

## Japan Charged-Particle Nuclear Reaction Data Group (JCPRG)

### EXFOR : Recent Compilation List (Added in Feb 2005)

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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					
$\pi^-$ ,el	$^1\text{H}$	DA	2JPNKEK	0.0+00		Jour	PR/C,64,(3),034608	Sep 01	Y.Fujii+	J1751
$\alpha$ ,sct	$^1\text{H}$	?	2JPNTOH	1.5+06	1.9+06	Jour	NIM/B,6,(3),533	Feb 85	S.Nagata+	E1862
$\alpha$ ,sct	$^1\text{H}$	?	2JPNTOH	1.9+06	3.0+06	Jour	NIM,218,(1-3),598	Dec 83	S.Yamaguchi+	E1861
$\alpha$ ,sct	$^1\text{H}$	?	2JPNTOH	2.0+06	3.0+06	Jour	NIM/B,6,(3),533	Feb 85	S.Nagata+	E1862
$\alpha$ ,sct	$^1\text{H}$	?	2JPNTOH	2.4+06	3.0+06	Jour	NIM,218,(1-3),598	Dec 83	S.Yamaguchi+	E1861
$\alpha$ ,sct	$^1\text{H}$	?	2JPNTOH	2.4+06	3.0+06	Jour	NIM/B,6,(3),533	Feb 85	S.Nagata+	E1862
$^8\text{He}$ ,2p	$^7\text{H}$	DE	2JPNIPC	4.9+08		Jour	PRL,90,(8),082501	Feb 03	A.A.Korsheninnikov+	E1815
$^8\text{He}$ ,t	$^6\text{He}$	DAP	2JPNIPC	4.9+08		Jour	PRL,90,(8),082501	Feb 03	A.A.Korsheninnikov+	E1815
$^{11}\text{C}$ ,el	$^1\text{H}$	DA	2JPNIPC	3.1+05	3.0+06	Jour	PL/B,556,(1-2),27	Mar 03	T.Teranishi+	E1803
$^{11}\text{C}$ ,tot		RP	2JPNIPC	2.5+06	3.0+06	Jour	PL/B,556,(1-2),27	Mar 03	T.Teranishi+	E1803
$^{17}\text{O}$ ,el	$^1\text{H}$	DA	1USAORL	4.4+05	1.3+06	Jour	NIM/B,172,647	00	A.Galindo-Uribarri+	C1139
$^{17}\text{F}$ ,el	$^1\text{H}$	DA	1USAORL	4.5+05	1.6+06	Jour	NIM/B,172,647	00	A.Galindo-Uribarri+	C1139
$^{17}\text{F}$ ,inel	$^1\text{H}$	?	1USAORL	2.1+06	2.4+06	Jour	NP/A,718,127	03	J.C.Blackmon+	C1138
$^{17}\text{F}$ ,inel	$^1\text{H}$	?	1USAORL	4.4+07		Jour	PRL,86,43	Jan 01	J.Gomezdelcampo+	C0988
$^{17}\text{F}$ ,X+p	$^1\text{H}$	?	1USAORL	3.3+07	4.4+07	Jour	PRL,86,43	Jan 01	J.Gomezdelcampo+	C0988
$^{18}\text{F}$ , $\alpha$	$^{15}\text{O}$	?	1USAORL	3.2+02	3.7+02	Jour	NP/A,718,590	03	D.W.Bardayan+	C1141
$^{18}\text{F}$ ,el	$^1\text{H}$	?	1USAORL	5.4+05	7.3+05	Jour	PR/C,62,042802	Oct 00	D.W.Bardayan+	C1048
$^{56}\text{Fe}$ ,x	Many	CS	2GERGSI	9.7+08		Prog	GSI-2004-13	Jun 04	P.Napolitani+	O1176
$^{208}\text{Pb}$ ,x	Many	CS	2GERGSI	2.1+08		Prog	GSI-2004-19	Jul 04	A.Kelic+	O1183

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## Hydrogen

2

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
n,el	$^2\text{H}$	POD	1USAINU	1.9+08		Jour	NP/A,663,545	Jan 00	B.D.Anderson+	13953
$\pi^-$ , $\pi^-$	incl	DAE	2JPNKEK	0.0+00		Jour	PR/C,64,(3),034608	Sep 01	Y.Fujii+	J1751
p,el	$^2\text{H}$	DA	2NEDGRN	1.1+08	1.9+08	Jour	PR/C,68,051001	03	K.Ermisch+	O1172
p,el	$^2\text{H}$	DA	1USACLA	2.1+07		Jour	PR,98,28	Apr 55	D.O.Caldwell+	C1053
p,el	$^2\text{H}$	DA	2JPNOSA	2.5+08		Jour	PR/C,66,(4),044002	Oct 02	K.Hatanaka+	E1801
p,el	$^2\text{H}$	DA	1USAMIN	4.0+07		Jour	PR,110,136	Apr 58	J.H.Williams+	C1055
p,el	$^2\text{H}$	POD	2NEDGRN	1.1+08	1.9+08	Jour	PR/C,68,051001	03	K.Ermisch+	O1172
p,el	$^2\text{H}$	POD	1USALAS	1.4+07		Jour	PRL,8,379	May 62	L.Rosen+	C1099
p,el	$^2\text{H}$	POD	2JPNOSA	2.5+08		Jour	PR/C,66,(4),044002	Oct 02	K.Hatanaka+	E1801
p,el	$^2\text{H}$	POD	1USALAS	8.0+08		Jour	NP/A,480,530	Apr 88	D.L.Adams+	C0786
d,n	$^3\text{He}$	DA	2GERBOC	1.5+04	1.3+05	Jour	ZP/A,351,107	95	U.Greife+	O1171
d,n	$^3\text{He}$	DA	2JPNKYU	2.0+06		Jour	JPJ,12,(8),841	Aug 57	I.Nonaka+	E1870
d,n	$^3\text{He}$	?	2GERBOC	2.4+03	1.3+05	Jour	ZP/A,351,107	95	U.Greife+	O1171
d,p	$^3\text{H}$	CS	2GERBOC	1.6+03	1.3+05	Jour	ZP/A,351,107	95	U.Greife+	O1171
d,p	$^3\text{H}$	DA	2GERBOC	1.5+04	1.3+05	Jour	ZP/A,351,107	95	U.Greife+	O1171
$\alpha$ ,sct	$^2\text{H}$	?	2JPNTOH	2.0+06	3.0+06	Jour	NIM/B,6,(3),533	Feb 85	S.Nagata+	E1862
$^8\text{Li}$ ,t	$^7\text{Li}$	DAP	1USANOT	1.4+07		Jour	PR/C,48,308	Jul 93	F.D.Becchetti+	C1096
$^{18}\text{F}$ ,p	$^{19}\text{F}$	DAP	2BLGLEU	1.4+07		Jour	PR/C,67,052801	03	N.Desereville+	O0790
$^{208}\text{Pb}$ ,x	Many	CS	2GERGSI	2.1+08		Prog	GSI-2004-19	Jul 04	A.Kelic+	O1183

