

Japan Charged-Particle Nuclear Reaction Data Group (JCPRG)

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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)

1 Hydrogen 1

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p,sct	^1H	POD	2JPNOSA	3.9+08		Jour	PR/C,72,(4),041602	Oct 05	T.Noro+	E1939
$^{25}\text{Al},el$	^1H	DA	2JPNIPC	5.2+05	3.5+06	Jour	NP/A,758,158	Jul 05	J.Y.Moon+	E1938
$^{26}\text{Si},el$	^1H	DA	2JPNIPC	5.2+05	3.6+06	Jour	NP/A,758,158	Jul 05	J.Y.Moon+	E1938

1 Hydrogen 2

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$p,n+p$	^1H	POD	2JPNOSA	3.9+08		Jour	PR/C,72,(4),041602	Oct 05	T.Noro+	E1939

2 Helium 3

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$p,2p$	^2H	POD	2JPNOSA	3.9+08		Jour	PR/C,72,(4),041602	Oct 05	T.Noro+	E1939

2 Helium 4

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$p,2p$	^3H	POD	2JPNOSA	3.9+08		Jour	PR/C,72,(4),041602	Oct 05	T.Noro+	E1939
$^8\text{Li},n$	^{11}B	CS	2JPNJAE	7.5+05	2.6+06	Jour	NP/A,746,330	Dec 04	T.Hashimoto+	E1933
$^8\text{Li},n$	^{11}B	?	2JPNJAE	7.5+05	2.6+06	Jour	NP/A,746,330	Dec 04	T.Hashimoto+	E1933

3 Lithium 6

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$p,2p$	^5He	POD	2JPNOSA	3.9+08		Jour	PR/C,72,(4),041602	Oct 05	T.Noro+	E1939

3 Lithium 7

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$p,2p$	^6He	POD	2JPNOSA	3.9+08		Jour	PR/C,72,(4),041602	Oct 05	T.Noro+	E1939

4

Beryllium

9

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$p,2p$	${}^8\text{Li}$	POD	2JPNOSA	3.9+08		Jour	PR/C,72,(4),041602	Oct 05	T.Noro+	E1939
${}^6\text{He}, {}^5\text{He}$	${}^{10}\text{Be}$	DA	2JPNIPC	1.5+08		Jour	CPL,20,(7),1034	Jul 03	Y.-C.Ge+	E1937
${}^6\text{He}, \alpha$	${}^{11}\text{Be}$	DA	2JPNIPC	1.5+08		Jour	CPL,20,(7),1034	Jul 03	Y.-C.Ge+	E1937
${}^6\text{He}, e$	${}^9\text{Be}$	DA	2JPNIPC	1.5+08		Jour	PR/C,71,(1),014604	Jan 05	Y.L.Ye+	E1931

5

Boron

10

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$p,2p$	${}^9\text{Be}$	POD	2JPNOSA	3.9+08		Jour	PR/C,72,(4),041602	Oct 05	T.Noro+	E1939

5

Boron

11

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$p,2p$	${}^{10}\text{Be}$	POD	2JPNOSA	3.9+08		Jour	PR/C,72,(4),041602	Oct 05	T.Noro+	E1939

