

Japan Charged-Particle Nuclear Reaction Data Group (JCPRG)

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Retrieval service is available at:

<http://www.jcprg.org/exfor/>

Quantity code

ALF	Alpha	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	Nu
D3A	Triple differential $d\Omega_1/d\Omega_2/dE'$	NUD	Nu delayed
D3E	Triple differential $d\Omega/dE'_1/dE'_2$	NUF	Fragment neutrons
D4A	Quadruple diff. $d\Omega_1/d\Omega_2/dE'_1/dE'_2$	POL	Polarization
DA	Differential $d/d\Omega$	POD	Differential polarization
DAA	Double differential $d\Omega_1/d\Omega_2$	PY	Product yield (other than fission)
DAE	Double differential $d\Omega/dE'$	RI	Resonance integral
DAP	Partial differential $d/d\Omega$	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	Eta	TTD	Differential thick target yield, $d/d\Omega$
EVL	Evaluation	TT	Partial thick target yield

Special codes in outgoing particle field

abs	Absorption	fus	Fusion	non	Nonelastic	ths	Thermal scattering
el	Elastic	inel	Inelastic	sct	Scattering	tot	Total
f	Fission	incl	Inclusive	tcc	Total charge changing		

Special codes in incident energy field

Fast	Fast reactor spectrum average	Maxw	Maxwellian spectrum average
Fiss	Fission spectrum average	Spont	Spontaneous (for fission)

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
,		?	1USABNL	8.0+08		Jour	PR,99,857	55	F.F.Chen+	C1219

1 Hydrogen 1

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
π^- ,el	^1H	DA	2JPNLEP	0.0+00		Jour	PR/C,51,(5),2542	May 95	T.Takahashi+	J1653
p ,el	^1H	DA	2JPNKEK	0.0+00		Jour	NIM/A,457,(1-2),137	Jan 01	J.K.Ahn+	E1830
p ,el	^1H	DA	2NEDGRN	1.9+08		Jour	PR/C,70,024004	04	M.Mahjour-Shafiei+	O1226
p ,el	^1H	POD	2NEDGRN	1.9+08		Jour	PR/C,70,024004	04	M.Mahjour-Shafiei+	O1226
p,π^+	incl	DAE	2GERJUL	9.5+08		Jour	PL/B,610,31	05	M.Abdel-Bary+	O0819
^7Li ,el	^1H	DA	3CRORBZ	2.3+06	5.7+06	Jour	NIM/B,292,180	05	Z.Siketic+	O0694
^{21}Na , γ	^{22}Mg	?	1CANTMF	2.0+05	2.2+05	Jour	NP/A,746,359	04	D.A.Hutcheon	C1184

1 Hydrogen 2

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
π^- ,el	^2H	DA	2JPNLEP	0.0+00		Jour	PRL,50,(6),400	Feb 83	M.Akemoto+	J1839
π^- ,el	^2H	DA	2JPNLEP	0.0+00		Jour	PRL,51,(20),1838	Nov 83	M.Akemoto+	J1840
π^+ , p	^1H	DA	2JPNLEP	0.0+00		Jour	PL/B,149,(4-5),321	Dec 84	M.Akemoto+	J1838
d , n	^3He	CS	4RUSRUS	3.6+03		Jour	YF,66,1731	03	Vyach.M.Bystritsky+	O1263
^7Be ,el	^2H	DA	3INDNSD	1.9+07		Jour	NP/A,746,561	04	J.J.Das+	O1241
^7Be , n	^8B	DA	3INDNSD	2.0+07		Jour	NP/A,746,561	04	J.J.Das+	O1241
^{82}Ge , p	^{83}Ge	DAP	1USAORL	3.3+08		Jour	NP/A,746,178	04	J.S.Thomas+	C1182
^{82}Ge , p	^{83}Ge	DAP	1USAORL	3.3+08		Jour	PR/C,71,021302	05	J.S.Thomas+	C1186

2 Helium 3

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p ,el	^3He	DA	4RUSLIN	1.0+09		Jour	YF,41,561	85	G.D.Alkhazov+	O1256

2 Helium 4

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p , d	^3He	DA	1USACLA	3.1+07		Jour	NP,53,241	64	S.M.Bunch+	C1210
p ,el	^4He	CS	1USABNL	1.0+09		Jour	PRL,18,1200	67	H.Palevsky+	C1220
p ,el	^4He	DA	1USABNL	1.0+09		Jour	PRL,18,1200	67	H.Palevsky+	C1220
p ,el	^4He	DA	4RUSLIN	1.0+09		Jour	YF,41,561	85	G.D.Alkhazov+	O1256

p,el ⁴He DA 1USACLA 3.1+07 Jour NP,53,241 64 S.M.Bunch+ C1210

3 Lithium 7

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,n</i>	⁷ Be	DAP	2JPNTOH	2.0+07	4.0+07	Jour	NIM/A,389,(3),463	Apr 97	Y.Uwamino+	E1826

3 Lithium 8

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>d,p</i>	⁹ Li	DAP	1USAANL	7.6+07		Jour	PRL,94,082502	05	A.H.Wuosmaa+	C1198

4 Beryllium 7

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,γ</i>	⁸ B	CS	3INDNSD	0.0+00		Jour	NP/A,746,561	04	J.J.Das+	O1241

4 Beryllium 9

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,d</i>	⁸ Be	DAP	1USALBL	1.7+07	2.9+07	Jour	NP/A,199,433	73	D.G.Montague+	C1207
<i>p,el</i>	⁹ Be	DA	4RUSLIN	1.0+09		Jour	YF,42,8	85	G.D.Alkhazov+	O1257
<i>p,el</i>	⁹ Be	DA	1USALBL	1.7+07	2.9+07	Jour	NP/A,199,433	73	D.G.Montague+	C1207
<i>p,el</i>	⁹ Be	POD	1USACLA	4.2+07		Jour	PR,144,932	66	T.A.Cahill+	C1214
<i>p,inel</i>	⁹ Be	CS	1USABNL	8.0+08		Jour	PR,99,857	55	F.F.Chen+	C1219
<i>p,inel</i>	⁹ Be	DAP	1USALBL	1.7+07	2.9+07	Jour	NP/A,199,433	73	D.G.Montague+	C1207
<i>d,inel</i>	⁹ Be	CS	1USABRK	1.6+08		Jour	PR,95,1268	54	G.P.Millburn+	C1218
<i>t,α</i>	⁸ Li	DAP	1USAPEN	1.5+07		Jour	PR/C,38,1985	88	G.B.Liu+	C1196
³ He,γ	¹² C	DAP	1USAYAL	3.2+06	2.6+07	Jour	PR/C,9,76	74	H.D.Shay+	C1201

5 Boron 11

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	¹¹ B	DA	4RUSLIN	1.0+09		Jour	YF,42,8	85	G.D.Alkhazov+	O1257