**1    Hydrogen    3**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	<sup>3</sup> H	POD	1USALAS	1.4+07		Jour	PRL,8,379	May 62	L.Rosen+	C1099
<i>α,γ</i>	<sup>7</sup> Li	CS	2JPNTSU	1.0+05	5.0+05	Jour	PR/C,63,(3),035801	Mar 01	Y.Tokimoto+	E1748

**2    Helium    3**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,p</i>	<sup>3</sup> H	DA	1CANTMF	2.9+08		Jour	PR/C,47,1563	Apr 93	A.Celler+	13950
<i>n,p</i>	<sup>3</sup> H	DAE	1CANTMF	2.9+08		Jour	PR/C,47,1563	Apr 93	A.Celler+	13950
<i>p,el</i>	<sup>3</sup> He	POD	1USALAS	1.4+07		Jour	PRL,8,379	May 62	L.Rosen+	C1099
<i>d,p</i>	<sup>4</sup> He	DA	1USATNL	5.2+05	1.5+06	Jour	PR/C,69,024708	04	B.Braizinha+	C0978
<i>d,p</i>	<sup>4</sup> He	POD	1USATNL	5.2+05	1.5+06	Jour	PR/C,69,024708	04	B.Braizinha+	C0978

**2    Helium    4**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	<sup>4</sup> He	DA	1USABRK	3.1+08		Jour	PR,102,1659	May 56	O.Chamberlain+	C1085
<i>p,el</i>	<sup>4</sup> He	POD	1USALAS	1.4+07		Jour	PRL,8,379	May 62	L.Rosen+	C1099
<i>p,el</i>	<sup>4</sup> He	POD	1USABRK	3.1+08		Jour	PR,102,1659	May 56	O.Chamberlain+	C1085
<i>d,el</i>	<sup>4</sup> He	DA	1USAANL	2.1+07		Jour	PR,135,B678	Aug 64	H.W.Broek+	C1060
<i>d,p</i>	<sup>5</sup> He	DA	1USAANL	2.1+07		Jour	PR,135,B678	Aug 64	H.W.Broek+	C1060

**3    Lithium    6**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,2p</i>	<sup>5</sup> He	D4A	2JPNOSA	3.9+08		Jour	PRL,78,(6),1014	Feb 97	K.Hatanaka+	E1681
<i>p,2p</i>	<sup>5</sup> He	POD	2JPNOSA	3.9+08		Jour	PRL,78,(6),1014	Feb 97	K.Hatanaka+	E1681
<i>p,el</i>	<sup>6</sup> Li	POD	1USALAS	1.4+07		Jour	PRL,8,379	May 62	L.Rosen+	C1099
<i>p,γ</i>	<sup>7</sup> Be	DAP	1USANGC	9.5+04	1.3+05	Jour	PR/C,70,055801	04	R.M.Prior+	C1136
<i>p,γ</i>	<sup>7</sup> Be	POD	1USANGC	1.1+05	1.3+05	Jour	PR/C,70,055801	04	R.M.Prior+	C1136
<i>p,inel</i>	<sup>6</sup> Li	DAE	3INDVEC	5.0+07		Jour	PR/C,45,1757	92	C.Samanta+	O1173
<i>p,inel</i>	<sup>6</sup> Li	DAP	3INDVEC	5.0+07		Jour	PR/C,45,1757	92	C.Samanta+	O1173
<i>α,d+α</i>	<sup>4</sup> He	DA	3INDVEC	5.0+07		Jour	PR/C,45,1757	92	C.Samanta+	O1173
<i>α,el</i>	<sup>6</sup> Li	DA	1USAMIT	3.2+07		Jour	PR,103,1763	Sep 56	H.J.Watters	C0918
<i>α,el</i>	<sup>6</sup> Li	DA	3INDVEC	5.0+07		Jour	PR/C,45,1757	92	C.Samanta+	O1173
<i>α,inel</i>	<sup>6</sup> Li	DAP	1USAMIT	3.2+07		Jour	PR,103,1763	Sep 56	H.J.Watters	C0918
<i>α,inel</i>	<sup>6</sup> Li	DAP	3INDVEC	5.0+07		Jour	PR/C,45,1757	92	C.Samanta+	O1173

**3    Lithium    7**

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

$p,\alpha$	$^4\text{He}$	DA	2JPNNAG	9.3+05	1.5+06	Jour	NIM/B,34,(4),465	Oct 88	A.Sagara+	E1863
$p,\text{el}$	$^7\text{Li}$	POD	1USALAS	1.4+07		Jour	PRL,8,379	May 62	L.Rosen+	C1099
$p,n$	$^7\text{Be}$	DAP	2JPNJAE	4.3+07	8.7+07	Jour	NIM/A,428,(2-3),454	Jun 99	M.Baba+	E1808
$d,p$	$^8\text{Li}$	CS	3ISLWZI	7.8+05		Jour	NP/A,630,678	98	L.Weissman+	O0796

## 4

## Beryllium

## 9

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$p,\text{el}$	$^9\text{Be}$	DA	1USABRK	3.2+08		Jour	PR,102,1659	May 56	O.Chamberlain+	C1085
$p,\text{el}$	$^9\text{Be}$	POD	1USABRK	3.2+08		Jour	PR,102,1659	May 56	O.Chamberlain+	C1085
$\alpha,2\alpha$	$^5\text{He}$	D3A	1USAMHD	5.8+08		Jour	PR/C,59,760	Feb 99	A.Nadasen+	C1097
$^8\text{Li},^7\text{Li}$	$^{10}\text{Be}$	DAP	1USANOT	1.4+07		Jour	PR/C,48,308	Jul 93	F.D.Becchetti+	C1096
$^8\text{Li},\alpha$	$^{13}\text{B}$	DAP	1USANOT	1.4+07		Jour	PR/C,48,308	Jul 93	F.D.Becchetti+	C1096
$^8\text{Li},\text{el}$	$^9\text{Be}$	DA	1USANOT	1.4+07		Jour	PR/C,48,308	Jul 93	F.D.Becchetti+	C1096
$^{17}\text{Ne},x$	$^{15}\text{O}$	CS	2JPNIPC	1.1+09		Jour	PL/B,571,(1-2),21	Oct 03	R.Kanungo+	E1818
$^{17}\text{Ne},x$	$^{15}\text{O}$	DP	2JPNIPC	1.1+09		Jour	PL/B,571,(1-2),21	Oct 03	R.Kanungo+	E1818
$^{40}\text{Ar},x$	Many	CS	2JPNIPC	3.8+09		Jour	PR/C,67,(1),014610	Jan 03	A.Ozawa+	E1814

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## Boron

## 11

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$p,\gamma$	$^{12}\text{C}$	CSP	3INDTRM	7.3+06	2.4+07	Jour	PR/C,69,021602	04	D.R.Chakrabarty+	O1163

