EXFOR News (April 2024)

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, 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 the NRDC Coordinator (n.otsuka@iaea.org) for inclusion in the EXFOR News distribution list as well as any question on EXFOR.

[1] N. Otuka, E. Dupont, V. Semkova, B. Pritychenko et al., Nucl.Data.Sheets **120**(2014)272.

Quantity codes

ALF	α-value ($\sigma_{\rm capt}/\sigma_{\rm fis}$)	KE	Kinetic energy
AMP	Scattering length	INT	Cross section integral over incident energy
CHG	Fragment charge	KER	Kerma factor
CS	Cross section	MAS	Fragment mass
CSP	Partial cross section	MFQ	Differential fission neutron multiplicity
CST	Temperature dependent cross section	MLT	Multiplicity
D3A	Triple differential $d\Omega_1/d\Omega_2/dE'$	NQ	Nuclear quantity
D3E	Triple differential $d\Omega/dE'_1/dE'_2$	NU	Fission neutron multiplicity $\bar{\nu}$
D4A	Quadruple diff. $d\Omega_1/d\Omega_2/dE'_1/dE'_2$	NUD	Delayed fission neutron multiplicity $\bar{\nu_d}$
DA	Differential $d/d\Omega$	POL	Polarization
DAA	Double differential $d\Omega_1/d\Omega_2$	POD	Differential polarization
DAE	Double differential $d\Omega/dE'$	PY	Product yield (other than fission)
DAP	Partial differential $d/d\Omega$	RI	Resonance integral
DAT	Temperature-dependent Legendre coefficient	RP	Resonance parameter
DE	Differential d/dE'	RR	Reaction rate
DEP	Energy spectrum for specific group	SIF	Self indication
DP	Diff. by linear momentum of outgoing part.	SPC	Gamma spectrum
DT	Diff. by 4-momentum transfer squared	TSL	Thermal scattering
ETA	η-value = $\bar{\nu}\sigma_{\rm fis}/(\sigma_{\rm capt}+\sigma_{\rm fis})$	TT	Thick target yield
EVL	Evaluation	TTD	Differential thick target yield, $d/d\Omega$
FY	Fission product yield	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 #
	^{16}O,tcc		CS	2ZZZCER	9.6+11	3.2+12	Jour	ZP/A,330,407	88	C.Brechtmann+	D8075
	^{16}O,x	Many	CS	2ZZZCER	9.6+11	3.2+12	Jour	ZP/A,330,407	88	C.Brechtmann+	D8075
	^{32}S,tcc		CS	2ZZZCER	7.0+08	2.0+11	Jour	ZP/A,331,463	88	C.Brechtmann+	D8076
	^{32}S,x	Many	CS	2ZZZCER	7.0+08	2.0+11	Jour	ZP/A,331,463	88	C.Brechtmann+	D8076

1 Hydrogen 2

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{15}C,el	^{2}H	?	1USAANL	1.1+08	1.1+08	Jour	PR/C,106,064312	22	J.Chen+	C2887
*	^{15}C,inel	^{2}H	?	1USAANL	1.1+08	1.1+08	Jour	PR/C,106,064312	22	J.Chen+	C2887

1 Hydrogen 3

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,el	^{3}H	POD	1USALAS	1.4+07	1.4+07	Jour	PR/C,4,52	71	J.L.Detch+	A1017
	p,el	^{3}H	POD	2ITYUPV	3.2+06	4.5+06	Jour	NC/B,57,340	68	C.Manduchi+	A1016

1 Hydrogen

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	^{16}O,non		CS	2ZZZCER	9.6+11	3.2+12	Jour	PL/B,222,301	89	K.Sengupta+	D8078
	^{16}O,tcc		CS	2ZZZCER	9.6+11	3.2+12	Jour	ZP/A,330,407	88	C.Brechtmann+	D8075
	^{16}O,x	Many	CS	2ZZZCER	9.6+11	3.2+12	Jour	ZP/A,330,407	88	C.Brechtmann+	D8075
	^{16}O,x+α	inclusive	CS	2ZZZCER	9.6+11	3.2+12	Jour	PL/B,222,301	89	K.Sengupta+	D8078
	^{32}S,non		CS	2ZZZCER	6.4+12	6.4+12	Jour	PL/B,222,301	89	K.Sengupta+	D8078
	^{32}S,tcc		CS	2ZZZCER	7.0+08	2.0+11	Jour	ZP/A,331,463	88	C.Brechtmann+	D8076
	^{32}S,x	Many	CS	2ZZZCER	7.0+08	2.0+11	Jour	ZP/A,331,463	88	C.Brechtmann+	D8076
	^{32}S,x+α	inclusive	CS	2ZZZCER	6.4+12	6.4+12	Jour	PL/B,222,301	89	K.Sengupta+	D8078

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	3HUNDEB	4.3+06	8.3+06	Jour	PR/C,108,025802	23	A.Toth+	D4430

2 Helium 4

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,el	^{4}He	DA	1USAMIN	1.8+07	3.0+07	Jour	PR/C,10,1767	74	W.S.Chien+	C2870
*	^{14}O,0		RP	1USATAM			Jour	PR/C,106,054310	22	M.Barbui+	C2854
*	^{14}O,el	^{4}He	?	1USATAM			Jour	PR/C,106,054310	22	M.Barbui+	C2854

3 Lithium

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	^{3}He,x	^{7}Be	CS	1USABRK	5.9+06	5.9+06	Jour	ANS,30,623	78	R.V.Pyle+	F0011

3 Lithium 6

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	γ,x+n	inclusive	CS	4RUSSGU	3.4+06	8.2+06	Jour	SUTP,8,50	07	A.M.Goryachev+	M1048

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	CS	2GERUEN	2.7+06	1.0+07	Jour	NP/A,126,529	69	K.Kilian+	A1443
	p,inel	^{7}Li	CSP	2GERUEN	2.7+06	1.1+07	Jour	NP/A,126,529	69	K.Kilian+	A1443
*	p,n	^{7}Be	CS	3HUNDEB	3.6+06	1.3+07	Jour	NP/A,1041,122778	24	A.Toth+	D4432

4 Berylium 7

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	α,γ		RP	1CANTMF	8.8+05	1.2+06	Jour	PR/C,106,045805	22	A.Psaltis+	C2835
*	α,γ		RP	1CANTMF	8.8+05	1.2+06	Jour	PRL,129,162701	22	A.Psaltis+	C2855
*	α,γ	^{11}C	RR	1CANTMF	Maxwl		Jour	PR/C,106,045805	22	A.Psaltis+	C2835

4 Berylium 9

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	d,el	^{9}Be	DA	2JPNKTO	1.4+07	1.4+07	Jour	JPJ,21,2462	66	Dai-Canguyen	F0164
	d,inel	^{9}Be	DAP	2JPNKTO	1.4+07	1.4+07	Jour	JPJ,21,2462	66	Dai-Canguyen	F0164
*	^{20}Ne,x	Many	CS	3INDVEC	1.6+08	1.9+08	Jour	PR/C,105,L021603	22	S.Manna+	D6421
*	^{20}Ne,x	Many	DA	3INDVEC	1.6+08	1.9+08	Jour	PR/C,105,L021603	22	S.Manna+	D6421
*	^{20}Ne,x	Many	DAE	3INDVEC	1.6+08	1.6+08	Jour	PR/C,105,L021603	22	S.Manna+	D6421
*	^{29}Ne,inel	^{9}Be	CSP	1USAMSU	2.8+09	2.8+09	Jour	PL/B,838,137704	23	A.Revel+	C2894

*	^{32}Mg,inel	^{9}Be	CSP	1USAMSU	3.6+09	3.6+09	Jour	PL/B,838,137704	23	A.Revel+	C2894
	^{40}Ar,x	Many	CS	2GERGSI			Jour	NP/A,673,411	00	A.Ozawa+	D8089

5 Boron 10

	Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
					Min	Max		Ref Vol Page			
*	p,x	^{7}Be	TTP	4UKRKFT	2.0+05	1.8+06	Jour	VAT/I,3/139,7	22	V.V.Levenets+	D5196
*	p,x	^{10}B	TTP	4UKRKFT	1.2+06	1.8+06	Jour	VAT/I,3/139,7	22	V.V.Levenets+	D5196

5 Boron 11

	Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
					Min	Max		Ref Vol Page			
	p,α	^{8}Be	DAP	3AULCBR	7.0+05	6.0+06	Jour	NP,46,93	63	G.D.Symons+	F0214
*	p,γ	^{12}C	TTP	4UKRKFT	2.0+05	1.8+06	Jour	VAT/I,3/139,7	22	V.V.Levenets+	D5196