6

Carbon

12

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p,d	${}^{11}\text{C}$	DAP	2JPNOSA	6.5+07		Jour	NP/A,343,234	Jul 80	K.Hosono+	E0247
p,d	${}^{11}\text{C}$	POD	2JPNOSA	6.5+07		Jour	NP/A,343,234	Jul 80	K.Hosono+	E0247
p,p	incl	DAE	2JPNOSA	3.0+08	3.9+08	Jour	PR/C,72,(1),014606	Jul 05	T.Kin+	E1936
${}^{15}\text{B}, \text{inel}$	${}^{12}\text{C}$	CSP	2JPNIPC	1.1+09		Jour	PR/C,71,(4),044611	Apr 05	Y.Kondo+	E1932
${}^{15}\text{B}, \text{inel}$	${}^{12}\text{C}$	DAP	2JPNIPC	1.1+09		Jour	PR/C,71,(4),044611	Apr 05	Y.Kondo+	E1932
${}^{17}\text{B}, \text{inel}$	${}^{12}\text{C}$	CSP	2JPNIPC	1.2+09		Jour	PR/C,71,(4),044611	Apr 05	Y.Kondo+	E1932
${}^{17}\text{B}, \text{inel}$	${}^{12}\text{C}$	DAP	2JPNIPC	1.2+09		Jour	PR/C,71,(4),044611	Apr 05	Y.Kondo+	E1932
${}^{17}\text{B}, \text{non}$		CS	2JPNIPC	1.3+09		Jour	PR/C,70,(5),054320	Nov 04	Y.Yamaguchi+	E1924
${}^{12}\text{C}, x$	Many	CS	2JPNIRS	4.8+09		Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923
${}^{17}\text{C}, x$	${}^{14}\text{C}$	CS	2JPNIPC	1.3+09		Jour	JP/G,31,(1),39	Jan 05	C.Wu+	E1926
${}^{17}\text{C}, x$	${}^{15}\text{C}$	CS	2JPNIPC	1.3+09		Jour	JP/G,31,(1),39	Jan 05	C.Wu+	E1926
${}^{17}\text{C}, x$	${}^{16}\text{C}$	CS	2JPNIPC	1.3+09		Jour	JP/G,31,(1),39	Jan 05	C.Wu+	E1926
${}^{20}\text{Ne}, x$	Many	CS	2JPNIRS	8.0+09		Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923
${}^{28}\text{Si}, x$	Many	CS	2JPNIRS	2.2+10		Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923
${}^{40}\text{Ar}, x$	Many	CS	2JPNIRS	1.6+10		Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923

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Carbon

13

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p,d	${}^{12}\text{C}$	DAP	2JPNOSA	6.5+07		Jour	NP/A,343,234	Jul 80	K.Hosono+	E0247
p,d	${}^{12}\text{C}$	POD	2JPNOSA	6.5+07		Jour	NP/A,343,234	Jul 80	K.Hosono+	E0247

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Oxygen

16

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,2p</i>	¹⁵ N	POD	2JPNOSA	3.9+08		Jour	PR/C,72,(4),041602	Oct 05	T.Noro+	E1939
<i>p,d</i>	¹⁵ O	DAP	2JPNOSA	6.5+07		Jour	NP/A,343,234	Jul 80	K.Hosono+	E0247
<i>p,d</i>	¹⁵ O	POD	2JPNOSA	6.5+07		Jour	NP/A,343,234	Jul 80	K.Hosono+	E0247
<i>p,el</i>	¹⁶ O	DA	2JPNOK	7.3+06	1.3+07	Jour	JPJ,14,(7),861	Jul 59	C.Hu+	E1940

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Fluorine

19

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,2p</i>	¹⁸ O	POD	2JPNOSA	3.9+08		Jour	PR/C,72,(4),041602	Oct 05	T.Noro+	E1939

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Magnesium

24

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,d</i>	²³ Mg	DAP	2JPNOSA	6.5+07		Jour	NP/A,343,234	Jul 80	K.Hosono+	E0247
<i>p,d</i>	²³ Mg	POD	2JPNOSA	6.5+07		Jour	NP/A,343,234	Jul 80	K.Hosono+	E0247

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Aluminium

27

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,p</i>	incl	DAE	2JPNOSA	3.0+08	3.9+08	Jour	PR/C,72,(1),014606	Jul 05	T.Kin+	E1936
<i>p,x</i>	¹⁰ Be	CS	2JPNLEP	1.2+10		Jour	PR/C,48,(6),2617	Dec 93	S.Shibata+	E1647
<i>p,x</i>	²⁶ Al	CS	2JPNLEP	1.2+10		Jour	PR/C,48,(6),2617	Dec 93	S.Shibata+	E1647
¹² C,x	Many	CS	2JPNIRS	4.8+09		Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923
²⁰ Ne,x	Many	CS	2JPNIRS	8.0+09		Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923
²⁸ Si,x	Many	CS	2JPNIRS	2.2+10		Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923
⁴⁰ Ar,x	Many	CS	2JPNIRS	1.6+10		Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923

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Silicon

28

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,d</i>	²⁷ Si	DAP	2JPNOSA	6.5+07		Jour	NP/A,343,234	Jul 80	K.Hosono+	E0247
<i>p,d</i>	²⁷ Si	POD	2JPNOSA	6.5+07		Jour	NP/A,343,234	Jul 80	K.Hosono+	E0247