## 6

## Carbon

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$p,\text{el}$	$^{nat}\text{C}$	DA	1USABRK	2.9+08	3.1+08	Jour	PR,102,1659	May 56	O.Chamberlain+	C1085
$p,\text{el}$	$^{nat}\text{C}$	DA	1USAHRV	9.2+07	1.0+08	Jour	PR,108,4271	Jul 57	G.Gerstein+	C1089
$p,\text{el}$	$^{nat}\text{C}$	POD	1USABRK	2.9+08	3.1+08	Jour	PR,102,1659	May 56	O.Chamberlain+	C1085
$p,\gamma$	incl	CSP	1USAINU	1.4+08		Jour	PR/C,45,1815	Apr 92	J.Clayton+	C1098
$p,\gamma$	incl	DAE	1USAINU	1.0+08	1.4+08	Jour	PR/C,45,1815	Apr 92	J.Clayton+	C1098
$p,\gamma$	incl	DAP	1USAINU	1.0+08	1.4+08	Jour	PR/C,45,1815	Apr 92	J.Clayton+	C1098
$\alpha,\text{el}$	$^{nat}\text{C}$	DA	1USABNL	4.0+07		Jour	PR,101,1508	Mar 56	G.Igo+	C1084

## 6

## Carbon

## 12

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$n,\text{el}$	$^{12}\text{C}$	DA	1USALAS	6.5+07	2.2+08	Jour	PR/C,70,054613	Nov 04	J.H.Osborne+	13946
$n,x$	$^7\text{Be}$	CS	1USAWAU	3.3+07	4.2+07	Thes	HOWER	62	C.O.Hower	C0980
$\pi^-, \text{el}$	$^{12}\text{C}$	DA	2JPNLEP	0.0+00		Jour	PR/C,51,(5),2542	May 95	T.Takahashi+	J1653
$K^-, K^+$	incl	DAE	2JPNKEK	0.0+00		Jour	NP/A,644,(4),365	Dec 98	S.Aoki+	J1717
$\pi^-, \pi^-$	incl	DAE	2JPNKEK	0.0+00		Jour	PR/C,64,(3),034608	Sep 01	Y.Fujii+	J1751
$\pi^-, \text{tot}$		CS	2JPNLEP	0.0+00		Jour	PR/C,51,(5),2542	May 95	T.Takahashi+	J1653
$p,2p$	$^{11}\text{B}$	D3A	2JPNOSA	3.9+08		Jour	PL/B,551,(3-4),255	Jan 03	M.Yosoi+	E1819

<i>p,2p</i>	<sup>11</sup> B	D4A	2JPNOSA	3.9+08		Jour	PRL,78,(6),1014	Feb 97	K.Hatanaka+	E1681
<i>p,2p</i>	<sup>11</sup> B	D4A	2JPNOSA	3.9+08		Jour	PL/B,551,(3-4),255	Jan 03	M.Yosoi+	E1819
<i>p,2p</i>	<sup>11</sup> B	POD	2JPNOSA	3.9+08		Jour	PRL,78,(6),1014	Feb 97	K.Hatanaka+	E1681
<i>p,el</i>	<sup>12</sup> C	POD	1USALAS	1.4+07		Jour	PRL,8,379	May 62	L.Rosen+	C1099
<i>p,inel</i>	<sup>12</sup> C	CSP	2FR CSN	8.4+06	2.0+07	Jour	PR/C,58,2174	98	J.Kiener+	O0787
<i>p,inel</i>	<sup>12</sup> C	DAE	2JPNOSA	3.0+08		Jour	PR/C,64,(1),011601	Jul 01	Y.Uozumi+	E1811
<i>p,inel</i>	<sup>12</sup> C	DAE	2JPNOSA	3.9+08		Jour	PL/B,459,(1-3),61	Jul 99	A.Tamii+	E1807
<i>p,inel</i>	<sup>12</sup> C	DAP	2FR CSN	8.4+06	2.0+07	Jour	PR/C,58,2174	98	J.Kiener+	O0787
<i>p,inel</i>	<sup>12</sup> C	POD	2JPNOSA	3.9+08		Jour	PL/B,459,(1-3),61	Jul 99	A.Tamii+	E1807
<i>p,inel</i>	<sup>12</sup> C	?	2JPNOSA	3.9+08		Jour	PL/B,459,(1-3),61	Jul 99	A.Tamii+	E1807
<i>p,n</i>	incl	TTD	2JPNTOH	5.0+07		Jour	NSE,146,(2),200	Feb 04	T.Aoki+	E1856
<i>d,el</i>	<sup>12</sup> C	DA	2JPNIPC	2.7+08		Jour	PL/B,549,(3-4),307	Dec 02	Y.Satou+	E1817
<i>d,el</i>	<sup>12</sup> C	DA	1USAORL	3.4+07		Jour	NP/A,100,225	67	E.Newman+	C1067
<i>d,el</i>	<sup>12</sup> C	POD	2JPNIPC	2.7+08		Jour	PL/B,549,(3-4),307	Dec 02	Y.Satou+	E1817
<i>d,<sup>2</sup>He</i>	<sup>12</sup> B	DAE	2JPNIPC	2.7+08		Jour	PR/C,66,(5),054602	Nov 02	H.Okamura+	E1804
<i>d,<sup>2</sup>He</i>	<sup>12</sup> B	POD	2JPNIPC	2.7+08		Jour	PR/C,66,(5),054602	Nov 02	H.Okamura+	E1804
<i>d,inel</i>	<sup>12</sup> C	DAP	2JPNIPC	2.7+08		Jour	PL/B,549,(3-4),307	Dec 02	Y.Satou+	E1817
<i>d,inel</i>	<sup>12</sup> C	POD	2JPNIPC	2.7+08		Jour	PL/B,549,(3-4),307	Dec 02	Y.Satou+	E1817
<i>t,el</i>	<sup>12</sup> C	DA	2UK UK	3.6+07		Jour	JP/G,12,979	86	K.I.Pearce+	O1185
<i>α,2α</i>	<sup>8</sup> Be	D3A	1USAMHD	5.8+08		Jour	PR/C,59,760	Feb 99	A.Nadasen+	C1097
<i>α,d</i>	incl	PY	2JPNIRS	4.0+08		Jour	NIM/A,430,(2-3),400	Jul 99	T.Kurosawa+	E1809
<i>α,el</i>	<sup>12</sup> C	DA	1USAMRD	1.4+08		Jour	NP/A,207,273	Mar 73	S.M.Smith+	C1080
<i>α,el</i>	<sup>12</sup> C	DA	1USATAM	2.4+08		Jour	PR/C,68,014305	03	B.John+	C1109
<i>α,el</i>	<sup>12</sup> C	DA	1USAMIT	3.2+07		Jour	PR,103,1763	Sep 56	H.J.Watters	C0918
<i>α,<sup>3</sup>He</i>	<sup>13</sup> C	DAP	1USAMRD	1.4+08		Jour	NP/A,207,273	Mar 73	S.M.Smith+	C1080
<i>α,inel</i>	<sup>12</sup> C	DAP	1USAMRD	1.4+08		Jour	NP/A,207,273	Mar 73	S.M.Smith+	C1080
<i>α,inel</i>	<sup>12</sup> C	DAP	1USATAM	1.7+08	2.4+08	Jour	PR/C,68,014305	03	B.John+	C1109
<i>α,inel</i>	<sup>12</sup> C	DAP	1USAMIT	3.2+07		Jour	PR,103,1763	Sep 56	H.J.Watters	C0918
<i>α,n</i>	incl	PY	2JPNIRS	4.0+08	7.2+08	Jour	NSE,132,(1),30	May 99	T.Kurosawa+	E1810
<i>α,p</i>	incl	PY	2JPNIRS	4.0+08		Jour	NIM/A,430,(2-3),400	Jul 99	T.Kurosawa+	E1809
<i>α,t</i>	incl	PY	2JPNIRS	4.0+08		Jour	NIM/A,430,(2-3),400	Jul 99	T.Kurosawa+	E1809
<sup>8</sup> Li, <sup>7</sup> Li	<sup>13</sup> C	DAP	1USANOT	1.4+07		Jour	PR/C,48,308	Jul 93	F.D.Becchetti+	C1096
<sup>8</sup> Li, <sup>α</sup>	<sup>16</sup> N	DAP	1USANOT	1.4+07		Jour	PR/C,48,308	Jul 93	F.D.Becchetti+	C1096
<sup>8</sup> Li,el	<sup>12</sup> C	DA	1USANOT	1.4+07		Jour	PR/C,48,308	Jul 93	F.D.Becchetti+	C1096
<sup>12</sup> C, <i>n</i>	incl	PY	2JPNIRS	1.2+09	4.8+09	Jour	NSE,132,(1),30	May 99	T.Kurosawa+	E1810