6 Carbon

	Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
					Min	Max		Ref Vol Page			
*	p,x+n	inclusive	TTD	3INDTAT	8.0+06	2.0+07	Jour	NIM/A,1034,166767	22	S.Paul+	D6430

6 Carbon 12

	Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
					Min	Max		Ref Vol Page			
*	p,γ	^{13}N	TTD	3HUNDEB	3.5+05	1.8+06	Jour	NP/A,1037,122705	23	L.Csedreki+	D4428
*	p,tot		RP	3HUNDEB	4.6+05	1.7+06	Jour	NP/A,1037,122705	23	L.Csedreki+	D4428
	^{16}O,tcc		CS	2ZZZCER	9.6+11	3.2+12	Jour	ZP/A,330,407	88	C.Brechtmann+	D8075
*	^{16}O,x	Many	CS	3INDVEC	1.4+08	1.6+08	Jour	PR/C,105,L021603	22	S.Manna+	D6421
	^{16}O,x	Many	CS	2ZZZCER	9.6+11	3.2+12	Jour	ZP/A,330,407	88	C.Brechtmann+	D8075
*	^{16}O,x	Many	DA	3INDVEC	1.4+08	1.6+08	Jour	PR/C,105,L021603	22	S.Manna+	D6421
*	^{16}O,x	Many	DAE	3INDVEC	1.4+08	1.4+08	Jour	PR/C,105,L021603	22	S.Manna+	D6421
*	^{17}O,fus		CS	1USAFLA	8.7+06	2.0+07	Jour	EPJ/A,57,272	21	B.W.Asher+	C2920
	^{32}S,tcc		CS	2ZZZCER	7.0+08	2.0+11	Jour	ZP/A,331,463	88	C.Brechtmann+	D8076
	^{32}S,x	Many	CS	2ZZZCER	7.0+08	2.0+11	Jour	ZP/A,331,463	88	C.Brechtmann+	D8076

6 Carbon 13

	Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
					Min	Max		Ref Vol Page			
*	α,n	^{16}O	DAP	1USANOT	5.0+06	5.6+06	Jour	PR/C,106,055808	22	R.J.Deboer+	C2875

6 Carbon 14

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	d,p	^{15}C	DAP	1USAANL	2.0+07	2.0+07	Jour	PRL,129,152501	22	B.P.Kay+	C2834

7 Nitrogen 14

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	p,γ	^{15}O	DAP	1USASRF	2.6+05	1.1+06	Jour	PR/C,106,065803	22	B.Frentz+	C2889
*	p,γ	^{15}O	RR	1USASRF			Jour	PR/C,106,065803	22	B.Frentz+	C2889
*	d,p	^{15}N	DAP	1USAANL	2.0+07	2.0+07	Jour	PRL,129,152501	22	B.P.Kay+	C2834

8 Oxygen 16

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{18}O,^{17}O	^{17}O	DAP	2ITYLNS	2.8+08	2.8+08	Jour	PR/C,108,044611	23	O.Sgouros+	D8067

8 Oxygen 18

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,^{6}He	^{16}O	DAP	1USAMHG	5.8+07	5.8+07	Jour	PR/C,11,734	75	A.Vandermolen+	C2864
	α,^{8}He	^{14}O	DAP	1USAMHG	5.8+07	5.8+07	Jour	PR/C,11,2114	75	J.Jaenecke+	C2863

9 Fluorine 19

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,el	^{19}F	DA	1USAMIN	2.5+07	2.5+07	Jour	NP/A,216,549	73	T.P.Krick+	C2868
	α,inel	^{19}F	DAP	1USAMIN	2.5+07	2.5+07	Jour	NP/A,216,549	73	T.P.Krick+	C2868

11 Sodium 22

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,p	^{22}Ne	CS	4ZZZDUB	7.8-01	3.7+02	Jour	ZP/A,308,57	82	Yu.M.Gledenov+	40703

13 Aluminium 27

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

	γ,x+n	inclusive	?	1USACOR	1.8+07	1.8+07	Jour	PR,79,242(X10)	50	R.L.Walker+	L0284
	^{16}O,tcc		CS	2ZZZCER	9.6+11	3.2+12	Jour	ZP/A,330,407	88	C.Brechtmann+	D8075
	^{16}O,x	Many	CS	2ZZZCER	9.6+11	3.2+12	Jour	ZP/A,330,407	88	C.Brechtmann+	D8075
*	^{18}O,^{17}O	^{28}Al	DAP	2ITYLNS	2.8+08	2.8+08	Jour	PR/C,108,044611	23	O.Sgouros+	D8067
	^{32}S,tcc		CS	2ZZZCER	1.2+09	2.0+11	Jour	ZP/A,331,463	88	C.Brechtmann+	D8076
	^{32}S,x	Many	CS	2ZZZCER	1.2+09	2.0+11	Jour	ZP/A,331,463	88	C.Brechtmann+	D8076
*	^{56}Fe,tcc		CS	1USABNL	1.7+10	1.7+10	Jour	NIM/B,534,54	23	R.Gupta+	C2918
*	^{56}Fe,x	Many	CS	1USABNL	1.7+10	1.7+10	Jour	NIM/B,534,54	23	R.Gupta+	C2918

14 Silicon

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,x	^{7}Be	CS	2SWDUPP	4.8+07	4.8+07	Jour	ARI,30,33	79	H.Lundqvist+	A0299

14 Silicon 29

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,el	^{29}Si	DA	1USALTI	2.0+06	5.8+06	Jour	NP/A,245,317	75	L.G.Sanin+	C2825
	α,n	^{32}S	DAP	1USALTI	3.5+06	5.5+06	Jour	NP/A,245,317	75	L.G.Sanin+	C2825

14 Silicon 30

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,3p	^{28}Mg	CS	2SWDUPP	1.3+08	1.3+08	Jour	ARI,30,33	79	H.Lundqvist+	A0299

17 Chlorine

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	γ,x+n	inclusive	?	1USACOR	1.8+07	1.8+07	Jour	PR,79,242(X10)	50	R.L.Walker+	L0284

20 Calcium

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	γ,x+n	inclusive	?	1USACOR	1.8+07	1.8+07	Jour	PR,79,242(X10)	50	R.L.Walker+	L0284
*	p,x	^{42}K	CS	3POLIFJ	2.2+07	6.0+07	Jour	RPC,214,111290	24	A.A.Ahmed+	D1053
*	p,x	^{43}K	CS	3POLIFJ	1.4+07	6.0+07	Jour	RPC,214,111290	24	A.A.Ahmed+	D1053
*	p,x	^{47}Ca	CS	3POLIFJ	8.1+06	6.0+07	Jour	RPC,214,111290	24	A.A.Ahmed+	D1053
*	p,x	^{44}Sc	CS	3POLIFJ	3.4+06	6.0+07	Jour	RPC,214,111290	24	A.A.Ahmed+	D1053
*	p,x	^{46}Sc	CS	3POLIFJ	3.4+06	6.0+07	Jour	RPC,214,111290	24	A.A.Ahmed+	D1053
*	p,x	^{47}Sc	CS	3POLIFJ	3.4+06	6.0+07	Jour	RPC,214,111290	24	A.A.Ahmed+	D1053
*	p,x	^{48}Sc	CS	3POLIFJ	3.4+06	6.0+07	Jour	RPC,214,111290	24	A.A.Ahmed+	D1053

20 Calcium 40

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,d	^{42}Sc	DAP	1USAMIN	2.6+07	2.6+07	Jour	JP/A,6,1763	73	M.F.Thomas+	C2867
	e,el	^{40}Ca	DA	1USASTF	1.8+08	1.8+08	Jour	PR,121,283	61	H.Crannell+	L0280
	e,el	^{40}Ca	DA	1USASTF	2.5+08	2.5+08	Jour	PR,137,B865	65	M.Croissiaux+	L0281
	e,inel	^{40}Ca	DAP	1USASTF	2.5+08	2.5+08	Jour	PR,137,B865	65	M.Croissiaux+	L0281

21 Scandium 45

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	d,p	^{46}Sc	CS	3HUNDEB	2.4+06	8.5+06	Jour	IJP,97,2787	23	M.Al-Abiad+	D4429
	α,el	^{45}Sc	DA	1USAMIN	2.7+07	2.7+07	Jour	PR/C,8,2189	73	P.Mailandt+	C2869
*	α,n	^{48}V	CS	3HUNDEB	7.5+06	1.9+07	Jour	IJP,97,2787	23	M.Al-Abiad+	D4429