6 Carbon

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

<i>p</i> ,el	^{nat} C	CS	1USAHRV	1.3+08	7.7+07	Jour	NP,29,485	63	R.Goloskie+	C1211
<i>p</i> ,el	^{nat} C	CS	1USACLA	1.6+07	2.8+07	Jour	NP,68,378	65	M.Q.Makino+	C1215
<i>p</i> ,el	^{nat} C	POD	1USACLA	4.4+07		Jour	PR,144,932	66	T.A.Cahill+	C1214
<i>p</i> ,inel	^{nat} C	CS	1USABNL	8.0+08		Jour	PR,99,857	55	F.F.Chen+	C1219
<i>p</i> ,tot	^{nat} C	CS	1USACLA	1.6+07	2.8+07	Jour	NP,68,378	65	M.Q.Makino+	C1215
<i>d</i> ,inel	^{nat} C	CS	1USABRK	1.6+08		Jour	PR,95,1268	54	G.P.Millburn+	C1218

6

Carbon

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Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p</i> , <i>d</i>	¹¹ C	DAP	2UK NIN	3.0+07		Jour	NP/A,99,669	67	N.S.Chant+	O1245
<i>p</i> , <i>d</i>	¹¹ C	POD	2UK NIN	3.0+07		Jour	NP/A,99,669	67	N.S.Chant+	O1245
<i>p</i> ,el	¹² C	CS	1USABNL	1.0+09		Jour	PRL,18,1200	67	H.Palevsky+	C1220
<i>p</i> ,el	¹² C	DA	1USABNL	1.0+09		Jour	PRL,18,1200	67	H.Palevsky+	C1220
<i>p</i> ,el	¹² C	DA	2JPNKTO	4.0+06	6.6+06	Jour	NIM/B,168,(4),543	Aug 00	M.Tosaki+	E1831
<i>p</i> ,el	¹² C	DA	2GERZFK	7.0+06		Jour	NP/A,129,405	69	H.Guratzsch+	O1242
<i>p</i> ,el	¹² C	POD	2GERZFK	6.9+06		Jour	NP/A,129,405	69	H.Guratzsch+	O1242
<i>p</i> ,inel	¹² C	CSP	2UK NIN	2.0+07	3.0+07	Jour	NP/A,99,177	67	D.K.Scott+	O1246
<i>p</i> ,inel	¹² C	DAP	2UK NIN	2.0+07	3.0+07	Jour	NP/A,99,177	67	D.K.Scott+	O1246
<i>p</i> ,inel	¹² C	DAP	2GERZFK	7.0+06		Jour	NP/A,129,405	69	H.Guratzsch+	O1242
<i>p</i> , <i>x</i>	Many	CS	2JPNIRS	1.0+08	2.3+08	Jour	RCA,91,(12),689	Dec 03	H.Yashima+	E1829
<i>d</i> , <i>p</i>	¹³ C	DAP	2GERZFK	4.5+06		Jour	NP/A,129,405	69	H.Guratzsch+	O1242
<i>t</i> , <i>p</i>	¹⁴ C	DAP	1USAPEN	1.8+07		Jour	PR/C,25,1	82	H.T.Fortune+	C1194
³ He, <i>el</i>	¹² C	DA	2JPNOSA	4.4+08		Jour	PR/C,67,(6),064612	Jun 03	J.Kamiya+	E1823
³ He, <i>el</i>	¹² C	POD	2JPNOSA	4.4+08		Jour	PR/C,67,(6),064612	Jun 03	J.Kamiya+	E1823
α , <i>el</i>	¹² C	DA	1USAWIS	1.0+07	2.0+07	Jour	PR/C,25,729	82	L.L.Ames	C1188
α , <i>inel</i>	¹² C	DAP	1USAWIS	1.0+07	2.0+07	Jour	PR/C,25,729	82	L.L.Ames	C1188
α , <i>x</i>	Many	CS	2JPNIRS	4.0+08	9.2+08	Jour	RCA,91,(12),689	Dec 03	H.Yashima+	E1829
¹² C, <i>x</i>	Many	CS	2JPNIRS	1.2+09	2.8+09	Jour	RCA,91,(12),689	Dec 03	H.Yashima+	E1829
¹⁶ C, <i>x</i>	¹⁴ C	CS	2JPNIPC	1.3+09		Jour	NP/A,724,(1-2),3	Aug 03	T.Yamaguchi+	E1827
¹⁶ C, <i>x</i>	¹⁴ C	DP	2JPNIPC	1.3+09		Jour	NP/A,724,(1-2),3	Aug 03	T.Yamaguchi+	E1827
¹⁶ C, <i>x</i>	¹⁵ C	CS	2JPNIPC	1.3+09		Jour	NP/A,724,(1-2),3	Aug 03	T.Yamaguchi+	E1827
¹⁶ C, <i>x</i>	¹⁵ C	DP	2JPNIPC	1.3+09		Jour	NP/A,724,(1-2),3	Aug 03	T.Yamaguchi+	E1827
²⁰ Ne, <i>x</i>	Many	CS	2JPNIRS	2.0+09	4.6+09	Jour	RCA,91,(12),689	Dec 03	H.Yashima+	E1829
⁴⁰ Ar, <i>x</i>	Many	CS	2JPNIRS	9.2+09		Jour	RCA,91,(12),689	Dec 03	H.Yashima+	E1829

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Carbon

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Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p</i> , <i>el</i>	¹³ C	DA	4RUSLIN	1.0+09		Jour	YF,42,8	85	G.D.Alkhazov+	O1257
<i>p</i> , <i>el</i>	¹³ C	DA	2GERZFK	7.0+06		Jour	NP/A,129,405	69	H.Guratzsch+	O1242
<i>p</i> , <i>el</i>	¹³ C	POD	2GERZFK	6.9+06		Jour	NP/A,129,405	69	H.Guratzsch+	O1242
<i>p</i> , <i>inel</i>	¹³ C	DAP	2GERZFK	7.0+06		Jour	NP/A,129,405	69	H.Guratzsch+	O1242
<i>t</i> , <i>p</i>	¹⁵ C	DAP	1USAPEN	1.8+07		Jour	PR/C,28,977	83	S.Truong+	C1195
³ He, γ	¹⁶ O	DAP	1USAYAL	2.8+06	1.6+07	Jour	PR/C,9,76	74	H.D.Shay+	C1201

7 Nitrogen 14

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	¹⁴ N	DA	4RUSLIN	1.0+09		Jour	YF,42,8	85	G.D.Alkhazov+	O1257
<i>p,n</i>	¹⁴ O	DAP	1USAANL	1.8+08		Jour	PR/C,47,2740	93	M.S.Smith+	C1190
<i>d,α</i>	¹² C	DAP	2UK ALD	1.4+06		Jour	NP,26,203	61	W.M.Jones+	O0827
<i>d,p</i>	¹⁵ N	DAP	2UK ALD	1.4+06	2.4+06	Jour	NP,26,203	61	W.M.Jones+	O0827
³ He, ⁶ He	¹¹ N	DAE	2JPNTOK	7.3+07		Jour	PR/C,67,(6),064601	Jun 03	V.Guimaraes+	E1822
³ He, ⁶ He	¹¹ N	DAP	2JPNTOK	7.3+07		Jour	PR/C,67,(6),064601	Jun 03	V.Guimaraes+	E1822