## 6

## Carbon

## 13

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,p</i>	<sup>13</sup> B	DAP	1USAINU	1.2+08		Jour	PR/C,54,2767	Nov 96	C.J.Martoff+	13951
<i>p,el</i>	<sup>13</sup> C	POD	1USALAS	1.4+07		Jour	PRL,8,379	May 62	L.Rosen+	C1099
<sup>6</sup> Li, <i>d</i>	<sup>17</sup> O	DAP	2JPNTOK	6.0+07		Jour	PRL,90,(6),062501	Feb 03	S.Kubono+	E1802
<sup>8</sup> Li, <sup>7</sup> Li	<sup>14</sup> C	DAP	1USANOT	1.4+07		Jour	PR/C,48,308	Jul 93	F.D.Becchetti+	C1096
<sup>8</sup> Li,el	<sup>13</sup> C	DA	1USANOT	1.4+07		Jour	PR/C,48,308	Jul 93	F.D.Becchetti+	C1096

## 7

## Nitrogen

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,x</i>	<sup>7</sup> Be	CS	1USAWAU	3.1+07	3.8+07	Thes	HOWER	62	C.O.Hower	C0980

7

## Nitrogen

14

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>d,n</i>	<sup>15</sup> O	CS	2JPNKYU	1.5+06	2.9+06	Jour	JPJ,15,(12),2170	Dec 60	S.Morita+	E1869
<i>d,n</i>	<sup>15</sup> O	CS	2JPNKYU	2.0+06		Jour	JPJ,12,(8),841	Aug 57	I.Nonaka+	E1870
<i>d,n</i>	<sup>15</sup> O	DA	2JPNKYU	1.5+06	2.0+06	Jour	JPJ,15,(12),2170	Dec 60	S.Morita+	E1869
<i>d,n</i>	<sup>15</sup> O	DA	2JPNKYU	2.0+06		Jour	JPJ,12,(8),841	Aug 57	I.Nonaka+	E1870
<i>d,n</i>	<sup>15</sup> O	DA	2JPNKYU	2.2+06	2.9+06	Jour	JPJ,15,(12),2170	Dec 60	S.Morita+	E1869
<sup>8</sup> Li,el	<sup>14</sup> N	DA	1USANOT	1.4+07		Jour	PR/C,48,308	Jul 93	F.D.Becchetti+	C1096
<sup>17</sup> F, <sup>13</sup> C	<sup>18</sup> Ne	DAP	1USAORL	1.7+08		Jour	NP/A,746,365	04	J.C.Blackmona+	C1137
<sup>17</sup> F,el	<sup>14</sup> N	DA	1USAORL	1.7+08		Jour	NP/A,746,365	04	J.C.Blackmona+	C1137

8

## Oxygen

16

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,x</i>	<sup>7</sup> Be	CS	1USAWAU	3.0+07	4.2+07	Thes	HOWER	62	C.O.Hower	C0980
<i>p,inel</i>	<sup>16</sup> O	CSP	2FR CSN	8.4+06	2.0+07	Jour	PR/C,58,2174	98	J.Kiener+	O0787
<i>p,inel</i>	<sup>16</sup> O	DAP	2FR CSN	8.4+06	2.0+07	Jour	PR/C,58,2174	98	J.Kiener+	O0787
<i>d,el</i>	<sup>16</sup> O	DA	1USAORL	3.4+07		Jour	NP/A,100,225	67	E.Newman+	C1067
<i>d,el</i>	<sup>16</sup> O	DA	2JPNOSA	5.6+07		Jour	NP/A,340,(1),93	May 80	K.Hatanaka+	E0682
<i>d,el</i>	<sup>16</sup> O	DA	1USANOT	9.3+06	1.3+07	Jour	NP/A,188,164	72	K.W.Corrigan+	C1069
<i>d,el</i>	<sup>16</sup> O	POD	2JPNOSA	5.6+07		Jour	NP/A,340,(1),93	May 80	K.Hatanaka+	E0682
<i>d,el</i>	<sup>16</sup> O	POD	1USANOT	9.3+06	1.3+07	Jour	NP/A,188,164	72	K.W.Corrigan+	C1069
<i>d,p</i>	<sup>17</sup> O	DAP	1USANOT	9.3+06	1.3+07	Jour	NP/A,188,164	72	K.W.Corrigan+	C1069
<i>d,p</i>	<sup>17</sup> O	POD	1USANOT	9.3+06	1.3+07	Jour	NP/A,188,164	72	K.W.Corrigan+	C1069
<i>t,el</i>	<sup>16</sup> O	DA	2UK UK	3.6+07		Jour	JP/G,12,979	86	K.I.Pearce+	O1185
<sup>3</sup> He,x	<sup>18</sup> F	CS	2JPNIPC	3.3+06	4.1+07	Jour	ARI,25,(9),393	74	T.Nozaki+	E1871
$\alpha$ ,el	<sup>16</sup> O	DA	1USATAM	2.4+08		Jour	PR/C,64,064308	01	Y.W.Lui+	C1112
$\alpha$ ,inel	<sup>16</sup> O	DAP	1USATAM	2.4+08		Jour	PR/C,64,064308	01	Y.W.Lui+	C1112
$\alpha$ ,x	<sup>18</sup> F	CS	2JPNIPC	2.3+07	4.2+07	Jour	ARI,25,(9),393	74	T.Nozaki+	E1871

8

## Oxygen

18

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>d,n</i>	<sup>19</sup> F	DAP	2JPNTOH	2.5+07		Jour	PR/C,66,(6),064313	Dec 02	A.Terakawa+	E1805