14

Silicon

29

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,d</i>	²⁸ Si	DAP	2JPNOSA	6.5+07		Jour	NP/A,343,234	Jul 80	K.Hosono+	E0247
<i>p,d</i>	²⁸ Si	POD	2JPNOSA	6.5+07		Jour	NP/A,343,234	Jul 80	K.Hosono+	E0247

20

Calcium

40

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,d</i>	³⁹ Ca	DAP	2JPNOSA	6.5+07		Jour	NP/A,343,234	Jul 80	K.Hosono+	E0247
<i>p,d</i>	³⁹ Ca	POD	2JPNOSA	6.5+07		Jour	NP/A,343,234	Jul 80	K.Hosono+	E0247

22

Titanium

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	^{nat} Ti	DA	2JPNTOK	1.2+07	1.4+07	Jour	JPJ,14,(7),861	Jul 59	C.Hu+	E1940
<i>p,inel</i>	^{nat} Ti	DA	2JPNTOK	1.2+07	1.4+07	Jour	JPJ,14,(7),861	Jul 59	C.Hu+	E1940

22

Titanium

48

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>α,n</i>	⁵¹ Cr	CS	2JPNTOK	4.8+06	3.0+07	Jour	AEJ,2,(11),682	Nov 60	A.Iguchi+	E1930

23

Vanadium

51

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>α,n</i>	⁵⁴ Mn	CS	2JPNTOK	7.2+06	3.0+07	Jour	AEJ,2,(11),682	Nov 60	A.Iguchi+	E1930

24

Chromium

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	^{nat} Cr	DA	2JPNTOK	7.9+06	1.4+07	Jour	JPJ,14,(7),861	Jul 59	C.Hu+	E1940
<i>p,inel</i>	^{nat} Cr	DA	2JPNTOK	7.9+06	1.4+07	Jour	JPJ,14,(7),861	Jul 59	C.Hu+	E1940
<i>p,x</i>	Many	CS	2JPNIRS	1.0+08	2.3+08	Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923
<i>α,x</i>	Many	CS	2JPNIRS	4.0+08	9.2+08	Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923
¹² C,x	Many	CS	2JPNIRS	1.2+09	4.8+09	Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923
²⁰ Ne,x	Many	CS	2JPNIRS	2.0+09	8.0+09	Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923
²⁸ Si,x	Many	CS	2JPNIRS	2.2+10		Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923
⁴⁰ Ar,x	Many	CS	2JPNIRS	9.2+09	1.6+10	Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923

26 Iron

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p,x	^{10}Be	CS	2JPNLEP	1.2+10		Jour	PR/C,48,(6),2617	Dec 93	S.Shibata+	E1647
p,x	Many	CS	2JPNIRS	1.0+08	2.3+08	Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923
p,x	^{26}Al	CS	2JPNLEP	1.2+10		Jour	PR/C,48,(6),2617	Dec 93	S.Shibata+	E1647
α,x	Many	CS	2JPNIRS	4.0+08	9.2+08	Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923
$^{12}\text{C},x$	Many	CS	2JPNIRS	1.2+09	4.8+09	Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923
$^{20}\text{Ne},x$	Many	CS	2JPNIRS	2.0+09	8.0+09	Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923
$^{28}\text{Si},x$	Many	CS	2JPNIRS	2.2+10		Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923
$^{40}\text{Ar},x$	Many	CS	2JPNIRS	9.2+09	1.6+10	Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923

26 Iron 56

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p,d	^{55}Fe	DAP	2JPNOSA	6.5+07		Jour	NP/A,343,234	Jul 80	K.Hosono+	E0247
p,d	^{55}Fe	POD	2JPNOSA	6.5+07		Jour	NP/A,343,234	Jul 80	K.Hosono+	E0247

