		CS	1USAORL	2.5-02	2.5-02	Jour	NSE,8,112	60	R.C.Block+	12024

95 Americium 241

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,fis		CS	1USALRL	2.5+06	2.5+06	Jour	PR,166,1219	68	C.D.Bowman+	12572