9

## Fluorine

17

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,<math>\alpha</math></i>	<sup>14</sup> O	CS	1USAHRV	3.1+06	3.9+06	Jour	PR/C,65,035803	Feb 02	B.Harss+	C1119
<i>p,el</i>	<sup>17</sup> F	DA	1USAHRV	3.3+06	4.2+06	Jour	PR/C,65,035803	Feb 02	B.Harss+	C1119
<i>p,inel</i>	<sup>17</sup> F	DAP	1USAHRV	3.1+06	3.9+06	Jour	PR/C,65,035803	Feb 02	B.Harss+	C1119

**9 Fluorine 18**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,0</i>	RP	1USAORL	0.0+00		Jour	PR/C,63,065802	01	D.W.Bardayan+	C0868	
<i>p,0</i>	RP	1USAORL	0.0+00		Jour	PR/C,62,042802	Oct 00	D.W.Bardayan+	C1048	
<i>p,α</i>	RP	1USAORL	3.3+05		Jour	NP/A,718,590	03	D.W.Bardayan+	C1141	
<i>p,α</i>	RP	1USAORL	8.3+05	1.1+06	Jour	PR/C,70,015804	04	D.W.Bardayan+	C1134	
<i>p,el</i>	RP	1USAORL	8.3+05	1.1+06	Jour	PR/C,70,015804	04	D.W.Bardayan+	C1134	
<i>p,γ</i>	RP	1USAORL	1.1+06		Jour	PR/C,70,015804	04	D.W.Bardayan+	C1134	

**9 Fluorine 19**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,x</i>	<sup>7</sup> Be	CS	1USAWAU	3.1+07	4.2+07	Thes	HOWER	62	C.O.Hower	C0980
<i>p,α</i>	<sup>16</sup> O	DA	2JPNOK	6.3+05	1.6+06	Jour	NP,7,(2),116	Jun 58	A.Isoya+	E1859
<i>d,α</i>	<sup>17</sup> O	CSP	2JPNKTO	1.5+07		Jour	JPJ,17,(6),896	Jun 62	K.Takamatsu	E1872
<i>d,α</i>	<sup>17</sup> O	DAP	2JPNKTO	1.5+07		Jour	JPJ,17,(6),896	Jun 62	K.Takamatsu	E1872
<i>α,n</i>	<sup>22</sup> Na	CS	1USACAL	2.3+06	3.1+06	Jour	PR/C,62,055805	Nov 00	P.R.Wrean+	C1049

**10 Neon**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,x</i>	<sup>7</sup> Be	CS	1USAWAU	3.0+07	3.8+07	Thes	HOWER	62	C.O.Hower	C0980

**10 Neon 20**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,p</i>	<sup>20</sup> F	DAP	1CANTMF	3.0+08		Jour	PR/C,60,067601	Oct 99	M.C.Munro+	13948
<i>d,α</i>	<sup>18</sup> F	CSP	2JPNKTO	1.4+07		Jour	JPJ,17,(6),896	Jun 62	K.Takamatsu	E1872
<i>d,α</i>	<sup>18</sup> F	DAP	2JPNKTO	1.4+07		Jour	JPJ,17,(6),896	Jun 62	K.Takamatsu	E1872
<i>d,x</i>	<sup>18</sup> F	CS	2JPNIPC	1.4+06	2.0+07	Jour	ARI,25,(9),393	74	T.Nozaki+	E1871
<sup>3</sup> He,x	<sup>18</sup> F	CS	2JPNIPC	5.1+06	4.1+07	Jour	ARI,25,(9),393	74	T.Nozaki+	E1871

**10 Neon 22**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,n</i>	<sup>22</sup> Na	CS	1USACAL	3.7+06	5.4+06	Jour	PR/C,62,055805	Nov 00	P.R.Wrean+	C1049
<i>t,<sup>3</sup>He</i>	<sup>22</sup> F	DAP	2UK UK	3.3+07		Jour	JP/G,14,1399	88	N.M.Clarke+	O1186

**11 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	PR/C,69,065803	04	J.M.D'Auria+	C1044

**11 Sodium 23**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$n,p$	$^{23}\text{Ne}$	DAP	1CANTMF	2.0+08		Jour	PR/C,52,1488	Apr 95	B.Siebels+	13613
$p,n$	incl	DAE	4RUSITE	8.0+08		Prog	ITEF-3-03	03	Yu.V.Trebukhovsky+	O1170
$^3\text{He},d$	$^{24}\text{Mg}$	DAP	1USATNL	2.0+07		Jour	PR/C,70,045802	04	S.E.Hale+	C1135
$^3\text{He},el$	$^{23}\text{Na}$	DA	1USATNL	2.0+07		Jour	PR/C,70,045802	04	S.E.Hale+	C1135

**12 Magnesium**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$d,el$	$^{nat}\text{Mg}$	DA	1USAANL	2.2+07		Jour	PR,113,261	Jan 59	J.L.Yntema	C1056

**12 Magnesium 24**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$d,\alpha$	$^{22}\text{Na}$	CSP	2JPNKTO	1.5+07		Jour	JPJ,17,(6),896	Jun 62	K.Takamatsu	E1872
$d,el$	$^{24}\text{Mg}$	DA	2JPNOSA	5.6+07		Jour	NP/A,340,(1),93	May 80	K.Hatanaka+	E0682
$d,el$	$^{24}\text{Mg}$	POD	2JPNOSA	5.6+07		Jour	NP/A,340,(1),93	May 80	K.Hatanaka+	E0682
$t,\alpha$	$^{23}\text{Na}$	DAP	2UK UK	3.3+07		Jour	JP/G,14,629	88	M.C.Mannion+	O1187
$t,el$	$^{24}\text{Mg}$	DA	2UK UK	3.3+07		Jour	JP/G,14,629	88	M.C.Mannion+	O1187
$t,inel$	$^{24}\text{Mg}$	DAP	2UK UK	3.3+07		Jour	JP/G,14,629	88	M.C.Mannion+	O1187
$\alpha,el$	$^{24}\text{Mg}$	DA	1USAMIT	3.2+07		Jour	PR,103,1763	Sep 56	H.J.Watters	C0918
$\alpha,inel$	$^{24}\text{Mg}$	DAP	1USAMIT	3.2+07		Jour	PR,103,1763	Sep 56	H.J.Watters	C0918

**12 Magnesium 26**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$t,el$	$^{26}\text{Mg}$	DA	2UK UK	3.6+07		Jour	JP/G,12,979	86	K.I.Pearce+	O1185

**13 Aluminium 27**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$n,\gamma$	$^{28}\text{Al}$	SPC	1USABNL	Maxwl		Jour	NIM,155,253	Mar 78	M.L.Stelts+	13945
$n,x$	$^7\text{Be}$	CS	1USAWAU	4.2+07		Thes	HOWER	62	C.O.Hower	C0980