27 Cobalt 59

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p,x	^{10}Be	CS	2JPNLEP	1.2+10		Jour	PR/C,48,(6),2617	Dec 93	S.Shibata+	E1647
p,x	^{26}Al	CS	2JPNLEP	1.2+10		Jour	PR/C,48,(6),2617	Dec 93	S.Shibata+	E1647
$^3\text{He},2n$	^{60}Cu	CS	2JPNIRS	4.1+06	6.5+07	Jour	NIM/B,222,(3-4),364	Aug 04	F.Szelecsenyi+	E1929
$^3\text{He},n$	^{61}Cu	CS	2JPNIRS	7.3+06	6.7+07	Jour	NIM/B,222,(3-4),364	Aug 04	F.Szelecsenyi+	E1929
$\alpha,2n$	^{61}Cu	CS	2JPNIRS	1.8+07	5.8+07	Jour	NIM/B,187,(2),153	Feb 02	F.Szelecsenyi+	E1928
$\alpha,3n$	^{60}Cu	CS	2JPNIRS	3.3+07	5.8+07	Jour	NIM/B,187,(2),153	Feb 02	F.Szelecsenyi+	E1928
α,n	^{62}Cu	CS	2JPNIRS	1.8+07	5.8+07	Jour	NIM/B,187,(2),153	Feb 02	F.Szelecsenyi+	E1928

28 Nickel

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p,el	^{nat}Ni	DA	2JPNTOK	7.9+06	1.4+07	Jour	JPJ,14,(7),861	Jul 59	C.Hu+	E1940
$p,inel$	^{nat}Ni	DA	2JPNTOK	7.9+06	1.4+07	Jour	JPJ,14,(7),861	Jul 59	C.Hu+	E1940
p,x	^{10}Be	CS	2JPNLEP	1.2+10		Jour	PR/C,48,(6),2617	Dec 93	S.Shibata+	E1647
p,x	Many	CS	2JPNIRS	1.0+08	2.3+08	Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923
p,x	^{26}Al	CS	2JPNLEP	1.2+10		Jour	PR/C,48,(6),2617	Dec 93	S.Shibata+	E1647
α,x	Many	CS	2JPNIRS	4.0+08	9.2+08	Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923
$^{12}\text{C},x$	Many	CS	2JPNIRS	1.2+09	4.8+09	Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923
$^{20}\text{Ne},x$	Many	CS	2JPNIRS	2.0+09	8.0+09	Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923
$^{28}\text{Si},x$	Many	CS	2JPNIRS	2.2+10		Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923
$^{40}\text{Ar},x$	Many	CS	2JPNIRS	9.2+09	1.6+10	Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923

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Nickel

58

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,d</i>	⁵⁷ Ni	DAP	2JPNOSA	6.5+07		Jour	NP/A,343,234	Jul 80	K.Hosono+	E0247
<i>p,d</i>	⁵⁷ Ni	POD	2JPNOSA	6.5+07		Jour	NP/A,343,234	Jul 80	K.Hosono+	E0247

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Copper

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,x</i>	¹⁰ Be	CS	2JPNLEP	1.2+10		Jour	PR/C,48,(6),2617	Dec 93	S.Shibata+	E1647
¹² C,x	Many	CS	2JPNIRS	4.8+09		Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923
²⁰ Ne,x	Many	CS	2JPNIRS	8.0+09		Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923
²⁸ Si,x	Many	CS	2JPNIRS	2.2+10		Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923
⁴⁰ Ar,x	Many	CS	2JPNIRS	1.6+10		Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923