22 Titanium

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	γ,x+n	inclusive	?	1USACOR	1.8+07	1.8+07	Jour	PR,79,242(X10)	50	R.L.Walker+	L0284
	n,x+n	inclusive	DAE	4RUSFEI	1.4+07	1.4+07	Prog	YK-10,18	72	O.A.Sal'Nikov+	40396
	n,x+n	inclusive	DAP	4RUSFEI	1.4+07	1.4+07	Prog	YK-10,18	72	O.A.Sal'Nikov+	40396
	p,x	^{42}K	CS	2FR PAR	5.0+07	1.7+08	Jour	NP/A,441,617	85	R.Michel+	A0100
*	p,x	^{43}K	CS	1USABRK	3.4+07	5.3+07	Jour	EPJ/A,57,94	21	A.S.Voyles+	C2921
	p,x	^{43}K	CS	2FR PAR	5.0+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{47}Ca	CS	2FR PAR	5.4+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
*	p,x	^{44}Sc	CS	1USABRK	1.4+07	5.3+07	Jour	EPJ/A,57,94	21	A.S.Voyles+	C2921
	p,x	^{44}Sc	CS	2FR PAR	5.0+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{46}Sc	CS	2FR PAR	5.0+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{47}Sc	CS	2FR PAR	5.0+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
*	p,x	^{47}Sc	CS	1USABRK	8.4+06	5.3+07	Jour	EPJ/A,57,94	21	A.S.Voyles+	C2921
*	p,x	^{48}Sc	CS	1USABRK	1.6+07	5.3+07	Jour	EPJ/A,57,94	21	A.S.Voyles+	C2921
	p,x	^{48}Sc	CS	2FR PAR	5.0+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100

22 Titanium 48

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{18}O,^{17}O	^{49}Ti	CSP	2ITYLNS	2.8+08	2.8+08	Jour	PR/C,108,044611	23	O.Sgouros+	D8067
*	^{18}O,^{17}O	^{49}Ti	DAP	2ITYLNS	2.8+08	2.8+08	Jour	PR/C,108,044611	23	O.Sgouros+	D8067
*	^{18}O,el	^{48}Ti	DA	2ITYLNS	2.8+08	2.8+08	Jour	PR/C,109,014604	24	G.A.Brischetto+	D8098
*	^{18}O,inel	^{48}Ti	DAP	2ITYLNS	2.8+08	2.8+08	Jour	PR/C,109,014604	24	G.A.Brischetto+	D8098

23 Vanadium

	Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
					Min	Max		Ref Vol Page			
	p,x	^{43}K	CS	2FR PAR	5.0+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{47}Ca	CS	2FR PAR	9.0+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{44}Sc	CS	2FR PAR	5.0+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{46}Sc	CS	2FR PAR	5.0+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{47}Sc	CS	2FR PAR	5.0+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{48}Sc	CS	2FR PAR	5.0+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{48}V	CS	2FR PAR	5.0+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{48}Cr	CS	2FR PAR	5.0+07	7.9+07	Jour	NP/A,441,617	85	R.Michel+	A0100

23 Vanadium 51

	Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
					Min	Max		Ref Vol Page			
	n,x+n	inclusive	DAE	4RUSFEI	1.4+07	1.4+07	Prog	YK-10,18	72	O.A.Sal'Nikov+	40396
	n,x+n	inclusive	DAP	4RUSFEI	1.4+07	1.4+07	Prog	YK-10,18	72	O.A.Sal'Nikov+	40396
*	^{6}Li,x+α	inclusive	CS	3INDTAT	1.4+07	2.6+07	Jour	PR/C,105,034615	22	C.Joshi+	D6424
*	^{6}Li,x+α	inclusive	DA	3INDTAT	1.4+07	2.6+07	Jour	PR/C,105,034615	22	C.Joshi+	D6424
*	^{6}Li,x+α	inclusive	DAE	3INDTAT	2.0+07	2.6+07	Jour	PR/C,105,034615	22	C.Joshi+	D6424
*	^{6}Li,x+d	inclusive	DAE	3INDTAT	2.6+07	2.6+07	Jour	PR/C,105,034615	22	C.Joshi+	D6424
	e,el	^{51}V	DA	1USASTF	1.8+08	1.8+08	Jour	PR,121,283	61	H.Crannell+	L0280

25 Manganese 55

	Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
					Min	Max		Ref Vol Page			
	p,x	^{43}K	CS	2FR PAR	1.1+08	1.6+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{46}Sc	CS	2FR PAR	4.7+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{47}Sc	CS	2FR PAR	7.6+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{48}Sc	CS	2FR PAR	7.6+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{48}V	CS	2FR PAR	4.7+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{48}Cr	CS	2FR PAR	6.1+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{51}Cr	CS	2FR PAR	4.7+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{52}Mn	CS	2FR PAR	4.7+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100

26 Iron

	Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
					Min	Max		Ref Vol Page			
	p,x	^{44}Sc	CS	2FR PAR	6.4+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{46}Sc	CS	2FR PAR	6.4+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{48}Sc	CS	2FR PAR	8.9+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
*	p,x	^{48}V	CS	1USABRK	3.5+07	5.3+07	Jour	EPJ/A,57,94	21	A.S.Voyles+	C2921
	p,x	^{48}V	CS	2FR PAR	4.9+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
*	p,x	^{48}Cr	CS	1USABRK	3.9+07	5.3+07	Jour	EPJ/A,57,94	21	A.S.Voyles+	C2921
	p,x	^{48}Cr	CS	2FR PAR	4.9+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
*	p,x	^{49}Cr	CS	1USABRK	3.5+07	5.3+07	Jour	EPJ/A,57,94	21	A.S.Voyles+	C2921

*	p,x	^{51}Cr	CS	1USABRK	1.2+07	5.3+07	Jour	EPJ/A,57,94	21	A.S.Voyles+	C2921
	p,x	^{51}Cr	CS	2FR PAR	4.9+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
*	p,x	^{51}Mn	CS	1USABRK	1.2+07	5.3+07	Jour	EPJ/A,57,94	21	A.S.Voyles+	C2921
*	p,x	^{52}Mn	CS	1USABRK	1.5+07	5.3+07	Jour	EPJ/A,57,94	21	A.S.Voyles+	C2921
	p,x	^{52}Mn	CS	2FR PAR	4.9+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
*	p,x	^{54}Mn	CS	1USABRK	4.1+06	5.3+07	Jour	EPJ/A,57,94	21	A.S.Voyles+	C2921
	p,x	^{54}Mn	CS	2FR PAR	4.9+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
*	p,x	^{56}Mn	CS	1USABRK	1.5+07	4.7+07	Jour	EPJ/A,57,94	21	A.S.Voyles+	C2921
*	p,x	^{52}Fe	CS	1USABRK	1.8+07	5.3+07	Jour	EPJ/A,57,94	21	A.S.Voyles+	C2921
*	p,x	^{55}Co	CS	1USABRK	1.2+07	5.3+07	Jour	EPJ/A,57,94	21	A.S.Voyles+	C2921
*	p,x	^{56}Co	CS	1USABRK	4.1+06	5.3+07	Jour	EPJ/A,57,94	21	A.S.Voyles+	C2921
	p,x	^{56}Co	CS	2FR PAR	7.9+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
*	p,x	^{57}Co	CS	1USABRK	4.1+06	4.7+07	Jour	EPJ/A,57,94	21	A.S.Voyles+	C2921
*	p,x	^{58}Co	CS	1USABRK	4.1+06	3.5+07	Jour	EPJ/A,57,94	21	A.S.Voyles+	C2921

26 Iron 54

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	d,p	^{55}Fe	DAP	1USAFSU	1.6+07	1.6+07	Jour	PR/C,106,064308	22	L.A.Riley+	C2886

27 Cobalt 58

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,x+p	inclusive	CS	3INDTAT			Jour	EPJ/A,59,187	23	R.Gandhi+	33194

27 Cobalt 59

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	γ,x+n	inclusive	?	1USACOR	1.8+07	1.8+07	Jour	PR,79,242(X10)	50	R.L.Walker+	L0284
	p,x	^{44}Sc	CS	2FR PAR	9.8+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{46}Sc	CS	2FR PAR	7.3+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{47}Sc	CS	2FR PAR	9.8+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{48}V	CS	2FR PAR	6.8+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{51}Cr	CS	2FR PAR	4.9+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{54}Mn	CS	2FR PAR	4.9+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{55}Co	CS	2FR PAR	4.9+07	1.7+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{56}Co	CS	2FR PAR	4.9+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{57}Co	CS	2FR PAR	4.9+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{58}Co	CS	2FR PAR	4.9+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
*	p,x+p	inclusive	DAE	4KASKAZ	7.0+06	7.0+06	Jour	JP/CS,2642,012001	23	T.K.Zholdybayev+	D8096
	e,el	^{59}Co	DA	1USASTF	1.8+08	1.8+08	Jour	PR,121,283	61	H.Crannell+	L0280