$K^- , K^+$	incl	DAE	2JPNKEK	0.0+00		Jour	NP/A,644,(4),365	Dec 98	S.Aoki+	J1717
$p, \alpha$	$^{24}\text{Mg}$	DA	2JPNTOK	1.2+06		Jour	JPJ,20,(5),669	May 65	T.Awaya	E1860
$p, el$		RP	2JPNTOK	1.1+06	1.2+06	Jour	JPJ,20,(5),669	May 65	T.Awaya	E1860
$p, el$	$^{27}\text{Al}$	DA	1USABRK	2.9+08		Jour	PR,102,1659	May 56	O.Chamberlain+	C1085
$p, el$	$^{27}\text{Al}$	DA	1USAHRV	9.3+07	9.6+07	Jour	PR,108,4271	Jul 57	G.Gerstein+	C1089
$p, el$	$^{27}\text{Al}$	POD	1USABRK	2.9+08		Jour	PR,102,1659	May 56	O.Chamberlain+	C1085
$p, n$	incl	DAE	4RUSITE	1.0+09	1.6+09	Prog	ITEF-3-03	03	Yu.V.Trebukhovsky+	O1170
$p, n$	incl	TTD	2JPNTOH	5.0+07		Jour	NSE,146,(2),200	Feb 04	T.Aoki+	E1856
$p, n$	$^{27}\text{Si}$	DAE	2JPNOSA	3.0+08		Jour	PL/B,426,(3-4),257	May 98	T.Wakasa+	E1857
$p, n$	$^{27}\text{Si}$	POD	2JPNOSA	3.0+08		Jour	PL/B,426,(3-4),257	May 98	T.Wakasa+	E1857
$p, sct$	$^{27}\text{Al}$	DA	2JPNTOK	1.1+06	1.2+06	Jour	JPJ,20,(5),669	May 65	T.Awaya	E1860
$p, x$	$^{22}\text{Na}$	CS	1USALAS	4.0+08	2.2+10	Jour	NIM/B,211,297	03	G.L.Morgan+	C0950
$p, x$	$^{24}\text{Na}$	CS	1USALAS	4.0+08	2.2+10	Jour	NIM/B,211,297	03	G.L.Morgan+	C0950
$d, \alpha$	$^{25}\text{Mg}$	CSP	2JPNKTO	1.5+07		Jour	JPJ,17,(6),914	Jun 62	T.Yanabu+	E1873
$d, \alpha$	$^{25}\text{Mg}$	DAP	2JPNKTO	1.5+07		Jour	JPJ,17,(6),914	Jun 62	T.Yanabu+	E1873
$d, el$	$^{27}\text{Al}$	DA	1USAWIS	1.3+07		Jour	NP/A,232,381	74	J.M.Lohr+	C1070
$d, el$	$^{27}\text{Al}$	DA	1USAWIS	7.0+06	1.1+07	Jour	NP/A,110,585	68	P.Schwandt+	C1068
$d, el$	$^{27}\text{Al}$	POD	1USAWIS	1.3+07		Jour	NP/A,232,381	74	J.M.Lohr+	C1070
$d, el$	$^{27}\text{Al}$	POD	1USAWIS	7.0+06	1.1+07	Jour	NP/A,110,585	68	P.Schwandt+	C1068
$t, el$	$^{27}\text{Al}$	DA	2FR STR	2.0+06	3.3+06	Jour	JP/G,13,671	87	M.S.Antony+	O1192
$\alpha, d$	incl	PY	2JPNIRS	4.0+08		Jour	NIM/A,430,(2-3),400	Jul 99	T.Kurosawa+	E1809
$\alpha, el$	$^{27}\text{Al}$	DA	1USABNL	4.0+07		Jour	PR,101,1508	Mar 56	G.Igo+	C1084
$\alpha, n$	incl	PY	2JPNIRS	4.0+08	7.2+08	Jour	NSE,132,(1),30	May 99	T.Kurosawa+	E1810
$\alpha, n+2\alpha$	$^{22}\text{Na}$	CS	3INDVEC	3.0+07	6.9+07	Jour	PRM,49,253	97	S.Mukherjee+	O1180
$\alpha, p$	incl	PY	2JPNIRS	4.0+08		Jour	NIM/A,430,(2-3),400	Jul 99	T.Kurosawa+	E1809
$\alpha, t$	incl	PY	2JPNIRS	4.0+08		Jour	NIM/A,430,(2-3),400	Jul 99	T.Kurosawa+	E1809
$\alpha, x$	$^{24}\text{Na}$	CS	3INDVEC	3.0+07	7.0+07	Jour	PRM,49,253	97	S.Mukherjee+	O1180
$^8\text{Li}, el$	$^{27}\text{Al}$	DA	1USANOT	1.4+07		Jour	PR/C,48,308	Jul 93	F.D.Becchetti+	C1096
$^{12}\text{C}, n$	incl	PY	2JPNIRS	1.2+09	4.8+09	Jour	NSE,132,(1),30	May 99	T.Kurosawa+	E1810

**14 Silicon**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$d, el$	$^{nat}\text{Si}$	DA	1USAWIS	9.0+06		Jour	NP/A,110,585	68	P.Schwandt+	C1068
$d, el$	$^{nat}\text{Si}$	POD	1USAWIS	9.0+06		Jour	NP/A,110,585	68	P.Schwandt+	C1068

**14 Silicon 28**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$p, t$	$^{26}\text{Si}$	DAP	1USAORL	4.1+07		Jour	NP/A,718,505	03	D.W.Bardayan+	C1140
$d, el$	$^{28}\text{Si}$	DA	2JPNOSA	5.6+07		Jour	NP/A,340,(1),93	May 80	K.Hatanaka+	E0682
$d, el$	$^{28}\text{Si}$	DA	1USAWIS	9.0+06	1.3+07	Jour	NP/A,232,381	74	J.M.Lohr+	C1070
$d, el$	$^{28}\text{Si}$	POD	2JPNOSA	5.6+07		Jour	NP/A,340,(1),93	May 80	K.Hatanaka+	E0682
$d, el$	$^{28}\text{Si}$	POD	1USAWIS	9.0+06	1.3+07	Jour	NP/A,232,381	74	J.M.Lohr+	C1070
$t, el$	$^{28}\text{Si}$	DA	2UK UK	3.6+07		Jour	JP/G,12,979	86	K.I.Pearce+	O1185
$\alpha, el$	$^{28}\text{Si}$	DA	1USATAM	2.4+08		Jour	PR/C,57,1134	Mar 98	D.H.Youngblood+	C1065
$\alpha, el$	$^{28}\text{Si}$	DA	1USATAM	2.4+08		Jour	PR/C,69,054312	04	D.H.Youngblood+	C1110
$\alpha, inel$	$^{28}\text{Si}$	DAP	1USATAM	2.4+08		Jour	PR/C,57,1134	Mar 98	D.H.Youngblood+	C1065
$\alpha, inel$	$^{28}\text{Si}$	DAP	1USATAM	2.4+08		Jour	PR/C,69,054312	04	D.H.Youngblood+	C1110

## 14

## Silicon

30

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$t,el$	$^{30}\text{Si}$	DA	2UK UK	3.6+07		Jour	JP/G,12,979	86	K.I.Pearce+	O1185

## 15

## Phosphorus

31

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$d,\alpha$	$^{29}\text{Si}$	CSP	2JPNKTO	1.5+07		Jour	JPJ,17,(6),896	Jun 62	K.Takamatsu	E1872
$d,\alpha$	$^{29}\text{Si}$	DAP	2JPNKTO	1.5+07		Jour	JPJ,17,(6),896	Jun 62	K.Takamatsu	E1872
$^3\text{He},d$	$^{32}\text{S}$	DAP	2FR PAR	2.5+07		Jour	PR/C,17,1961	78	J.Kalifa+	O1164
$^3\text{He},el$	$^{31}\text{P}$	DA	2FR PAR	2.5+07		Jour	PR/C,17,1961	78	J.Kalifa+	O1164