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Zinc

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	^{nat} Zn	DA	2JPNTOK	7.8+06	1.4+07	Jour	JPJ,14,(7),861	Jul 59	C.Hu+	E1940
<i>p,inel</i>	^{nat} Zn	DA	2JPNTOK	7.8+06	1.4+07	Jour	JPJ,14,(7),861	Jul 59	C.Hu+	E1940
<i>p,x</i>	¹⁰ Be	CS	2JPNLEP	1.2+10		Jour	PR/C,48,(6),2617	Dec 93	S.Shibata+	E1647
<i>p,x</i>	²⁶ Al	CS	2JPNLEP	1.2+10		Jour	PR/C,48,(6),2617	Dec 93	S.Shibata+	E1647
<i>p,x</i>	⁵² Mn	CS	2JPNTOH	5.5+07	6.7+07	Jour	ARI,62,(1),73	Jan 05	F.Tarkanyi+	E1921
<i>p,x</i>	⁵⁴ Mn	CS	2JPNTOH	5.5+07	6.7+07	Jour	ARI,62,(1),73	Jan 05	F.Tarkanyi+	E1921
<i>p,x</i>	⁵⁵ Co	CS	2JPNTOH	5.0+07	6.7+07	Jour	ARI,62,(1),73	Jan 05	F.Tarkanyi+	E1921
<i>p,x</i>	⁵⁶ Co	CS	2JPNTOH	3.3+07	6.7+07	Jour	ARI,62,(1),73	Jan 05	F.Tarkanyi+	E1921
<i>p,x</i>	⁵⁷ Co	CS	2JPNTOH	2.6+07	6.7+07	Jour	ARI,62,(1),73	Jan 05	F.Tarkanyi+	E1921
<i>p,x</i>	⁵⁸ Co	CS	2JPNTOH	2.6+07	6.7+07	Jour	ARI,62,(1),73	Jan 05	F.Tarkanyi+	E1921
<i>p,x</i>	⁶⁰ Co	CS	2JPNTOH	2.6+07	6.7+07	Jour	ARI,62,(1),73	Jan 05	F.Tarkanyi+	E1921
<i>p,x</i>	⁵⁷ Ni	CS	2JPNTOH	5.5+07	6.7+07	Jour	ARI,62,(1),73	Jan 05	F.Tarkanyi+	E1921
<i>p,x</i>	⁶⁴ Cu	CS	2JPNTOH	2.6+07	6.7+07	Jour	ARI,62,(1),73	Jan 05	F.Tarkanyi+	E1921
<i>p,x</i>	⁶² Zn	CS	2JPNTOH	2.6+07	6.7+07	Jour	ARI,62,(1),73	Jan 05	F.Tarkanyi+	E1921
<i>p,x</i>	⁶⁵ Zn	CS	2JPNTOH	2.6+07	6.7+07	Jour	ARI,62,(1),73	Jan 05	F.Tarkanyi+	E1921
<i>p,x</i>	⁶⁹ Zn	CS	2JPNTOH	2.6+07	6.7+07	Jour	ARI,62,(1),73	Jan 05	F.Tarkanyi+	E1921
<i>p,x</i>	⁶⁶ Ga	CS	2JPNTOH	2.6+07	6.7+07	Jour	ARI,62,(1),73	Jan 05	F.Tarkanyi+	E1921
<i>p,x</i>	⁶⁶ Ga	CS	3SAFITH	6.4+06	9.5+07	Jour	NIM/B,234,(4),375	Jul 05	F.Szelecsenyi+	E1935
<i>p,x</i>	⁶⁷ Ga	CS	2JPNTOH	2.6+07	6.7+07	Jour	ARI,62,(1),73	Jan 05	F.Tarkanyi+	E1921
<i>p,x</i>	⁶⁷ Ga	CS	3SAFITH	8.7+06	9.9+07	Jour	NIM/B,234,(4),375	Jul 05	F.Szelecsenyi+	E1935

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Zinc

66

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,n</i>	⁶⁶ Ga	CS	3SAFITH	2.5+07	1.0+08	Jour	NIM/B,234,(4),375	Jul 05	F.Szelecsenyi+	E1935

30

Zinc

68

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$p,2n$	^{67}Ga	CS	3SAFITH	2.5+07	9.9+07	Jour	NIM/B,234,(4),375	Jul 05	F.Szelecsenyi+	E1935
$p,3n$	^{66}Ga	CS	3SAFITH	2.5+07	9.9+07	Jour	NIM/B,234,(4),375	Jul 05	F.Szelecsenyi+	E1935

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Yttrium

89

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$p,2n$	^{88}Zr	CS	2JPNTOH	7.9+07	1.6+07	Jour	ARI,63,(3),367	Sep 05	M.S.Uddin+	E1934
$p,4n$	^{86}Zr	CS	2JPNTOH	7.9+07	4.4+07	Jour	ARI,63,(3),367	Sep 05	M.S.Uddin+	E1934
p,n	^{89}Zr	CS	2JPNTOH	7.9+07	1.6+07	Jour	ARI,63,(3),367	Sep 05	M.S.Uddin+	E1934
p,x	^{83}Rb	CS	2JPNTOH	7.9+07	4.9+07	Jour	ARI,63,(3),367	Sep 05	M.S.Uddin+	E1934
p,x	^{84}Rb	CS	2JPNTOH	7.9+07	3.8+07	Jour	ARI,63,(3),367	Sep 05	M.S.Uddin+	E1934
p,x	^{82}Sr	CS	2JPNTOH	7.9+07	5.9+07	Jour	ARI,63,(3),367	Sep 05	M.S.Uddin+	E1934
p,x	^{83}Sr	CS	2JPNTOH	7.9+07	4.9+07	Jour	ARI,63,(3),367	Sep 05	M.S.Uddin+	E1934
p,x	^{85}Sr	CS	2JPNTOH	7.9+07	2.6+07	Jour	ARI,63,(3),367	Sep 05	M.S.Uddin+	E1934
p,x	^{86}Y	CS	2JPNTOH	7.9+07	3.8+07	Jour	ARI,63,(3),367	Sep 05	M.S.Uddin+	E1934
p,x	^{87}Y	CS	2JPNTOH	7.9+07	3.8+07	Jour	ARI,63,(3),367	Sep 05	M.S.Uddin+	E1934
p,x	^{88}Y	CS	2JPNTOH	7.9+07	1.6+07	Jour	ARI,63,(3),367	Sep 05	M.S.Uddin+	E1934