8 Oxygen 16

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,d</i>	¹⁵ O	DAP	2UK NIN	3.0+07		Jour	NP/A,99,669	67	N.S.Chant+	O1245
<i>p,d</i>	¹⁵ O	POD	2UK NIN	3.0+07		Jour	NP/A,99,669	67	N.S.Chant+	O1245
<i>p,el</i>	¹⁶ O	CS	1USABNL	1.0+09		Jour	PRL,18,1200	67	H.Palevsky+	C1220
<i>p,el</i>	¹⁶ O	DA	1USABNL	1.0+09		Jour	PRL,18,1200	67	H.Palevsky+	C1220
<i>p,el</i>	¹⁶ O	DA	4RUSLIN	1.0+09		Jour	YF,42,8	85	G.D.Alkhazov+	O1257
<i>d,p</i>	¹⁷ O	DAP	4RUSFEI	7.0+05	1.8+06	Jour	NIM/B,226,637	04	A.F.Gurbich+	O1225
<i>α,el</i>	¹⁶ O	DA	1USABRK	5.0+07	8.1+07	Thes	REED,69-14	68	M.Reed	C1187
<i>α,inel</i>	¹⁶ O	DAP	1USABRK	5.0+07	8.1+07	Thes	REED,69-14	68	M.Reed	C1187

9 Fluorine 18

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>d,p</i>	¹⁹ F	DAP	1USAORL	1.1+08		Jour	PR/C,71,032801	05	R.L.Kozub+	C1202

10 Neon 20

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>α,el</i>	²⁰ Ne	DA	1USABRK	3.3+07	8.1+07	Thes	REED,69-14	68	M.Reed	C1187
<i>α,inel</i>	²⁰ Ne	DAP	1USABRK	3.3+07	8.1+07	Thes	REED,69-14	68	M.Reed	C1187

10 Neon 21

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>t,α</i>	²⁰ F	DAP	1USAPEN	1.5+07		Jour	PR/C,37,1818	88	G.B.Liu+	C1193

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Sodium

21

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$p,0$		RP	1CANTMF	0.0+00		Jour	NP/A,746,359	04	D.A.Hutcheon	C1184
p,γ		RP	1CANTMF	4.5+05	7.3+05	Jour	NP/A,746,359	04	D.A.Hutcheon	C1184

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Magnesium

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p,el	^{nat}Mg	POD	1USAPTN	1.8+07		Jour	PR,113,1099	59	W.A.Blanpied	C1213

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Magnesium

24

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p,el	^{24}Mg	DA	1USACLA	3.0+07		Jour	NP/A,218,125	74	J.Eenmaa+	C1206
$p,inel$	^{24}Mg	DAP	1USACLA	3.0+07		Jour	NP/A,218,125	74	J.Eenmaa+	C1206
$p,inel$	^{24}Mg	POD	1USAPTN	1.8+07		Jour	PR,113,1099	59	W.A.Blanpied	C1213
α,el	^{24}Mg	DA	1USABRK	5.0+07	1.2+08	Thes	REED,69-14	68	M.Reed	C1187
$\alpha,inel$	^{24}Mg	DAP	1USABRK	5.0+07	1.2+08	Thes	REED,69-14	68	M.Reed	C1187

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Magnesium

25

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
d,p	^{26}Mg	DAP	1USAYAL	1.0+07		Jour	NP/A,402,159	83	A.E.Champagne+	C1203
d,p	^{26}Mg	DAP	1USAPEN	1.2+07		Jour	PR/C,29,2013	84	M.Burlein+	C1197
$^3\text{He},d$	^{26}Al	DAP	1USAYAL	2.0+07		Jour	NP/A,402,159	83	A.E.Champagne+	C1203

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Magnesium

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Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$\alpha,inel$	^{26}Mg	DAP	1USAYAL	2.0+07		Jour	NP/A,402,159	83	A.E.Champagne+	C1203

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Aluminium

27

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p,el	^{27}Al	CS	1USAHRV	1.3+08	7.7+07	Jour	NP,29,485	63	R.Goloskie+	C1211
p,el	^{27}Al	DA	1USACLA	2.8+07		Jour	NP/A,126,592	69	R.Dittman+	C1208
p,el	^{27}Al	POD	1USACLA	4.4+07		Jour	PR,144,932	66	T.A.Cahill+	C1214
$p,inel$	^{27}Al	CS	1USABNL	8.0+08		Jour	PR,99,857	55	F.F.Chen+	C1219
p,x	Many	CS	2JPNIRS	1.0+08	2.3+08	Jour	RCA,91,(12),689	Dec 03	H.Yashima+	E1829

<i>d</i> ,inel	²⁷ Al	CS	1USABRK	1.6+08		Jour	PR,95,1268	54	G.P.Millburn+	C1218
<i>t</i> , <i>p</i>	²⁹ Al	DAP	1USAPEN	1.5+07		Jour	NP/A,431,237	84	L.C.Bland+	C1192
α , <i>x</i>	Many	CS	2JPNIRS	4.0+08	9.2+08	Jour	RCA,91,(12),689	Dec 03	H.Yashima+	E1829
¹² C, <i>x</i>	Many	CS	2JPNIRS	1.2+09	2.8+09	Jour	RCA,91,(12),689	Dec 03	H.Yashima+	E1829
²⁰ Ne, <i>x</i>	Many	CS	2JPNIRS	2.0+09	4.6+09	Jour	RCA,91,(12),689	Dec 03	H.Yashima+	E1829
⁴⁰ Ar, <i>x</i>	Many	CS	2JPNIRS	9.2+09		Jour	RCA,91,(12),689	Dec 03	H.Yashima+	E1829

14 Silicon

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p</i> ,el	^{nat} Si	DA	1USACLA	2.8+07		Jour	NP/A,126,592	69	R.Dittman+	C1208

14 Silicon 28

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p</i> ,el	²⁸ Si	DA	4RUSLIN	1.0+09		Jour	YF,22,902	75	G.D.Alkhazov+	O1255
<i>p</i> ,inel	²⁸ Si	DAP	4RUSLIN	1.0+09		Jour	YF,22,902	75	G.D.Alkhazov+	O1255
<i>d</i> , <i>p</i>	²⁹ Si	DAP	4RUSFEI	1.0+06	2.1+06	Jour	NIM/B,226,637	04	A.F.Gurbich+	O1225

14 Silicon 30

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>t</i> , <i>p</i>	³² Si	DAP	1USAPEN	1.5+07		Jour	PR/C,25,5	82	H.T.Fortune+	C1191

16 Sulphur 32

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p</i> ,el	³² S	DA	4RUSLIN	1.0+09		Jour	YF,22,902	75	G.D.Alkhazov+	O1255
<i>p</i> ,inel	³² S	DAP	4RUSLIN	1.0+09		Jour	YF,22,902	75	G.D.Alkhazov+	O1255

16 Sulphur 34

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p</i> ,el	³⁴ S	DA	4RUSLIN	1.0+09		Jour	YF,22,902	75	G.D.Alkhazov+	O1255
<i>p</i> ,inel	³⁴ S	DAP	4RUSLIN	1.0+09		Jour	YF,22,902	75	G.D.Alkhazov+	O1255