## 16

## Sulphur

32

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$d,\alpha$	$^{30}\text{P}$	CSP	2JPNKTO	1.4+07		Jour	JPJ,17,(6),896	Jun 62	K.Takamatsu	E1872
$d,\alpha$	$^{30}\text{P}$	DAP	2JPNKTO	1.4+07		Jour	JPJ,17,(6),896	Jun 62	K.Takamatsu	E1872
$d,el$	$^{32}\text{S}$	DA	2JPNOSA	5.6+07		Jour	NP/A,340,(1),93	May 80	K.Hatanaka+	E0682
$d,el$	$^{32}\text{S}$	POD	2JPNOSA	5.6+07		Jour	NP/A,340,(1),93	May 80	K.Hatanaka+	E0682

## 17

## Chlorine

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$n,\gamma$		SPC	1USABNL	Maxwl		Jour	NIM,155,253	Mar 78	M.L.Stelts+	13945

## 18

## Argon

40

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$p,el$	$^{40}\text{Ar}$	POD	1USALAS	1.4+07		Jour	PRL,8,379	May 62	L.Rosen+	C1099
$d,el$	$^{40}\text{Ar}$	DA	2JPNOSA	5.6+07		Jour	NP/A,340,(1),93	May 80	K.Hatanaka+	E0682
$d,el$	$^{40}\text{Ar}$	POD	2JPNOSA	5.6+07		Jour	NP/A,340,(1),93	May 80	K.Hatanaka+	E0682

## 20

## Calcium

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$p,el$	$^{nat}\text{Ca}$	DA	1USABRK	3.1+08		Jour	PR,102,1659	May 56	O.Chamberlain+	C1085
$p,el$	$^{nat}\text{Ca}$	POD	1USABRK	3.1+08		Jour	PR,102,1659	May 56	O.Chamberlain+	C1085
$d,el$	$^{nat}\text{Ca}$	DA	1USAANL	7.0+06	1.2+07	Jour	PR,136,B960	Nov 64	R.H.Bassel+	C1061

## 20

## Calcium

## 40

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n</i> ,el	<sup>40</sup> Ca	DA	1USALAS	6.5+07	2.2+08	Jour	PR/C,70,054613	Nov 04	J.H.Osborne+	13946
<i>p</i> ,2 <i>p</i>	<sup>39</sup> K	D3A	2JPNOSA	3.9+08		Jour	PRL,78,(6),1014	Feb 97	K.Hatanaka+	E1681
<i>p</i> ,2 <i>p</i>	<sup>39</sup> K	POD	2JPNOSA	3.9+08		Jour	PRL,78,(6),1014	Feb 97	K.Hatanaka+	E1681
<i>p</i> ,el	<sup>40</sup> Ca	POD	1USALAS	1.4+07		Jour	PRL,8,379	May 62	L.Rosen+	C1099
<i>d</i> ,el	<sup>40</sup> Ca	DA	1USAORL	3.4+07		Jour	NP/A,100,225	67	E.Newman+	C1067
<i>d</i> ,el	<sup>40</sup> Ca	DA	1USAWIS	5.0+06		Jour	NP/A,123,401	69	P.Schwandt+	C1076
<i>d</i> ,el	<sup>40</sup> Ca	DA	1CANALA	5.0+06	6.5+06	Jour	NP/A,109,218	68	H.G.Leighton+	C1074
<i>d</i> ,el	<sup>40</sup> Ca	DA	2JPNOSA	5.6+07		Jour	NP/A,340,(1),93	May 80	K.Hatanaka+	E0682
<i>d</i> ,el	<sup>40</sup> Ca	POD	1USAWIS	5.0+06	1.1+07	Jour	NP/A,123,401	69	P.Schwandt+	C1076
<i>d</i> ,el	<sup>40</sup> Ca	POD	2JPNOSA	5.6+07		Jour	NP/A,340,(1),93	May 80	K.Hatanaka+	E0682
<i>d</i> ,el	<sup>40</sup> Ca	POD	1USAWIS	7.0+06	1.1+07	Jour	NP/A,123,401	69	P.Schwandt+	C1076
<i>d</i> , <i>n</i>	<sup>41</sup> Sc	DAP	1CANALA	5.0+06	7.0+06	Jour	NP/A,109,218	68	H.G.Leighton+	C1074
<i>d</i> , <i>p</i>	<sup>41</sup> Ca	DAP	1CANALA	5.0+06	6.0+06	Jour	NP/A,109,218	68	H.G.Leighton+	C1074
$\alpha$ ,inel	<sup>40</sup> Ca	DAE	1USATAM	2.4+08		Jour	PR/C,68,057303	03	D.H.Youngblood+	C1105
$\alpha$ ,inel	<sup>40</sup> Ca	DAP	1USATAM	2.4+08		Jour	PR/C,68,057303	03	D.H.Youngblood+	C1105
$\alpha$ ,inel	<sup>40</sup> Ca	DAP	1USATAM	2.4+08		Jour	PR/C,63,067301	01	D.H.Youngblood+	C1106

## 20

## Calcium

## 44

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p</i> ,el	<sup>44</sup> Ca	DA	1USANCS	2.5+06	3.5+06	Jour	PL/B,599,223	04	S.J.Lokitz+	C1120
<i>p</i> ,inel	<sup>44</sup> Ca	DAP	1USANCS	2.5+06	3.5+06	Jour	PL/B,599,223	04	S.J.Lokitz+	C1120
<i>d</i> ,el	<sup>44</sup> Ca	DA	2JPNOSA	5.6+07		Jour	NP/A,340,(1),93	May 80	K.Hatanaka+	E0682
<i>d</i> ,el	<sup>44</sup> Ca	POD	2JPNOSA	5.6+07		Jour	NP/A,340,(1),93	May 80	K.Hatanaka+	E0682

## 21

## Scandium

## 45

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n</i> , $\gamma$		SPC	1USABNL	4.6+02	4.3+03	Jour	NP/A,337,401	Nov 79	H.I.Liou+	13917
<i>n</i> , $\gamma$	<sup>46</sup> Sc	SPC	1USABNL	1.4-01	8.0+00	Jour	NP/A,337,401	Nov 79	H.I.Liou+	13917
<i>n</i> , $\gamma$	<sup>46</sup> Sc	SPC	2NEDRCN	Maxwl		Jour	NP/A,337,401	Nov 79	H.I.Liou+	13917

## 22

## Titanium

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p</i> ,el	<sup>nat</sup> Ti	DA	3CPRFUD	1.0+06	3.1+06	Jour	NIM/B,217,551	04	P.Hu+	O1197
$\alpha$ ,el	<sup>nat</sup> Ti	DA	1USABNL	4.0+07		Jour	PR,101,1508	Mar 56	G.Igo+	C1084
<sup>56</sup> Fe,x	Many	CS	2GERGSI	2.3+10		Prog	GSI-2004-13	Jun 04	P.Napolitani+	O1176
<sup>208</sup> Pb,x	Many	CS	2GERGSI	2.1+08		Prog	GSI-2004-19	Jul 04	A.Kelic+	O1183