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Zirconium

90

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p,d	^{89}Zr	DAP	2JPNOSA	6.5+07		Jour	NP/A,343,234	Jul 80	K.Hosono+	E0247
p,d	^{89}Zr	POD	2JPNOSA	6.5+07		Jour	NP/A,343,234	Jul 80	K.Hosono+	E0247

40

Zirconium

94

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p,d	^{93}Zr	DAP	2JPNOSA	6.5+07		Jour	NP/A,343,234	Jul 80	K.Hosono+	E0247
p,d	^{93}Zr	POD	2JPNOSA	6.5+07		Jour	NP/A,343,234	Jul 80	K.Hosono+	E0247

41

Niobium

93

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p,p	incl	DAE	2JPNOSA	3.0+08	3.9+08	Jour	PR/C,72,(1),014606	Jul 05	T.Kin+	E1936

47

Silver

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,x</i>	¹⁰ Be	CS	2JPNLEP	1.2+10		Jour	PR/C,48,(6),2617	Dec 93	S.Shibata+	E1647
<i>p,x</i>	²⁶ Al	CS	2JPNLEP	1.2+10		Jour	PR/C,48,(6),2617	Dec 93	S.Shibata+	E1647
<i>p,x</i>	⁹⁷ Ru	CS	2JPNTOH	5.5+07	7.8+07	Jour	ARI,62,(4),533	Apr 05	M.S.Uddin+	E1927
<i>p,x</i>	⁹⁹ Rh	CS	2JPNTOH	3.0+07	7.8+07	Jour	ARI,62,(4),533	Apr 05	M.S.Uddin+	E1927
<i>p,x</i>	¹⁰⁰ Rh	CS	2JPNTOH	4.7+07	7.8+07	Jour	ARI,62,(4),533	Apr 05	M.S.Uddin+	E1927
<i>p,x</i>	¹⁰¹ Rh	CS	2JPNTOH	2.9+07	7.8+07	Jour	ARI,62,(4),533	Apr 05	M.S.Uddin+	E1927
<i>p,x</i>	¹⁰² Rh	CS	2JPNTOH	3.0+07	7.8+07	Jour	ARI,62,(4),533	Apr 05	M.S.Uddin+	E1927
<i>p,x</i>	¹⁰⁵ Rh	CS	2JPNTOH	3.0+07	7.8+07	Jour	ARI,62,(4),533	Apr 05	M.S.Uddin+	E1927
<i>p,x</i>	¹⁰⁰ Pd	CS	2JPNTOH	3.0+07	7.8+07	Jour	ARI,62,(4),533	Apr 05	M.S.Uddin+	E1927
<i>p,x</i>	¹⁰¹ Pd	CS	2JPNTOH	3.9+07	7.8+07	Jour	ARI,62,(4),533	Apr 05	M.S.Uddin+	E1927
<i>p,x</i>	¹⁰³ Pd	CS	2JPNTOH	5.1+07	7.8+07	Jour	ARI,62,(4),533	Apr 05	M.S.Uddin+	E1927
<i>p,x</i>	¹⁰⁵ Ag	CS	2JPNTOH	1.1+07	7.8+07	Jour	ARI,62,(4),533	Apr 05	M.S.Uddin+	E1927
<i>p,x</i>	¹⁰⁶ Ag	CS	2JPNTOH	1.1+07	7.8+07	Jour	ARI,62,(4),533	Apr 05	M.S.Uddin+	E1927