28 Nickel

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	γ,x+n	inclusive	?	1USACOR	1.8+07	1.8+07	Jour	PR,79,242(X10)	50	R.L.Walker+	L0284
	p,x	^{44}Sc	CS	2FR PAR	7.7+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{46}Sc	CS	2FR PAR	9.8+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{47}Sc	CS	2FR PAR	7.7+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{48}V	CS	2FR PAR	4.8+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{48}Cr	CS	2FR PAR	9.8+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{51}Cr	CS	2FR PAR	4.8+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{52}Mn	CS	2FR PAR	4.8+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{59}Fe	CS	2FR PAR	7.7+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{55}Co	CS	2FR PAR	4.8+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{56}Co	CS	2FR PAR	4.8+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{57}Co	CS	4RUSITE	4.3+07	2.6+09	Jour	PAN,74,537	11	Yu.E.Titarenko+	A0906
	p,x	^{57}Co	CS	2FR PAR	4.8+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{58}Co	CS	2FR PAR	4.8+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{60}Co	CS	2FR PAR	7.7+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100
	p,x	^{56}Ni	CS	2FR PAR	4.8+07	2.0+08	Jour	NP/A,441,617	85	R.Michel+	A0100

28 Nickel 64

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{70}Zn,x	Many	CS	2ITYLNS	1.0+09	1.0+09	Jour	PR/C,108,044612	23	S.Koulouris+	D8068
*	^{70}Zn,x	Many	DA	2ITYLNS	1.0+09	1.0+09	Jour	PR/C,108,044612	23	S.Koulouris+	D8068

29 Copper

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	γ,x+n	inclusive	CS	1USACOR	1.8+07	1.8+07	Jour	PR,79,242(X10)	50	R.L.Walker+	L0284
	n,γ		CS	4RUSFEI	2.4+04	2.4+04	Conf	66PARIS,I,455(96)	66	T.S.Belanova+	40717
*	p,x	^{54}Mn	CS	1USABRK	2.4+07	5.3+07	Jour	EPJ/A,57,94	21	A.S.Voyles+	C2921
*	p,x	^{57}Co	CS	1USABRK	1.8+07	5.3+07	Jour	EPJ/A,57,94	21	A.S.Voyles+	C2921
*	p,x	^{60}Co	CS	1USABRK	1.8+07	5.3+07	Jour	EPJ/A,57,94	21	A.S.Voyles+	C2921
*	p,x	^{61}Co	CS	1USABRK	1.7+07	5.3+07	Jour	EPJ/A,57,94	21	A.S.Voyles+	C2921
*	p,x	^{57}Ni	CS	1USABRK	3.8+07	5.3+07	Jour	EPJ/A,57,94	21	A.S.Voyles+	C2921
*	p,x	^{60}Cu	CS	1USABRK	3.4+07	5.3+07	Jour	EPJ/A,57,94	21	A.S.Voyles+	C2921
*	p,x	^{61}Cu	CS	1USABRK	1.7+07	5.3+07	Jour	EPJ/A,57,94	21	A.S.Voyles+	C2921
*	p,x	^{64}Cu	CS	1USABRK	1.5+07	5.3+07	Jour	EPJ/A,57,94	21	A.S.Voyles+	C2921
*	d,x+p	inclusive	DAE	4KASKAZ	1.4+07	1.4+07	Jour	JP/CS,2642,012002	23	T.K.Zholdybayev+	D8097
*	α,x	^{64}Cu	CS	3INDVEC	2.7+07	3.6+07	Jour	JP/G,50,015103	23	M.Choudhary+	D6445
*	α,x	^{65}Zn	CS	3INDVEC	1.6+07	3.6+07	Jour	JP/G,50,015103	23	M.Choudhary+	D6445
*	α,x	^{66}Ga	CS	3INDVEC	1.6+07	3.6+07	Jour	JP/G,50,015103	23	M.Choudhary+	D6445
*	α,x	^{67}Ga	CS	3INDVEC	1.6+07	3.6+07	Jour	JP/G,50,015103	23	M.Choudhary+	D6445
	^{16}O,tcc		CS	2ZZZCER	9.6+11	3.2+12	Jour	ZP/A,330,407	88	C.Brechtmann+	D8075
	^{16}O,x	Many	CS	2ZZZCER	9.6+11	3.2+12	Jour	ZP/A,330,407	88	C.Brechtmann+	D8075
	^{32}S,tcc		CS	2ZZZCER	1.2+09	2.0+11	Jour	ZP/A,331,463	88	C.Brechtmann+	D8076
	^{32}S,x	Many	CS	2ZZZCER	1.2+09	2.0+11	Jour	ZP/A,331,463	88	C.Brechtmann+	D8076

29 Copper 65

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,p	^{65}Ni	CS	3INDTAT	1.4+07	2.0+07	Jour	PR/C,107,054607	23	R.K.Singh+	33191
	α,el	^{65}Cu	DA	1USAMIN	2.7+07	2.7+07	Jour	PR/C,8,2189	73	P.Mailandt+	C2869

30 Zinc

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	α,x	^{65}Zn	CS	3INDVEC	1.9+07	3.6+07	Jour	NP/A,1038,122720	23	M.Choudhary+	D6457
*	α,x	^{65}Zn	CS	3INDVEC	2.3+07	4.6+07	Jour	EPJ/A,58,259	22	S.W.Raja+	D6442
*	α,x	^{66}Ga	CS	3INDVEC	2.3+07	4.6+07	Jour	EPJ/A,58,259	22	S.W.Raja+	D6442
*	α,x	^{67}Ga	CS	3INDVEC	1.2+07	4.6+07	Jour	EPJ/A,58,259	22	S.W.Raja+	D6442
*	α,x	^{67}Ga	CS	3INDVEC	1.4+07	3.6+07	Jour	NP/A,1038,122720	23	M.Choudhary+	D6457
*	α,x	^{68}Ge	CS	3INDVEC	1.9+07	3.6+07	Jour	NP/A,1038,122720	23	M.Choudhary+	D6457
*	α,x	^{68}Ge	CS	3INDVEC	2.3+07	4.6+07	Jour	EPJ/A,58,259	22	S.W.Raja+	D6442
*	α,x	^{69}Ge	CS	3INDVEC	1.2+07	4.6+07	Jour	EPJ/A,58,259	22	S.W.Raja+	D6442
*	α,x	^{69}Ge	CS	3INDVEC	1.4+07	3.6+07	Jour	NP/A,1038,122720	23	M.Choudhary+	D6457
*	^{6}Li,x	^{61}Cu	CS	3INDTAT	2.4+07	4.3+07	Jour	PR/C,108,024607	23	A.Singh+	D6459
*	^{6}Li,x	^{63}Zn	CS	3INDTAT	2.8+07	4.3+07	Jour	PR/C,108,024607	23	A.Singh+	D6459
*	^{6}Li,x	^{65}Zn	CS	3INDTAT	2.1+07	4.3+07	Jour	PR/C,108,024607	23	A.Singh+	D6459
*	^{6}Li,x	^{69}Zn	CS	3INDTAT	2.1+07	4.3+07	Jour	PR/C,108,024607	23	A.Singh+	D6459
*	^{6}Li,x	^{71}Zn	CS	3INDTAT	2.1+07	4.3+07	Jour	PR/C,108,024607	23	A.Singh+	D6459
*	^{6}Li,x	^{65}Ga	CS	3INDTAT	2.1+07	4.3+07	Jour	PR/C,108,024607	23	A.Singh+	D6459
*	^{6}Li,x	^{66}Ga	CS	3INDTAT	2.1+07	4.3+07	Jour	PR/C,108,024607	23	A.Singh+	D6459
*	^{6}Li,x	^{67}Ga	CS	3INDTAT	2.1+07	4.3+07	Jour	PR/C,108,024607	23	A.Singh+	D6459
*	^{6}Li,x	^{68}Ga	CS	3INDTAT	2.1+07	4.3+07	Jour	PR/C,108,024607	23	A.Singh+	D6459
*	^{6}Li,x	^{66}Ge	CS	3INDTAT	2.8+07	4.3+07	Jour	PR/C,108,024607	23	A.Singh+	D6459
*	^{6}Li,x	^{67}Ge	CS	3INDTAT	2.1+07	4.3+07	Jour	PR/C,108,024607	23	A.Singh+	D6459
*	^{6}Li,x	^{69}Ge	CS	3INDTAT	2.1+07	4.3+07	Jour	PR/C,108,024607	23	A.Singh+	D6459
*	^{6}Li,x	^{69}As	CS	3INDTAT	2.8+07	4.3+07	Jour	PR/C,108,024607	23	A.Singh+	D6459
*	^{6}Li,x	^{70}As	CS	3INDTAT	2.1+07	4.3+07	Jour	PR/C,108,024607	23	A.Singh+	D6459
*	^{6}Li,x	^{71}As	CS	3INDTAT	2.1+07	4.3+07	Jour	PR/C,108,024607	23	A.Singh+	D6459
*	^{6}Li,x	^{72}As	CS	3INDTAT	2.1+07	4.3+07	Jour	PR/C,108,024607	23	A.Singh+	D6459