18

Argon

40

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,2p</i>	³⁹ Cl	CS	2JPNIRS	2.0+07	4.0+07	Jour	ARI,50,(2),389	Feb 99	K.Nagatsu+	E1836
<i>p,3n</i>	³⁸ K	CS	2JPNIRS	2.3+07	4.0+07	Jour	ARI,50,(2),389	Feb 99	K.Nagatsu+	E1836
<i>p,n+2p</i>	³⁸ Cl	CS	2JPNIRS	2.3+07	4.0+07	Jour	ARI,50,(2),389	Feb 99	K.Nagatsu+	E1836
<i>d,³He</i>	³⁹ Cl	DAP	2GERKRU	5.2+07		Jour	NP/A,129,469	69	G.J.Wagner+	O1262

19

Potassium

39

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,0</i>		RP	1USADKE	0.0+00		Thes	Warthen	87	B.J.Warthen	C1222

20

Calcium

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	^{nat} Ca	POD	1USAPTN	1.7+07		Jour	PR,113,1099	59	W.A.Blanpied	C1213

20

Calcium

42

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	⁴² Ca	DA	1USAANL	9.0+06	1.2+07	Jour	PR,145,852	66	A.Marinov+	C1216
<i>d,el</i>	⁴² Ca	DA	1USAANL	9.0+06	1.2+07	Jour	PR,145,852	66	A.Marinov+	C1216

20

Calcium

43

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,n</i>	⁴³ Sc	CS	3SAFSUN	5.6+06	3.4+06	Jour	JIN,33,2783	71	Tielmanj.Dewaal+	O0748

20

Calcium

44

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	⁴⁴ Ca	DA	1USAANL	9.0+06	1.2+07	Jour	PR,145,852	66	A.Marinov+	C1216
<i>p,n</i>	⁴⁴ Sc	CS	3SAFSUN	5.6+06	4.6+06	Jour	JIN,33,2783	71	Tielmanj.Dewaal+	O0748
<i>d,el</i>	⁴⁴ Ca	DA	1USAANL	9.0+06	1.2+07	Jour	PR,145,852	66	A.Marinov+	C1216

20 Calcium 46

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation		Date	Author	Data #
				Min	Max		Ref	Vol Page			
α,el	^{46}Ca	DA	1USAYAL	2.5+07		Jour	NP/A,406,134		83	C.Ellegaard+	C1204
α,p	^{49}Sc	DAP	1USAYAL	2.5+07		Jour	NP/A,406,134		83	C.Ellegaard+	C1204

20 Calcium 48

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation		Date	Author	Data #
				Min	Max		Ref	Vol Page			
p,el	^{48}Ca	DA	1USAANL	9.0+06	1.2+07	Jour	PR,145,852		66	A.Marinov+	C1216
p,n	^{48}Sc	CS	3SAFSUN	5.5+06	1.9+06	Jour	JIN,33,2783		71	Tielmanj.Dewaal+	O0748
d,el	^{48}Ca	DA	1USAANL	9.0+06	1.2+07	Jour	PR,145,852		66	A.Marinov+	C1216
α,p	^{51}Sc	DAP	1USAYAL	2.5+07		Jour	NP/A,406,134		83	C.Ellegaard+	C1204

22 Titanium 49

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation		Date	Author	Data #
				Min	Max		Ref	Vol Page			
p,tot		CS	1USALAS	1.4+07		Jour	PR,157,1001		67	J.F.Dicello+	C1217

23 Vanadium

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation		Date	Author	Data #
				Min	Max		Ref	Vol Page			
p,el	^{nat}V	POD	1USACLA	4.2+07		Jour	PR,144,932		66	T.A.Cahill+	C1214

23 Vanadium 51

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation		Date	Author	Data #
				Min	Max		Ref	Vol Page			
p,n	^{51}Cr	CS	3INDVEC	3.7+06	1.5+07	Jour	ARI,62,419		05	M.M.Musthafa+	O1237

24 Chromium

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation		Date	Author	Data #
				Min	Max		Ref	Vol Page			
p,el	^{nat}Cr	CS	1USACLA	2.8+07		Jour	PL,9,178		64	M.Q.Makino+	C1212
$p,inel$	^{nat}Cr	CS	1USACLA	2.8+07		Jour	PL,9,178		64	M.Q.Makino+	C1212
p,tot		CS	1USACLA	2.8+07		Jour	PL,9,178		64	M.Q.Makino+	C1212

24 Chromium 52

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>d,el</i>	⁵² Cr	DA	1USARIC	4.4+06	6.3+06	Jour	NP,84,398	66	J.C.Legg+	C1209
<i>d,p</i>	⁵³ Cr	DA	1USARIC	4.4+06	6.3+06	Jour	NP,84,398	66	J.C.Legg+	C1209

24 Chromium 53

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	⁵³ Cr	DA	1USARIC	1.0+07	1.2+07	Jour	NP,84,398	66	J.C.Legg+	C1209

26 Iron

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	^{nat} Fe	CS	1USACLA	2.8+07		Jour	PL,9,178	64	M.Q.Makino+	C1212
<i>p,incl</i>	^{nat} Fe	CS	1USACLA	2.8+07		Jour	PL,9,178	64	M.Q.Makino+	C1212
<i>p,n</i>	incl	DAE	2JPNKEK	8.0+08	1.5+09	Jour	NST,40,(5),283	May 03	D.Satoh+	E1833
<i>p,tot</i>		CS	1USACLA	2.8+07		Jour	PL,9,178	64	M.Q.Makino+	C1212

26 Iron 54

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	⁵⁴ Fe	DA	2UK NIN	3.0+07		Jour	NP/A,99,203	67	D.J.Baugh+	O1243
<i>p,incl</i>	⁵⁴ Fe	DAP	2UK NIN	3.0+07		Jour	NP/A,99,203	67	D.J.Baugh+	O1243
<i>p,incl</i>	⁵⁴ Fe	POD	2UK NIN	3.0+07		Jour	NP/A,99,203	67	D.J.Baugh+	O1243
<i>p,tot</i>		CS	1USALAS	1.4+07		Jour	PR,157,1001	67	J.F.Dicello+	C1217

26 Iron 56

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	⁵⁶ Fe	DA	1USALRL	1.1+07	1.2+07	Jour	PR,133,(B),323	64	J.Benveniste+	C1221
<i>p,incl</i>	⁵⁶ Fe	CSP	1USALRL	1.1+07	1.2+07	Jour	PR,133,(B),323	64	J.Benveniste+	C1221
<i>p,incl</i>	⁵⁶ Fe	DAP	1USALRL	1.1+07	1.2+07	Jour	PR,133,(B),323	64	J.Benveniste+	C1221

26 Iron 57

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,tot</i>		CS	1USALAS	1.4+07		Jour	PR,157,1001	67	J.F.Dicello+	C1217