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Platinum

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,x</i>	¹⁸⁸ Ir	CS	2JPNTOH	4.4+07	6.8+07	Jour	NIM/B,226,(4),473	Dec 04	F.Tarkanyi+	E1922
<i>p,x</i>	¹⁸⁹ Ir	CS	2JPNTOH	3.7+07	6.9+07	Jour	NIM/B,226,(4),473	Dec 04	F.Tarkanyi+	E1922
<i>p,x</i>	¹⁹⁰ Ir	CS	2JPNTOH	2.3+07	6.9+07	Jour	NIM/B,226,(4),473	Dec 04	F.Tarkanyi+	E1922
<i>p,x</i>	¹⁹² Ir	CS	2JPNTOH	1.6+07	6.9+07	Jour	NIM/B,226,(4),473	Dec 04	F.Tarkanyi+	E1922
<i>p,x</i>	¹⁹⁴ Ir	CS	2JPNTOH	3.0+07	6.9+07	Jour	NIM/B,226,(4),473	Dec 04	F.Tarkanyi+	E1922
<i>p,x</i>	¹⁸⁸ Pt	CS	2JPNTOH	4.8+07	6.9+07	Jour	NIM/B,226,(4),473	Dec 04	F.Tarkanyi+	E1922
<i>p,x</i>	¹⁸⁹ Pt	CS	2JPNTOH	4.2+07	6.9+07	Jour	NIM/B,226,(4),473	Dec 04	F.Tarkanyi+	E1922
<i>p,x</i>	¹⁹¹ Pt	CS	2JPNTOH	1.9+07	6.9+07	Jour	NIM/B,226,(4),473	Dec 04	F.Tarkanyi+	E1922
<i>p,x</i>	¹⁹⁵ Pt	CS	2JPNTOH	1.9+07	6.9+07	Jour	NIM/B,226,(4),473	Dec 04	F.Tarkanyi+	E1922
<i>p,x</i>	¹⁹¹ Au	CS	2JPNTOH	1.5+07	6.8+07	Jour	NIM/B,226,(4),473	Dec 04	F.Tarkanyi+	E1922
<i>p,x</i>	¹⁹² Au	CS	2JPNTOH	8.0+06	6.9+07	Jour	NIM/B,226,(4),473	Dec 04	F.Tarkanyi+	E1922
<i>p,x</i>	¹⁹³ Au	CS	2JPNTOH	1.1+07	6.9+07	Jour	NIM/B,226,(4),473	Dec 04	F.Tarkanyi+	E1922
<i>p,x</i>	¹⁹⁴ Au	CS	2JPNTOH	6.0+06	6.9+07	Jour	NIM/B,226,(4),473	Dec 04	F.Tarkanyi+	E1922
<i>p,x</i>	¹⁹⁵ Au	CS	2JPNTOH	8.0+06	6.9+07	Jour	NIM/B,226,(4),473	Dec 04	F.Tarkanyi+	E1922
<i>p,x</i>	¹⁹⁶ Au	CS	2JPNTOH	8.0+06	6.9+07	Jour	NIM/B,226,(4),473	Dec 04	F.Tarkanyi+	E1922

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Gold

197

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,x</i>	¹⁰ Be	CS	2JPNLEP	1.2+10		Jour	PR/C,48,(6),2617	Dec 93	S.Shibata+	E1647
<i>p,x</i>	²⁶ Al	CS	2JPNLEP	1.2+10		Jour	PR/C,48,(6),2617	Dec 93	S.Shibata+	E1647

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Lead

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,x</i>	Many	CS	2JPNIRS	1.0+08	2.3+08	Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923

α,x	Many	CS	2JPNIRS	4.0+08	9.2+08	Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923
$^{12}\text{C},x$	Many	CS	2JPNIRS	1.2+09	4.8+09	Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923
$^{20}\text{Ne},x$	Many	CS	2JPNIRS	2.0+09	8.0+09	Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923
$^{28}\text{Si},x$	Many	CS	2JPNIRS	2.2+10		Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923
$^{40}\text{Ar},x$	Many	CS	2JPNIRS	9.2+09	1.6+10	Jour	NIM/B,226,(3),243	Nov 04	H.Yashima+	E1923

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Lead

208

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
d,p	^{209}Pb	POD	2JPNTSU	2.0+07		Jour	NP/A,747,(1),3	Jan 05	M.Yamaguchi+	E1925