30 Zinc 64

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	γ,2n	^{62}Zn	?	1USABRK		3.4+08	Jour	PR,79,241(X8)	50	K.Strauch	L0283
	γ,n	^{63}Zn	?	1USABRK		3.4+08	Jour	PR,79,241(X8)	50	K.Strauch	L0283
	γ,x	^{62}Cu	?	1USABRK		3.4+08	Jour	PR,79,241(X8)	50	K.Strauch	L0283
	n,γ	^{65}Zn	CS	4BLRIJE	Maxwl		Jour	SNP,6,660	68	L.N.Bystrov+	40780

30 Zinc 67

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,x+γ	inclusive	SPC	4BLRIJE	Maxwl		Jour	SNP,6,660	68	L.N.Bystrov+	40780
	p,2n	^{66}Ga	CS	1USADAV	1.6+07	3.6+07	Jour	ARI,34,631	83	F.E.Little+	A0321

30 Zinc 68

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,γ	^{69}Zn	CS	4BLRIJE	Maxwl		Jour	SNP,6,660	68	L.N.Bystrov+	40780
	p,3n	^{66}Ga	CS	1USADAV	2.5+07	3.6+07	Jour	ARI,34,631	83	F.E.Little+	A0321

30 Zinc 70

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,γ	^{71}Zn	CS	4BLRIJE	Maxwl		Jour	SNP,6,660	68	L.N.Bystrov+	40780

31 Gallium 71

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,γ	^{72}Ga	CS	3INDTRM	2.2+06	3.2+06	Jour	CPH/C,47,074001	23	R.Pachuau+	33193

34 Selenium

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	γ,x	^{79}Se	CS	4RUSMOS		5.5+07	Jour	PAN,86,725	23	F.A.Rasulova+	M1047

34 Selenium 74

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,2n	^{73}Se	CS	3INDPOO	1.5+07	1.5+07	Jour	RPC,212,111101	23	T.S.Ganesapandy+	33192
	p,γ	^{75}Br	CS	4UKRKFT	1.5+06	3.5+06	Conf	2010KYIV,,207	10	Ye.Skakun+	D5079

34 Selenium 76

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,2n	^{75}Se	CS	3INDPOO	1.5+07	1.5+07	Jour	RPC,212,111101	23	T.S.Ganesapandy+	33192

*	n,p	^{76}As	CS	3INDPOO	1.5+07	1.5+07	Jour	RPC,212,111101	23	T.S.Ganesapandy+	33192
	p,γ	^{77}Br	CS	4UKRKFT	2.0+06	3.5+06	Conf	2010KYIV,,207	10	Ye.Skakun+	D5079

34 Selenium 77

	Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
					Min	Max		Ref Vol Page			
	p,γ	^{78}Br	CS	4UKRKFT	1.8+06	3.5+06	Conf	2010KYIV,,207	10	Ye.Skakun+	D5079
	p,n	^{77}Br	CS	4UKRKFT	2.1+06	3.5+06	Conf	2010KYIV,,207	10	Ye.Skakun+	D5079

34 Selenium 78

	Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
					Min	Max		Ref Vol Page			
*	n,p	^{78}As	CS	3INDPOO	1.5+07	1.5+07	Jour	RPC,212,111101	23	T.S.Ganesapandy+	33192

34 Selenium 80

	Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
					Min	Max		Ref Vol Page			
*	n,α	^{77}Ge	CS	3INDPOO	1.5+07	1.5+07	Jour	RPC,212,111101	23	T.S.Ganesapandy+	33192
	p,n	^{80}Br	CS	4UKRKFT	2.7+06	3.5+06	Conf	2010KYIV,,207	10	Ye.Skakun+	D5079

34 Selenium 82

	Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
					Min	Max		Ref Vol Page			
*	n,$2n$	^{81}Se	CS	3INDPOO	1.5+07	1.5+07	Jour	RPC,212,111101	23	T.S.Ganesapandy+	33192

36 Krypton 86

	Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
					Min	Max		Ref Vol Page			
	p,x	^{85}Kr	CS	4ZZZDUB	6.0+08	6.0+08	Jour	SNP,35,638	82	V.V.Kuzminov+	A0131

38 Strontium 86

	Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
					Min	Max		Ref Vol Page			
*	p,$2n$	^{85}Y	CS	2GERJUL	1.6+07	4.4+07	Jour	EPJ/A,58,67	22	M.S.Uddin+	C2919
*	p,n	^{86}Y	CS	2GERJUL	6.5+06	4.4+07	Jour	EPJ/A,58,67	22	M.S.Uddin+	C2919
*	p,x	^{83}Rb	CS	2GERJUL	8.8+06	4.3+07	Jour	EPJ/A,58,67	22	M.S.Uddin+	C2919
*	p,x	^{84}Rb	CS	2GERJUL	2.7+07	4.3+07	Jour	EPJ/A,58,67	22	M.S.Uddin+	C2919

40 Zirconium

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	α,x	^{89}Zr	CS	3INDVEC	2.0+07	4.0+07	Jour	EPJ/A,59,167	23	T.T.V.Thaslim+	D6458
*	α,x	^{90}Nb	CS	3INDVEC	3.2+07	4.0+07	Jour	EPJ/A,59,167	23	T.T.V.Thaslim+	D6458
*	α,x	^{92}Nb	CS	3INDVEC	2.0+07	4.0+07	Jour	EPJ/A,59,167	23	T.T.V.Thaslim+	D6458
*	α,x	^{95}Nb	CS	3INDVEC	2.0+07	4.0+07	Jour	EPJ/A,59,167	23	T.T.V.Thaslim+	D6458
*	α,x	^{95}Nb	?	3INDVEC	2.0+07	4.0+07	Jour	EPJ/A,59,167	23	T.T.V.Thaslim+	D6458
*	α,x	^{96}Nb	CS	3INDVEC	2.0+07	4.0+07	Jour	EPJ/A,59,167	23	T.T.V.Thaslim+	D6458
*	α,x	^{93}Mo	CS	3INDVEC	2.0+07	4.0+07	Jour	EPJ/A,59,167	23	T.T.V.Thaslim+	D6458
*	^{12}C,x	^{89}Zr	CS	3INDTAT	5.6+07	7.6+07	Jour	PR/C,107,034609	23	M.Sagwal+	D6452
*	^{12}C,x	^{93}Mo	CS	3INDTAT	5.4+07	7.6+07	Jour	PR/C,107,034609	23	M.Sagwal+	D6452
*	^{12}C,x	^{94}Tc	CS	3INDTAT	6.5+07	7.6+07	Jour	PR/C,107,034609	23	M.Sagwal+	D6452
*	^{12}C,x	^{95}Tc	CS	3INDTAT	5.4+07	7.6+07	Jour	PR/C,107,034609	23	M.Sagwal+	D6452
*	^{12}C,x	^{96}Tc	CS	3INDTAT	5.4+07	7.6+07	Jour	PR/C,107,034609	23	M.Sagwal+	D6452
*	^{12}C,x	^{94}Ru	CS	3INDTAT	7.1+07	7.6+07	Jour	PR/C,107,034609	23	M.Sagwal+	D6452
*	^{12}C,x	^{95}Ru	CS	3INDTAT	6.1+07	7.6+07	Jour	PR/C,107,034609	23	M.Sagwal+	D6452
*	^{12}C,x	^{97}Ru	CS	3INDTAT	4.0+07	7.6+07	Jour	PR/C,107,034609	23	M.Sagwal+	D6452
*	^{12}C,x	^{97}Rh	CS	3INDTAT	6.5+07	7.6+07	Jour	PR/C,107,034609	23	M.Sagwal+	D6452
*	^{12}C,x	^{99}Rh	CS	3INDTAT	4.0+07	7.6+07	Jour	PR/C,107,034609	23	M.Sagwal+	D6452
*	^{12}C,x	^{100}Rh	CS	3INDTAT	4.1+07	7.6+07	Jour	PR/C,107,034609	23	M.Sagwal+	D6452
*	^{12}C,x	^{101}Rh	CS	3INDTAT	4.0+07	7.6+07	Jour	PR/C,107,034609	23	M.Sagwal+	D6452
*	^{12}C,x	^{98}Pd	CS	3INDTAT	5.6+07	7.6+07	Jour	PR/C,107,034609	23	M.Sagwal+	D6452
*	^{12}C,x	^{99}Pd	CS	3INDTAT	4.1+07	7.6+07	Jour	PR/C,107,034609	23	M.Sagwal+	D6452
*	^{12}C,x	^{100}Pd	CS	3INDTAT	4.1+07	7.6+07	Jour	PR/C,107,034609	23	M.Sagwal+	D6452
*	^{12}C,x	^{101}Pd	CS	3INDTAT	4.0+07	7.6+07	Jour	PR/C,107,034609	23	M.Sagwal+	D6452