26

Iron

58

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	⁵⁸ Fe	DA	1USALRL	1.1+07	1.2+07	Jour	PR,133,(B),323	64	J.Benveniste+	C1221
<i>p,incl</i>	⁵⁸ Fe	CSP	1USALRL	1.1+07	1.2+07	Jour	PR,133,(B),323	64	J.Benveniste+	C1221
<i>p,incl</i>	⁵⁸ Fe	DAP	1USALRL	1.1+07	1.2+07	Jour	PR,133,(B),323	64	J.Benveniste+	C1221
<i>p,tot</i>		CS	1USALAS	1.4+07		Jour	PR,157,1001	67	J.F.Dicello+	C1217

27

Cobalt

59

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	⁵⁹ Co	CS	1USACLA	2.8+07		Jour	PL,9,178	64	M.Q.Makino+	C1212
<i>p,incl</i>	⁵⁹ Co	CS	1USACLA	2.8+07		Jour	PL,9,178	64	M.Q.Makino+	C1212
<i>p,n</i>	incl	DA	2BLGLVN	6.3+07		Conf	2003DARMST,	03	N.Marie+	O1252
<i>p,n</i>	incl	DAE	2BLGLVN	6.3+07		Conf	2003DARMST,	03	N.Marie+	O1252
<i>p,n</i>	incl	DE	2BLGLVN	6.3+07		Conf	2003DARMST,	03	N.Marie+	O1252
<i>p,tot</i>		CS	1USACLA	2.8+07		Jour	PL,9,178	64	M.Q.Makino+	C1212
α,x	⁵¹ Cr	CS	3INDVEC	7.9+07	1.1+08	Jour	PS,58,319	98	S.Mukherjee+	O1231
α,x	⁵² Mn	CS	3INDVEC	6.4+07	1.1+08	Jour	PS,58,319	98	S.Mukherjee+	O1231
α,x	⁵⁴ Mn	CS	3INDVEC	3.8+07	1.1+08	Jour	PS,58,319	98	S.Mukherjee+	O1231
α,x	⁵⁹ Fe	CS	3INDVEC	5.4+07	1.1+08	Jour	PS,58,319	98	S.Mukherjee+	O1231
α,x	⁵⁶ Co	CS	3INDVEC	4.2+07	1.1+08	Jour	PS,58,319	98	S.Mukherjee+	O1231
α,x	⁵⁷ Co	CS	3INDVEC	3.0+07	1.1+08	Jour	PS,58,319	98	S.Mukherjee+	O1231
α,x	⁵⁸ Co	CS	3INDVEC	2.0+07	1.1+08	Jour	PS,58,319	98	S.Mukherjee+	O1231
α,x	⁶⁰ Co	CS	3INDVEC	3.8+07	1.1+08	Jour	PS,58,319	98	S.Mukherjee+	O1231
α,x	⁵⁶ Ni	CS	3INDVEC	7.5+07	1.1+08	Jour	PS,58,319	98	S.Mukherjee+	O1231
α,x	⁵⁷ Ni	CS	3INDVEC	6.9+07	1.1+08	Jour	PS,58,319	98	S.Mukherjee+	O1231

28

Nickel

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	^{nat} Ni	CS	1USACLA	2.8+07		Jour	PL,9,178	64	M.Q.Makino+	C1212
<i>p,incl</i>	^{nat} Ni	CS	1USACLA	2.8+07		Jour	PL,9,178	64	M.Q.Makino+	C1212
<i>p,tot</i>		CS	1USACLA	2.8+07		Jour	PL,9,178	64	M.Q.Makino+	C1212

28

Nickel

58

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	⁵⁸ Ni	DA	1USALRL	1.2+07		Jour	PR,133,(B),323	64	J.Benveniste+	C1221
<i>p,incl</i>	⁵⁸ Ni	CSP	1USALRL	1.1+07	1.2+07	Jour	PR,133,(B),323	64	J.Benveniste+	C1221
<i>p,incl</i>	⁵⁸ Ni	DAP	1USALRL	1.1+07	1.2+07	Jour	PR,133,(B),323	64	J.Benveniste+	C1221
<i>p,tot</i>		CS	1USALAS	1.4+07		Jour	PR,157,1001	67	J.F.Dicello+	C1217
³ He,el	⁵⁸ Ni	DA	2JPNOSA	4.4+08		Jour	PR/C,67,(6),064612	Jun 03	J.Kamiya+	E1823
³ He,el	⁵⁸ Ni	POD	2JPNOSA	4.4+08		Jour	PR/C,67,(6),064612	Jun 03	J.Kamiya+	E1823

28

Nickel

62

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p</i> ,tot		CS	1USALAS	1.4+07		Jour	PR,157,1001	67	J.F.Dicello+	C1217

28

Nickel

64

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p</i> ,el	⁶⁴ Ni	DA	1USALRL	9.6+06	1.2+07	Jour	PR,133,(B),323	64	J.Benveniste+	C1221
<i>p</i> ,inel	⁶⁴ Ni	CSP	1USALRL	9.6+06	1.2+07	Jour	PR,133,(B),323	64	J.Benveniste+	C1221
<i>p</i> ,inel	⁶⁴ Ni	DAP	1USALRL	9.6+06	1.2+07	Jour	PR,133,(B),323	64	J.Benveniste+	C1221