40 Zirconium 90

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,el		RP	4RUSKUR	3.9+03	1.8+04	Jour	NP,53,667	64	S.S.Moskalev+	40758
	p,x	^{83}Sr	CS	1USAROC	6.0+07	2.4+08	Jour	PR,122,1875	61	E.Unseren+	C0333
	α,el	^{90}Zr	DA	1USAMIN	2.7+07	2.7+07	Jour	PR/C,8,2189	73	P.Mailandt+	C2869

40 Zirconium 91

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,el		RP	4RUSKUR	1.8+02	5.6+03	Jour	NP,53,667	64	S.S.Moskalev+	40758

40 Zirconium 92

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,el		RP	4RUSKUR	1.9+03	6.9+03	Jour	NP,53,667	64	S.S.Moskalev+	40758

40 Zirconium 94

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,el		RP	4RUSKUR	2.3+03	2.0+04	Jour	NP,53,667	64	S.S.Moskalev+	40758

40 Zirconium 96

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,el		RP	4RUSKUR	3.0+08	5.5+09	Jour	NP,53,667	64	S.S.Moskalev+	40758
*	α,n	^{99}Mo	CS	3INDVEC	2.0+07	3.2+07	Jour	EPJ/A,59,167	23	T.T.V.Thaslim+	D6458

41 Niobium 93

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	d,x	^{87}Y	CS	4ZZZDUB	7.3+09	7.3+09	Jour	SNP,44,271	86	V.S.Buttsev+	F1217
*	^{6}Li,2n	^{97}Ru	CS	3INDTAT	2.4+07	4.3+07	Jour	PR/C,107,054610	23	A.Singh+	D6450
*	^{6}Li,4n	^{95}Ru	CS	3INDTAT	2.6+07	4.3+07	Jour	PR/C,107,054610	23	A.Singh+	D6450
*	^{6}Li,5n	^{94}Ru	CS	3INDTAT	3.8+07	4.3+07	Jour	PR/C,107,054610	23	A.Singh+	D6450
*	^{6}Li,x	^{92}Nb	CS	3INDTAT	2.4+07	4.3+07	Jour	PR/C,107,054610	23	A.Singh+	D6450
*	^{6}Li,x	^{93}Mo	CS	3INDTAT	2.4+07	4.3+07	Jour	PR/C,107,054610	23	A.Singh+	D6450
*	^{6}Li,x	^{94}Tc	CS	3INDTAT	2.9+07	4.3+07	Jour	PR/C,107,054610	23	A.Singh+	D6450
*	^{6}Li,x	^{95}Tc	CS	3INDTAT	2.4+07	4.3+07	Jour	PR/C,107,054610	23	A.Singh+	D6450
*	^{6}Li,x	^{96}Tc	CS	3INDTAT	2.4+07	4.3+07	Jour	PR/C,107,054610	23	A.Singh+	D6450
*	^{14}N,3n	^{104}Cd	CS	3INDTAT	4.3+07	5.9+07	Jour	PR/C,107,064601	23	H.Sharma+	D6454
*	^{14}N,x	^{101}Rh	CS	3INDTAT	4.6+07	5.9+07	Jour	PR/C,107,064601	23	H.Sharma+	D6454
*	^{14}N,x	^{101}Pd	CS	3INDTAT	4.3+07	5.9+07	Jour	PR/C,107,064601	23	H.Sharma+	D6454
*	^{14}N,x	^{103}Ag	CS	3INDTAT	4.3+07	5.9+07	Jour	PR/C,107,064601	23	H.Sharma+	D6454
*	^{14}N,x	^{104}Ag	CS	3INDTAT	4.3+07	5.9+07	Jour	PR/C,107,064601	23	H.Sharma+	D6454

42 Molybdenum

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	γ,x+n	inclusive	?	1USACOR	1.8+07	1.8+07	Jour	PR,79,242(X10)	50	R.L.Walker+	L0284
	n,γ		CS	4RUSFEI	2.4+04	2.4+04	Conf	66PARIS,I,455(96)	66	T.S.Belanova+	40717

45 Rhodium 103

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,2n	^{102}Rh	CS	3INDTAT	1.7+07	2.0+07	Jour	ARI,200,110949	23	R.K.Singh+	33195

47 Silver

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	^{16}O,tcc		CS	2ZZZCER	9.6+11	3.2+12	Jour	ZP/A,330,407	88	C.Brechtmann+	D8075
	^{16}O,x	Many	CS	2ZZZCER	9.6+11	3.2+12	Jour	ZP/A,330,407	88	C.Brechtmann+	D8075
	^{32}S,tcc		CS	2ZZZCER	7.0+08	2.0+11	Jour	ZP/A,331,463	88	C.Brechtmann+	D8076
	^{32}S,x	Many	CS	2ZZZCER	7.0+08	2.0+11	Jour	ZP/A,331,463	88	C.Brechtmann+	D8076

49 Indium

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,γ		CS	4RUSFEI	2.4+04	2.4+04	Conf	66PARIS,I,455(96)	66	T.S.Belanova+	40717

49 Indium 115

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	e,el	^{115}In	DA	1USASTF	1.8+08	1.8+08	Jour	PR,121,283	61	H.Crannell+	L0280

50 Tin 112

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	α,x+n	inclusive	DAE	3INDVEC		4.2+07	Jour	PL/B,831,137145	22	R.Shil+	D6435

50 Tin 116

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	α,x+n	inclusive	DAE	3INDVEC		3.9+07	Jour	PL/B,831,137145	22	R.Shil+	D6435
*	^{28}Si,fus		CS	3INDNSD	7.5+07	9.7+07	Jour	PR/C,106,064606	22	A.Rani+	D6444

50 Tin 120

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{28}Si,fus		CS	3INDNSD	7.5+07	9.7+07	Jour	PR/C,106,064606	22	A.Rani+	D6444

50 Tin 122

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,el	^{122}Sn	DA	1USAMIN	2.7+07	2.7+07	Jour	PR/C,8,2189	73	P.Mailandt+	C2869

50 Tin 124

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	α,x+n	inclusive	DAE	3INDVEC		3.9+07	Jour	PL/B,831,137145	22	R.Shil+	D6435
*	^{28}Si,fus		CS	3INDNSD	7.4+07	9.8+07	Jour	PR/C,106,064606	22	A.Rani+	D6444

51 Antimony

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	e,el	^{nat}Sb	DA	1USASTF	1.8+08	1.8+08	Jour	PR,121,283	61	H.Crannell+	L0280

57 Lanthanum 139

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,el	^{139}La	DA	1USAMHG	4.5+07	4.5+07	Jour	PR/C,5,182	72	F.T.Baker+	C2862
	α,inel	^{139}La	DAP	1USAMHG	4.5+07	4.5+07	Jour	PR/C,5,182	72	F.T.Baker+	C2862

58 Cerium

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	γ,x+n	inclusive	?	1USACOR	1.8+07	1.8+07	Jour	PR,79,242(X10)	50	R.L.Walker+	L0284

58 Cerium 140

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,el	^{140}Ce	DA	1USAMHG	4.5+07	4.5+07	Jour	PR/C,5,182	72	F.T.Baker+	C2862
	α,inel	^{140}Ce	DAP	1USAMHG	4.5+07	4.5+07	Jour	PR/C,5,182	72	F.T.Baker+	C2862