29

Copper

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p</i> ,el	^{nat} Cu	CS	1USAHRV	1.3+08	7.7+07	Jour	NP,29,485	63	R.Goloskie+	C1211
<i>p</i> ,el	^{nat} Cu	CS	1USACLA	2.8+07		Jour	PL,9,178	64	M.Q.Makino+	C1212
<i>p</i> ,el	^{nat} Cu	DA	1USACLA	2.8+07		Jour	NP/A,126,592	69	R.Dittman+	C1208
<i>p</i> ,el	^{nat} Cu	POD	1USAPTN	1.7+07		Jour	PR,113,1099	59	W.A.Blanpied	C1213
<i>p</i> ,inel	^{nat} Cu	CS	1USACLA	2.8+07		Jour	PL,9,178	64	M.Q.Makino+	C1212
<i>p</i> ,inel	^{nat} Cu	CS	1USABNL	8.0+08		Jour	PR,99,857	55	F.F.Chen+	C1219
<i>p</i> ,tot		CS	1USACLA	2.8+07		Jour	PL,9,178	64	M.Q.Makino+	C1212
<i>p</i> ,x	Many	CS	2JPNIRS	1.0+08	2.3+08	Jour	RCA,91,(12),689	Dec 03	H.Yashima+	E1829
<i>p</i> ,x	⁴⁸ Cr	CS	2JPNIRS	1.7+08	2.3+08	Jour	RCA,91,(12),689	Dec 03	H.Yashima+	E1829
<i>p</i> ,x	⁵⁴ Mn	CS	2JPNIRS	6.3+07	2.3+08	Jour	RCA,91,(12),689	Dec 03	H.Yashima+	E1829
<i>p</i> ,x	⁵⁸ Co	CS	2JPNIRS	2.7+07	2.3+08	Jour	RCA,91,(12),689	Dec 03	H.Yashima+	E1829
<i>p</i> ,x	⁶⁰ Cu	CS	2JPNIRS	4.8+07	2.3+08	Jour	RCA,91,(12),689	Dec 03	H.Yashima+	E1829
<i>d</i> ,inel	^{nat} Cu	CS	1USABRK	1.6+08		Jour	PR,95,1268	54	G.P.Millburn+	C1218
α ,x	Many	CS	2JPNIRS	4.0+08	9.2+08	Jour	RCA,91,(12),689	Dec 03	H.Yashima+	E1829
α ,x	³⁹ Cl	CS	2JPNIRS	1.7+08	2.3+08	Jour	RCA,91,(12),689	Dec 03	H.Yashima+	E1829
α ,x	⁴¹ Ar	CS	2JPNIRS	2.7+07	2.3+08	Jour	RCA,91,(12),689	Dec 03	H.Yashima+	E1829
α ,x	⁵⁶ Co	CS	2GERKFK	8.4+07	6.2+07	Jour	JRN,131,467	89	M.J.Ozafran+	O1250
α ,x	⁵⁷ Co	CS	2GERKFK	8.4+07	4.7+07	Jour	JRN,131,467	89	M.J.Ozafran+	O1250
α ,x	⁵⁸ Co	CS	2GERKFK	8.4+07	3.5+07	Jour	JRN,131,467	89	M.J.Ozafran+	O1250
α ,x	⁶⁰ Co	CS	2GERKFK	8.4+07	5.9+06	Jour	JRN,131,467	89	M.J.Ozafran+	O1250
¹² C,x	Many	CS	2JPNIRS	1.2+09	2.8+09	Jour	RCA,91,(12),689	Dec 03	H.Yashima+	E1829
¹² C,x	³⁹ Cl	CS	2JPNIRS	7.7+07	2.3+08	Jour	RCA,91,(12),689	Dec 03	H.Yashima+	E1829
¹² C,x	⁴¹ Ar	CS	2JPNIRS	7.7+07	2.3+08	Jour	RCA,91,(12),689	Dec 03	H.Yashima+	E1829
²⁰ Ne,x	Many	CS	2JPNIRS	2.0+09	4.6+09	Jour	RCA,91,(12),689	Dec 03	H.Yashima+	E1829
²⁰ Ne,x	³⁹ Cl	CS	2JPNIRS	5.6+07	2.3+08	Jour	RCA,91,(12),689	Dec 03	H.Yashima+	E1829
²⁰ Ne,x	⁴¹ Ar	CS	2JPNIRS	5.6+07	2.3+08	Jour	RCA,91,(12),689	Dec 03	H.Yashima+	E1829
⁴⁰ Ar,x	Many	CS	2JPNIRS	9.2+09		Jour	RCA,91,(12),689	Dec 03	H.Yashima+	E1829

29

Copper

65

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p</i> ,tot		CS	1USALAS	1.4+07		Jour	PR,157,1001	67	J.F.Dicello+	C1217

30

Zinc

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p</i> ,el	^{nat} Zn	CS	1USACLA	2.8+07		Jour	PL,9,178	64	M.Q.Makino+	C1212
<i>p</i> ,inel	^{nat} Zn	CS	1USACLA	2.8+07		Jour	PL,9,178	64	M.Q.Makino+	C1212
<i>p</i> ,tot		CS	1USACLA	2.8+07		Jour	PL,9,178	64	M.Q.Makino+	C1212
<i>d</i> ,x	⁶⁵ Zn	CS	2GERKFK	4.5+06	2.2+07	Jour	RRL,12,353	72	S.J.Nassiff+	O1247
<i>d</i> ,x	⁶⁹ Zn	CS	2GERKFK	4.5+06	2.3+07	Jour	RRL,12,353	72	S.J.Nassiff+	O1247
<i>d</i> ,x	⁷¹ Zn	CS	2GERKFK	4.5+06	2.3+07	Jour	RRL,12,353	72	S.J.Nassiff+	O1247
<i>d</i> ,x	⁶⁵ Ga	CS	2GERKFK	5.0+06	1.3+07	Jour	RRL,12,353	72	S.J.Nassiff+	O1247
<i>d</i> ,x	⁶⁶ Ga	CS	2GERKFK	5.0+06	2.3+07	Jour	RRL,12,353	72	S.J.Nassiff+	O1247
<i>d</i> ,x	⁶⁷ Ga	CS	2GERKFK	4.5+06	2.3+07	Jour	RRL,12,353	72	S.J.Nassiff+	O1247
<i>d</i> ,x	⁶⁸ Ga	CS	2GERKFK	5.0+06	2.3+07	Jour	RRL,12,353	72	S.J.Nassiff+	O1247

30

Zinc

64

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p</i> ,el	⁶⁴ Zn	DA	1USALRL	9.6+06	1.2+07	Jour	PR,133,(B),323	64	J.Benveniste+	C1221
<i>p</i> ,inel	⁶⁴ Zn	CSP	1USALRL	9.6+06	1.2+07	Jour	PR,133,(B),323	64	J.Benveniste+	C1221
<i>p</i> ,inel	⁶⁴ Zn	DAP	1USALRL	9.6+06	1.2+07	Jour	PR,133,(B),323	64	J.Benveniste+	C1221
<i>p</i> ,tot		CS	1USALAS	1.4+07		Jour	PR,157,1001	67	J.F.Dicello+	C1217
<i>t</i> ,α	⁶³ Cu	DAP	2UK ALD	1.3+07		Jour	NP/A,99,487	67	D.Bachner+	O1244

30

Zinc

66

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p</i> ,tot		CS	1USALAS	1.4+07		Jour	PR,157,1001	67	J.F.Dicello+	C1217
<i>t</i> ,α	⁶⁵ Cu	DAP	2UK ALD	1.3+07		Jour	NP/A,99,487	67	D.Bachner+	O1244

32

Germanium

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p</i> ,el	^{nat} Ge	CS	1USACLA	2.8+07		Jour	PL,9,178	64	M.Q.Makino+	C1212
<i>p</i> ,inel	^{nat} Ge	CS	1USACLA	2.8+07		Jour	PL,9,178	64	M.Q.Makino+	C1212
<i>p</i> ,tot		CS	1USACLA	2.8+07		Jour	PL,9,178	64	M.Q.Makino+	C1212

40 Zirconium 90

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p</i> ,el	⁹⁰ Zr	POD	2JPNKYU	5.7+06	6.9+06	Jour	NIM/A,420,(3),380	Jan 99	S.Kouda+	E1828
<i>p</i> ,tot		CS	1USALAS	1.4+07		Jour	PR,157,1001	67	J.F.Dicello+	C1217
³ He,el	⁹⁰ Zr	DA	2JPNOSA	4.4+08		Jour	PR/C,67,(6),064612	Jun 03	J.Kamiya+	E1823
³ He,el	⁹⁰ Zr	POD	2JPNOSA	4.4+08		Jour	PR/C,67,(6),064612	Jun 03	J.Kamiya+	E1823
α ,el	⁹⁰ Zr	DA	1USAYAL	3.5+07		Jour	PR/C,51,635	95	B.J.Lund+	C1205
α ,inel	⁹⁰ Zr	DAP	1USAYAL	3.5+07		Jour	PR/C,51,635	95	B.J.Lund+	C1205