58 Cerium 142

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{16}O,^{14}C	^{144}Nd	DA	3INDNSD	5.6+07	5.8+07	Jour	EPJ/A,59,60	23	R.Biswas+	D6449

*	^{16}O,^{15}N	^{143}Pr	DA	3INDNSD	5.1+07	6.2+07	Jour	EPJ/A,59,60	23	R.Biswas+	D6449

59 Praesodymium 141

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	γ,n	^{140}Pr	CS	3INDIND		1.5+07	Jour	EPJ/A,59,127	23	G.T.Bholane+	G0518
	α,el	^{141}Pr	DA	1USAMHG	4.5+07	4.5+07	Jour	PR/C,3,1398	71	H.W.Baer+	C2861
	α,inel	^{141}Pr	DAP	1USAMHG	4.5+07	4.5+07	Jour	PR/C,3,1398	71	H.W.Baer+	C2861

62 Samarium 154

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{19}F,5n	^{168}Lu	CS	3INDNSD	1.1+08	1.1+08	Jour	PR/C,107,014601	23	A.Mahato+	D6446
*	^{19}F,6n	^{167}Lu	CS	3INDNSD	1.1+08	1.1+08	Jour	PR/C,107,014601	23	A.Mahato+	D6446
*	^{19}F,x	^{161}Ho	CS	3INDNSD	1.1+08	1.1+08	Jour	PR/C,107,014601	23	A.Mahato+	D6446
*	^{19}F,x	^{162}Ho	CS	3INDNSD	1.1+08	1.1+08	Jour	PR/C,107,014601	23	A.Mahato+	D6446
*	^{19}F,x	^{164}Tm	CS	3INDNSD	1.1+08	1.1+08	Jour	PR/C,107,014601	23	A.Mahato+	D6446
*	^{19}F,x	^{165}Tm	CS	3INDNSD	1.1+08	1.1+08	Jour	PR/C,107,014601	23	A.Mahato+	D6446
*	^{19}F,x	^{166}Tm	CS	3INDNSD	1.1+08	1.1+08	Jour	PR/C,107,014601	23	A.Mahato+	D6446
*	^{19}F,x	^{167}Yb	CS	3INDNSD	1.1+08	1.1+08	Jour	PR/C,107,014601	23	A.Mahato+	D6446

64 Gadolinium 154

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{44}Ca,3n	^{195}Po	CS	1USATAM			Jour	PR/C,106,054615	22	T.A.Werke+	C2853
*	^{44}Ca,4n	^{194}Po	CS	1USATAM			Jour	PR/C,106,054615	22	T.A.Werke+	C2853
*	^{44}Ca,5n	^{193}Po	CS	1USATAM			Jour	PR/C,106,054615	22	T.A.Werke+	C2853

64 Gadolinium 156

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{44}Ca,3n	^{197}Po	CS	1USATAM			Jour	PR/C,106,054615	22	T.A.Werke+	C2853
*	^{44}Ca,4n	^{196}Po	CS	1USATAM			Jour	PR/C,106,054615	22	T.A.Werke+	C2853
*	^{44}Ca,5n	^{195}Po	CS	1USATAM			Jour	PR/C,106,054615	22	T.A.Werke+	C2853

64 Gadolinium 157

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{44}Ca,3n	^{198}Po	CS	1USATAM			Jour	PR/C,106,054615	22	T.A.Werke+	C2853
*	^{44}Ca,4n	^{197}Po	CS	1USATAM			Jour	PR/C,106,054615	22	T.A.Werke+	C2853
*	^{44}Ca,5n	^{196}Po	CS	1USATAM			Jour	PR/C,106,054615	22	T.A.Werke+	C2853

*	^{44}Ca,6n	^{195}Po	CS	1USATAM			Jour	PR/C,106,054615	22	T.A.Werke+	C2853

64 Gadolinium 158

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{28}Si,fus		CS	3INDNSD	9.1+07	1.2+08	Jour	PR/C,107,064616	23	R.Prajapat+	D6455

64 Gadolinium 160

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	γ,n	^{159}Gd	CS	3INDIND		1.5+07	Jour	EPJ/A,59,127	23	G.T.Bholane+	G0518
*	^{44}Ca,4n	^{200}Po	CS	1USATAM			Jour	PR/C,106,054615	22	T.A.Werke+	C2853
*	^{44}Ca,5n	^{199}Po	CS	1USATAM			Jour	PR/C,106,054615	22	T.A.Werke+	C2853
*	^{44}Ca,6n	^{198}Po	CS	1USATAM			Jour	PR/C,106,054615	22	T.A.Werke+	C2853
*	^{44}Ca,7n	^{197}Po	CS	1USATAM			Jour	PR/C,106,054615	22	T.A.Werke+	C2853
*	^{44}Ca,8n	^{196}Po	CS	1USATAM			Jour	PR/C,106,054615	22	T.A.Werke+	C2853

65 Terbium 159

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	d,x	^{94}Tc	CS	4ZZZDUB	7.3+09	7.3+09	Jour	SNP,44,271	86	V.S.Buttsev+	F1217
	d,x	^{104}Ag	CS	4ZZZDUB	7.3+09	7.3+09	Jour	SNP,44,271	86	V.S.Buttsev+	F1217
	d,x	^{133}Ce	CS	4ZZZDUB	7.3+09	7.3+09	Jour	SNP,44,271	86	V.S.Buttsev+	F1217
	^{14}N,x	Many	CS	2NEDKVI	1.4+08	1.4+08	Jour	PRL,45,606	80	J.Wilczynski+	D8072

66 Dysprosium

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,x	^{159}Ho	CS	1CANMCG	3.3+07	7.7+07	Jour	JIN,26,479	64	M.May+	C2018

68 Erbium 162

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	γ,n	^{161}Er	CS	3INDIND		1.5+07	Jour	EPJ/A,59,127	23	G.T.Bholane+	G0518

70 Ytterbium 176

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

*	^{30}Si,fus		CS	3INDNSD	1.3+08	2.0+08	Jour	PR/C,105,044619	22	K.Hajara+	D6427

73 Tantalum

	Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
					Min	Max		Ref Vol Page			
*	α,x	^{178}Ta	CS	2JPNIPC	4.5+07	5.0+07	Jour	NIM/B,545,165127	23	S.Takacs+	D4431
*	α,x	^{182}Ta	CS	2JPNIPC	9.2+06	5.0+07	Jour	NIM/B,545,165127	23	S.Takacs+	D4431
*	α,x	^{181}Re	CS	2JPNIPC	3.5+07	5.0+07	Jour	NIM/B,545,165127	23	S.Takacs+	D4431
*	α,x	^{182}Re	CS	2JPNIPC	2.6+07	5.0+07	Jour	NIM/B,545,165127	23	S.Takacs+	D4431
*	α,x	^{183}Re	CS	2JPNIPC	1.7+07	5.0+07	Jour	NIM/B,545,165127	23	S.Takacs+	D4431
*	α,x	^{184}Re	CS	2JPNIPC	1.4+07	5.0+07	Jour	NIM/B,545,165127	23	S.Takacs+	D4431

73 Tantalum 181

	Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
					Min	Max		Ref Vol Page			
*	^{6}Li,4n	^{183}Os	CS	3INDTAT	2.7+07	4.3+07	Jour	JP/G,50,025106	23	R.Kumar+	D6448
*	^{6}Li,5n	^{182}Os	CS	3INDTAT	3.8+07	4.3+07	Jour	JP/G,50,025106	23	R.Kumar+	D6448
*	^{6}Li,x	^{180}Ta	CS	3INDTAT	2.7+07	4.3+07	Jour	JP/G,50,025106	23	R.Kumar+	D6448
*	^{6}Li,x	^{182}Ta	CS	3INDTAT	2.7+07	4.3+07	Jour	JP/G,50,025106	23	R.Kumar+	D6448
*	^{6}Li,x	^{183}Ta	CS	3INDTAT	4.0+07	4.3+07	Jour	JP/G,50,025106	23	R.Kumar+	D6448
*	^{6}Li,x	^{183}Re	CS	3INDTAT	2.9+07	4.3+07	Jour	JP/G,50,025106	23	R.Kumar+	D6448
*	^{29}Ne,inel	^{181}Ta	CSP	1USAMSU	2.2+09	2.2+09	Jour	PL/B,838,137704	23	A.Revel+	C2894
*	^{32}Mg,inel	^{181}Ta	CSP	1USAMSU	2.9+09	2.9+09	Jour	PL/B,838,137704	23	A.Revel+	C2894

74 Tungsten

	Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
					Min	Max		Ref Vol Page			
	γ,x+n	inclusive	?	1USACOR	1.8+07	1.8+07	Jour	PR,79,242(X10)	50	R.L.Walker+	L0284

78 Platinum 198

	Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
					Min	Max		Ref Vol Page			
*	^{136}Xe,fis	Many	CS	1USAANL	4.5+08	4.5+08	Jour	EPJ/A,56,150	20	V.V.Desai+	C2922

79 Gold 197

	Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
					Min	Max		Ref Vol Page			
	p,x	^{194}Au	CS	1CANMCG	3.2+07	8.6+07	Jour	CJP,39,1172	61	T.M.Kavanagh+	C0357
	p,x	^{195}Au	CS	1CANMCG	2.3+07	8.6+07	Jour	CJP,39,1172	61	T.M.Kavanagh+	C0357

80 Mercury

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	γ,x+n	inclusive	?	1USACOR	1.8+07	1.8+07	Jour	PR,79,242(X10)	50	R.L.Walker+	L0284

82 Lead

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	γ,x+n	inclusive	?	1USACOR	1.8+07	1.8+07	Jour	PR,79,242(X10)	50	R.L.Walker+	L0284
	^{16}O,tcc		CS	2ZZZCER	9.6+11	3.2+12	Jour	ZP/A,330,407	88	C.Brechtmann+	D8075
	^{16}O,x	Many	CS	2ZZZCER	9.6+11	3.2+12	Jour	ZP/A,330,407	88	C.Brechtmann+	D8075
	^{32}S,tcc		CS	2ZZZCER	2.0+11	2.0+11	Jour	ZP/A,331,463	88	C.Brechtmann+	D8076
	^{32}S,x	Many	CS	2ZZZCER	2.0+11	2.0+11	Jour	ZP/A,331,463	88	C.Brechtmann+	D8076

82 Lead 204

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{16}O,fis		NU	3INDNSD			Jour	PL/B,843,138021	23	K.Chakraborty+	D6456

82 Lead 206

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{16}O,fis		NU	3INDNSD			Jour	PL/B,843,138021	23	K.Chakraborty+	D6456

82 Lead 207

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	γ,x+n	inclusive	?	1USAORL		2.2+07	Jour	PR,79,242(X11)	50	H.Palevsky+	L0282
	d,x	^{198}Tl	CS	4ZZZDUB	7.3+09	7.3+09	Jour	SNP,44,271	86	V.S.Buttsev+	F1217

82 Lead 208

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	γ,x+n	inclusive	?	1USAORL		2.2+07	Jour	PR,79,242(X11)	50	H.Palevsky+	L0282
	α,el	^{208}Pb	DA	1USAMIN	1.8+07	1.9+07	Jour	PR,186,1205	69	A.R.Barnett+	C2865
	α,inel	^{208}Pb	DAP	1USAMIN	1.8+07	1.9+07	Jour	PR,186,1205	69	A.R.Barnett+	C2865
	α,inel	^{208}Pb	DAP	1USAMHG	4.5+07	4.5+07	Jour	PL/B,32,47	70	F.T.Baker+	C2826
	^{16}O,el	^{208}Pb	DA	1USAMIN	6.9+07	6.9+07	Jour	PR,186,1205	69	A.R.Barnett+	C2865
*	^{16}O,fis		NU	3INDNSD			Jour	PL/B,843,138021	23	K.Chakraborty+	D6456

^{16}O,inel	^{208}Pb	DAP	1USAMIN	6.9+07	6.9+07	Jour	PR,186,1205	69	A.R.Barnett+	C2865

83 Bismuth 209

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	γ,x+n	inclusive	?	1USACOR	1.8+07	1.8+07	Jour	PR,79,242(X10)	50	R.L.Walker+	L0284
	n,0		RP	4RUSKUR			Jour	SJA,5,883	58	V.V.Vladimirskii+	40394
	n,el	^{209}Bi	CS	4UKRIJD	3.0+05	3.0+05	Jour	UFZ,9,577	64	I.A.Korzh+	40764
	n,el	^{209}Bi	DA	4RUSFEI	2.2+05	2.2+05	Jour	JET,11,1036	60	G.N.Lovchikova	40787
	n,el	^{209}Bi	DA	4UKRIJD	3.0+05	3.0+05	Jour	UFZ,9,577	64	I.A.Korzh+	40764
	^{6}Li,3n	^{212}Rn	CS	1USAROC	2.8+07	3.0+07	Conf	73ROCH,1,447	73	H.Freiesleben+	A0118
	^{6}Li,x	^{212}At	CS	1USAROC	2.8+07	3.0+07	Conf	73ROCH,1,447	73	H.Freiesleben+	A0118
	^{7}Li,3n	^{213}Rn	CS	1USAROC	2.5+07	3.4+07	Conf	73ROCH,1,447	73	H.Freiesleben+	A0118
	^{7}Li,4n	^{212}Rn	CS	1USAROC	3.1+07	3.4+07	Conf	73ROCH,1,447	73	H.Freiesleben+	A0118
	^{7}Li,x	^{211}Po	CS	1USAROC	2.5+07	3.4+07	Conf	73ROCH,1,447	73	H.Freiesleben+	A0118
	^{7}Li,x	^{212}At	CS	1USAROC	2.9+07	3.4+07	Conf	73ROCH,1,447	73	H.Freiesleben+	A0118
	e,el	^{209}Bi	DA	1USASTF	1.8+08	1.8+08	Jour	PR,121,283	61	H.Crannell+	L0280

90 Thorium 230

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,fis		DA	4RUSKUR	7.0+08	1.2+09	Jour	SPD,4,1074	59	B.M.Gokhberg+	40714

90 Thorium 232

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,fis	γ	FY	3INDTRM	1.5+06	2.8+06	Jour	EPJ/A,58,217	22	S.De+	33183
*	n,fis	γ	KE	3INDTRM	1.5+06	2.8+06	Jour	EPJ/A,58,217	22	S.De+	33183
*	n,fis		MFQ	3INDTRM	1.5+06	2.8+06	Jour	EPJ/A,58,217	22	S.De+	33183
*	n,fis	n	KE	3INDTRM	1.5+06	2.8+06	Jour	EPJ/A,58,217	22	S.De+	33183

92 Uranium

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	γ,x+n	inclusive	?	1USACOR	1.8+07	1.8+07	Jour	PR,79,242(X10)	50	R.L.Walker+	L0284

92 Uranium 233

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,fis		NU	4RUSKUR	Fiss		Rept	AEC-TR-2435,(1),131	56	V.I.Kalashnikova+	40757

92 Uranium 235

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,fis		CS	4RUSKUR	2.3+06	8.3+06	Conf	58GENEVA,16,136	58	S.P.Kalinin+	40741

92 Uranium 238

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	p,fis	^{105}Ru	CS	3INDTAT	1.2+07	2.1+07	Jour	NP/A,1032,122611	23	T.Najumunnisa+	D6447
*	p,fis	^{105}Rh	CS	3INDTAT	1.2+07	2.1+07	Jour	NP/A,1032,122611	23	T.Najumunnisa+	D6447

93 Neptunium 237

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,fis		DA	4RUSKUR	3.5+05	1.5+06	Jour	SPD,4,1074	59	B.M.Gokhberg+	40714

94 Plutonium 238

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,fis		DA	4RUSKUR	1.4+07	1.4+07	Jour	SNP,5,689	67	E.F.Fomushkin+	40779

94 Plutonium 239

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,fis		NU	4RUSKUR	Maxwl		Rept	AEC-TR-2435,(1),131	56	V.I.Kalashnikova+	40757

94 Plutonium 240

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	0,fis		NU	4RUSKUR	Spont		Rept	AEC-TR-2435,(1),131	56	V.I.Kalashnikova+	40757

94 Plutonium 242

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,fis		DA	4RUSKUR	1.4+07	1.4+07	Jour	SNP,5,689	67	E.F.Fomushkin+	40779

95 Americium 241

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,fis		DA	4RUSKUR	1.4+07	1.4+07	Jour	SNP,5,689	67	E.F.Fomushkin+	40779

95 Americium 243

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,fis		DA	4RUSKUR	1.4+07	1.4+07	Jour	SNP,5,689	67	E.F.Fomushkin+	40779

98 Californium 252

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	0,fis	γ	FY	3INDTRM	Spont		Jour	EPJ/A,58,217	22	S.De+	33183
*	0,fis		MFQ	3INDTRM	Spont		Jour	EPJ/A,58,217	22	S.De+	33183