40 Zirconium 92

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p</i> ,tot		CS	1USALAS	1.4+07		Jour	PR,157,1001	67	J.F.Dicello+	C1217
α ,el	⁹² Zr	DA	1USAYAL	3.5+07		Jour	PR/C,51,635	95	B.J.Lund+	C1205
α ,inel	⁹² Zr	DAP	1USAYAL	3.5+07		Jour	PR/C,51,635	95	B.J.Lund+	C1205

40 Zirconium 94

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p</i> ,tot		CS	1USALAS	1.4+07		Jour	PR,157,1001	67	J.F.Dicello+	C1217
α ,el	⁹⁴ Zr	DA	1USAYAL	3.5+07		Jour	PR/C,51,635	95	B.J.Lund+	C1205
α ,inel	⁹⁴ Zr	DAP	1USAYAL	3.5+07		Jour	PR/C,51,635	95	B.J.Lund+	C1205

40 Zirconium 96

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
α ,el	⁹⁶ Zr	DA	1USAYAL	3.5+07		Jour	PR/C,51,635	95	B.J.Lund+	C1205
α ,inel	⁹⁶ Zr	DAP	1USAYAL	3.5+07		Jour	PR/C,51,635	95	B.J.Lund+	C1205

41 Niobium 93

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
α ,2 <i>n</i>	⁹⁵ Tc	CS	1USAINU	3.4+07	1.1+08	Jour	PS,55,409	97	S.Mukherjee+	O1230
α ,2 <i>p</i>	⁹⁵ Nb	CS	1USAINU	2.8+07	1.1+08	Jour	PS,55,409	97	S.Mukherjee+	O1230
α , <i>n</i>	⁹⁶ Tc	CS	1USAINU	2.7+07	1.1+08	Jour	PS,55,409	97	S.Mukherjee+	O1230
α , <i>x</i>	⁸⁶ Y	CS	1USAINU	7.1+07	1.1+08	Jour	PS,55,409	97	S.Mukherjee+	O1230
α , <i>x</i>	⁸⁷ Y	CS	1USAINU	5.6+07	1.1+08	Jour	PS,55,409	97	S.Mukherjee+	O1230
α , <i>x</i>	⁸⁸ Y	CS	1USAINU	6.3+07	1.1+08	Jour	PS,55,409	97	S.Mukherjee+	O1230
α , <i>x</i>	⁸⁶ Zr	CS	1USAINU	9.6+07	1.1+08	Jour	PS,55,409	97	S.Mukherjee+	O1230
α , <i>x</i>	⁸⁸ Zr	CS	1USAINU	5.7+07	1.1+08	Jour	PS,55,409	97	S.Mukherjee+	O1230
α , <i>x</i>	⁸⁹ Zr	CS	1USAINU	5.2+07	1.1+08	Jour	PS,55,409	97	S.Mukherjee+	O1230
α , <i>x</i>	⁹⁰ Nb	CS	1USAINU	4.1+07	1.1+08	Jour	PS,55,409	97	S.Mukherjee+	O1230

α, x ^{92}Nb CS 1USAINU 2.8+07 1.1+08 Jour PS,55,409 97 S.Mukherjee+ O1230

45 Rhodium 103

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p, el	^{103}Rh	POD	1USACLA	4.4+07		Jour	PR,144,932	66	T.A.Cahill+	C1214
$\alpha, 2n$	^{105}Ag	CS	3ARGCNE	5.4+07	1.7+07	Jour	RRL,43,265	80	M.J.Ozafran+	O1248
$\alpha, 2n$	^{105}Ag	CS	2GERKFK	8.8+07	1.0+07	Jour	JRN,198,41	95	A.Moreno+	O0806
$\alpha, 3n$	^{104}Ag	CS	3ARGCNE	4.8+07	2.5+07	Jour	RRL,43,265	80	M.J.Ozafran+	O1248
$\alpha, 4n$	^{103}Ag	CS	3ARGCNE	5.4+07	3.7+07	Jour	RRL,43,265	80	M.J.Ozafran+	O1248
α, n	^{106}Ag	CS	3ARGCNE	5.4+07	1.0+07	Jour	RRL,43,265	80	M.J.Ozafran+	O1248
α, n	^{106}Ag	CS	2GERKFK	8.4+07	1.0+07	Jour	JRN,198,41	95	A.Moreno+	O0806
α, x	^{99}Rh	CS	3ARGCNE	5.4+07	3.9+07	Jour	RRL,43,265	80	M.J.Ozafran+	O1248
α, x	^{100}Rh	CS	3ARGCNE	5.4+07	2.5+07	Jour	RRL,43,265	80	M.J.Ozafran+	O1248

47 Silver

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p, el	^{nat}Ag	CS	1USAHRV	1.3+08	7.7+07	Jour	NP,29,485	63	R.Goloskie+	C1211
p, el	^{nat}Ag	DA	1USACLA	2.8+07		Jour	NP/A,126,592	69	R.Dittman+	C1208
p, el	^{nat}Ag	POD	1USAPTN	1.7+07		Jour	PR,113,1099	59	W.A.Blanpied	C1213

48 Cadmium 106

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p, n	^{106}In	CSP	1USAANL	7.7+06	8.4+09	Jour	PR/C,29,2118	84	B.W.Filippone+	C1189

49 Indium 113

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p, n	^{113}Sn	CS	3INDVEC	6.1+06	2.0+07	Jour	ARI,62,419	05	M.M.Musthafa+	O1237

50 Tin

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$p, inel$	^{nat}Sn	CS	1USABNL	8.0+08		Jour	PR,99,857	55	F.F.Chen+	C1219

50

Tin

120

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,tot</i>		CS	1USALAS	1.4+07		Jour	PR,157,1001	67	J.F.Dicello+	C1217

52

Tellurium

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,x</i>	¹²³ I	CS	2UK UK	6.7+06	5.9+07	Conf	91VILLIG,,76	91	J.Zweit+	O1260
<i>p,x</i>	¹²⁴ I	CS	2UK UK	6.7+06	5.9+07	Conf	91VILLIG,,76	91	J.Zweit+	O1260
<i>p,x</i>	¹²⁵ I	CS	2UK UK	6.8+06	5.9+07	Conf	91VILLIG,,76	91	J.Zweit+	O1260
<i>p,x</i>	¹²⁶ I	CS	2UK UK	7.2+06	5.9+07	Conf	91VILLIG,,76	91	J.Zweit+	O1260
<i>p,x</i>	¹³⁰ I	CS	2UK UK	6.9+06	3.4+07	Conf	91VILLIG,,76	91	J.Zweit+	O1260

55

Cesium

133

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>d,2n</i>	¹³³ Ba	CS	3ARGCNE	1.4+07	2.8+07	Jour	JIN,28,5	66	A.Mocoroa+	O1253
<i>d,p</i>	¹³⁴ Cs	CS	3ARGCNE	9.4+06	2.7+07	Jour	JIN,28,5	66	A.Mocoroa+	O1253

57

Lanthanum

139

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>d,4n</i>	¹³⁷ Ce	CS	3ARGCNE	1.9+07	2.8+07	Jour	NP,26,108	61	H.Vignau+	O1205

62

Samarium

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
α,x	¹⁴⁶ Gd	CS	2GERKFK	7.2+07	1.4+07	Jour	JRN,132,139	89	A.Archenti+	O1249
α,x	¹⁴⁷ Gd	CS	2GERKFK	7.2+07	1.4+07	Jour	JRN,132,139	89	A.Archenti+	O1249
α,x	¹⁴⁹ Gd	CS	2GERKFK	7.2+07	1.4+07	Jour	JRN,132,139	89	A.Archenti+	O1249
α,x	¹⁵¹ Gd	CS	2GERKFK	7.2+07	1.4+07	Jour	JRN,132,139	89	A.Archenti+	O1249
α,x	¹⁵³ Gd	CS	2GERKFK	7.2+07	1.4+07	Jour	JRN,132,139	89	A.Archenti+	O1249

64

Gadolinium

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
α,x	¹⁵³ Tb	CS	2GERKFK	8.0+07	3.9+07	Jour	RCA,72,55	96	R.E.Gayoso+	O0818
α,x	¹⁵⁵ Tb	CS	2GERKFK	7.6+07	1.4+07	Jour	RCA,72,55	96	R.E.Gayoso+	O0818
α,x	¹⁵⁶ Tb	CS	2GERKFK	7.6+07	1.4+07	Jour	RCA,72,55	96	R.E.Gayoso+	O0818

74 Tungsten 184

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,t</i>	¹⁸² W	DAP	1USAYAL	2.1+07		Jour	PR/C,21,2275	80	M.H.Mortensen+	C1199
<i>p,x</i>	¹⁷⁹ Hf	CS	4RUSITE	1.6+09		Rept	INDC(CCP)-434,65	Feb 03	Yu.E.Titarenko	O1021
<i>p,x</i>	¹⁷⁹ Hf	CS	4RUSITE	8.0+08	1.6+09	Rept	INDC(CCP)-434,61	Feb 03	Yu.E.Titarenko	O1020
<i>p,x</i>	¹⁷⁸ Ta	CS	4RUSITE	2.0+08	1.6+09	Rept	INDC(CCP)-434,61	Feb 03	Yu.E.Titarenko	O1020

74 Tungsten 186

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,t</i>	¹⁸⁴ W	DAP	1USAYAL	2.1+07		Jour	PR/C,21,2275	80	M.H.Mortensen+	C1199
<i>p,x</i>	¹⁷⁸ Ta	CS	4RUSITE	2.0+08	1.6+09	Rept	INDC(CCP)-434,65	Feb 03	Yu.E.Titarenko	O1021

79 Gold 197

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	¹⁹⁷ Au	DA	1USACLA	2.8+07		Jour	NP/A,126,592	69	R.Dittman+	C1208
<i>p,el</i>	¹⁹⁷ Au	POD	1USAPTN	1.6+07		Jour	PR,113,1099	59	W.A.Blanpied	C1213
<i>d,p</i>	¹⁹⁸ Au	CS	3ARGCNE	1.0+07	2.7+07	Jour	NP,88,344	66	S.J.Nassiff+	O0826

82 Lead

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,α</i>	incl	CS	2FR SAT	4.4+07	2.6+09	Jour	NIM/B,229,1	05	I.Leya+	O0839
<i>p,el</i>	^{nat} Pb	CS	1USAHRV	1.3+08	7.7+07	Jour	NP,29,485	63	R.Goloskie+	C1211
<i>p,inel</i>	^{nat} Pb	CS	1USABNL	8.0+08		Jour	PR,99,857	55	F.F.Chen+	C1219
<i>p,n</i>	incl	DAE	2JPNKEK	8.0+08	1.5+09	Jour	NST,40,(5),283	May 03	D.Satoh+	E1833
<i>p,x</i>	³ He	CS	2FR SAT	4.4+07	2.6+09	Jour	NIM/B,229,1	05	I.Leya+	O0839
<i>p,x</i>	²¹ Ne	CS	2FR SAT	4.4+07	2.6+09	Jour	NIM/B,229,1	05	I.Leya+	O0839
<i>p,x</i>	²² Ne	CS	2FR SAT	7.6+08	2.6+09	Jour	NIM/B,229,1	05	I.Leya+	O0839
<i>p,x</i>	³⁶ Ar	CS	2FR SAT	1.3+08	1.6+09	Jour	NIM/B,229,1	05	I.Leya+	O0839
<i>p,x</i>	³⁸ Ar	CS	2FR SAT	1.3+08	2.6+09	Jour	NIM/B,229,1	05	I.Leya+	O0839
<i>p,x</i>	⁷⁸ Kr	CS	2FR SAT	5.8+07	2.6+09	Jour	NIM/B,229,1	05	I.Leya+	O0839
<i>p,x</i>	⁸⁰ Kr	CS	2FR SAT	5.8+07	2.6+09	Jour	NIM/B,229,1	05	I.Leya+	O0839
<i>p,x</i>	⁸¹ Kr	CS	2FR SAT	5.8+07	2.6+09	Jour	NIM/B,229,1	05	I.Leya+	O0839
<i>p,x</i>	⁸² Kr	CS	2FR SAT	5.8+07	2.6+09	Jour	NIM/B,229,1	05	I.Leya+	O0839
<i>p,x</i>	⁸³ Kr	CS	2FR SAT	4.4+07	2.6+09	Jour	NIM/B,229,1	05	I.Leya+	O0839
<i>p,x</i>	⁸⁴ Kr	CS	2FR SAT	5.8+07	2.6+09	Jour	NIM/B,229,1	05	I.Leya+	O0839
<i>p,x</i>	⁸⁵ Kr	CS	2FR SAT	4.4+07	2.6+09	Jour	NIM/B,229,1	05	I.Leya+	O0839
<i>p,x</i>	⁸⁶ Kr	CS	2FR SAT	4.4+07	2.6+09	Jour	NIM/B,229,1	05	I.Leya+	O0839
<i>p,x</i>	¹²⁴ Xe	CS	2FR SAT	5.8+07	2.6+09	Jour	NIM/B,229,1	05	I.Leya+	O0839
<i>p,x</i>	¹²⁶ Xe	CS	2FR SAT	4.4+07	2.6+09	Jour	NIM/B,229,1	05	I.Leya+	O0839
<i>p,x</i>	¹²⁸ Xe	CS	2FR SAT	4.4+07	2.6+09	Jour	NIM/B,229,1	05	I.Leya+	O0839
<i>p,x</i>	¹³⁰ Xe	CS	2FR SAT	4.4+07	2.6+09	Jour	NIM/B,229,1	05	I.Leya+	O0839
<i>p,x</i>	¹³¹ Xe	CS	2FR SAT	4.4+07	2.6+09	Jour	NIM/B,229,1	05	I.Leya+	O0839

92

Uranium

238

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,f</i>	Many	CHG	2JPNTOH	1.3+07	2.4+07	Jour	JNRS,3,(2),7	Dec 02	D.Kaji+	E1837