**22 Titanium 46**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
d,el	<sup>46</sup> Ti	DA	1USAWIS	1.0+07	1.3+07	Jour	NP/A,316,116	Oct 79	R.P.Goddard+	C1071
d,el	<sup>46</sup> Ti	DA	1USAWIS	9.0+06	1.3+07	Jour	NP/A,232,381	74	J.M.Lohr+	C1070
d,el	<sup>46</sup> Ti	POD	1USAWIS	1.0+07	1.3+07	Jour	NP/A,316,116	Oct 79	R.P.Goddard+	C1071
d,el	<sup>46</sup> Ti	POD	1USAWIS	9.0+06	1.3+07	Jour	NP/A,232,381	74	J.M.Lohr+	C1070

**22 Titanium 48**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
d,el	<sup>48</sup> Ti	DA	1USAORL	3.4+07		Jour	NP/A,100,225	67	E.Newman+	C1067
d,el	<sup>48</sup> Ti	DA	1USAWIS	9.0+06	1.3+07	Jour	NP/A,232,381	74	J.M.Lohr+	C1070
d,el	<sup>48</sup> Ti	POD	1USAWIS	9.0+06	1.3+07	Jour	NP/A,232,381	74	J.M.Lohr+	C1070

**22 Titanium 49**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
d,el	<sup>49</sup> Ti	DA	1USAORL	3.4+07		Jour	NP/A,100,225	67	E.Newman+	C1067

**22 Titanium 50**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
d,el	<sup>50</sup> Ti	DA	1USAORL	3.4+07		Jour	NP/A,100,225	67	E.Newman+	C1067

**23 Vanadium 51**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
d,el	<sup>51</sup> V	DA	1USAORL	3.4+07		Jour	NP/A,100,225	67	E.Newman+	C1067

**24 Chromium 52**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p,el	<sup>52</sup> Cr	POD	1USALAS	1.4+07		Jour	PRL,10,246	Mar 63	L.Rosen+	C1100
d,el	<sup>52</sup> Cr	DA	1USAWIS	1.0+07		Jour	NP/A,316,116	Oct 79	R.P.Goddard+	C1071
d,el	<sup>52</sup> Cr	DA	1USAORL	3.4+07		Jour	NP/A,100,225	67	E.Newman+	C1067
d,el	<sup>52</sup> Cr	POD	1USAWIS	1.0+07		Jour	NP/A,316,116	Oct 79	R.P.Goddard+	C1071

24

Chromium

53

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>d,el</i>	<sup>53</sup> Cr	DA	1USAWIS	9.0+06	1.3+07	Jour	NP/A,232,381	74	J.M.Lohr+	C1070
<i>d,el</i>	<sup>53</sup> Cr	POD	1USAWIS	9.0+06	1.3+07	Jour	NP/A,232,381	74	J.M.Lohr+	C1070

25

Manganese

55

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	<sup>55</sup> Mn	POD	1USALAS	1.4+07		Jour	PRL,10,246	Mar 63	L.Rosen+	C1100
<i>p,n</i>	<sup>55</sup> Fe	DA	1USARIC	2.5+06	5.5+06	Jour	PR,105,633	Jan 57	R.A.Chapman+	C1087

26

Iron

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,<math>\gamma</math></i>		SPC	1USABNL	Maxwl		Jour	NIM,155,253	Mar 78	M.L.Stelts+	13945
<i><math>\pi^+,n</math></i>	incl	DAE	2JPNKEK	1.5+09		Jour	NST,34,(8),860	Aug 97	T.Nakamoto+	J1763
<i><math>\pi^+,n</math></i>	incl	DAE	2JPNKEK	8.7+08	2.1+09	Jour	NST,38,(6),363	Jun 01	Y.Iwamoto+	J1765
<i><math>\pi^-,n</math></i>	incl	DAE	2JPNKEK	8.7+08		Jour	NST,38,(6),363	Jun 01	Y.Iwamoto+	J1765
<i>p,el</i>	<sup>nat</sup> Fe	DA	1USABRK	3.2+08		Jour	PR,102,1659	May 56	O.Chamberlain+	C1085
<i>p,el</i>	<sup>nat</sup> Fe	DA	1USAMIT	7.5+06		Jour	PR,107,1602	Sep 57	W.F.Waldorf+	C1088
<i>p,el</i>	<sup>nat</sup> Fe	POD	1USABRK	3.2+08		Jour	PR,102,1659	May 56	O.Chamberlain+	C1085
<i>p,n</i>	incl	PY	2JPNIPC	2.1+08		Jour	NIM/A,515,(3),733	Dec 03	S.Yonai+	E1858

26

Iron

54

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	<sup>54</sup> Fe	POD	1USALAS	1.4+07		Jour	PRL,10,246	Mar 63	L.Rosen+	C1100
<i>d,el</i>	<sup>54</sup> Fe	DA	1USAWIS	1.0+07	1.3+07	Jour	NP/A,316,116	Oct 79	R.P.Goddard+	C1071
<i>d,el</i>	<sup>54</sup> Fe	DA	1USAPUP	1.4+07		Jour	NP/A,116,1	68	S.A.Hjorth+	C1075
<i>d,el</i>	<sup>54</sup> Fe	DA	1USAORL	3.4+07		Jour	NP/A,100,225	67	E.Newman+	C1067
<i>d,el</i>	<sup>54</sup> Fe	DA	2JPNOSA	5.6+07		Jour	NP/A,340,(1),93	May 80	K.Hatanaka+	E0682
<i>d,el</i>	<sup>54</sup> Fe	POD	1USAWIS	1.0+07	1.3+07	Jour	NP/A,316,116	Oct 79	R.P.Goddard+	C1071
<i>d,el</i>	<sup>54</sup> Fe	POD	2JPNOSA	5.6+07		Jour	NP/A,340,(1),93	May 80	K.Hatanaka+	E0682

26

Iron

56

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,<math>\gamma</math></i>		RP	1USABNL	1.2+03		Jour	PR/C,1,973	Mar 70	R.E.Chrien+	10743
<i>p,el</i>	<sup>56</sup> Fe	POD	1USALAS	1.4+07		Jour	PRL,10,246	Mar 63	L.Rosen+	C1100

**26 Iron 57**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	<sup>57</sup> Fe	POD	1USALAS	1.4+07		Jour	PRL,10,246	Mar 63	L.Rosen+	C1100

**26 Iron 58**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	<sup>58</sup> Fe	POD	1USALAS	1.4+07		Jour	PRL,8,379	May 62	L.Rosen+	C1099
<i>p,el</i>	<sup>58</sup> Fe	POD	1USALAS	1.4+07		Jour	PRL,10,246	Mar 63	L.Rosen+	C1100

**27 Cobalt 59**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,0</i>		RP	1USAORL	2.0+02	1.0+05	Jour	ANE,19,393	Jul 92	G.Desaussure+	12988
<i>p,el</i>	<sup>59</sup> Co	DA	1USAROC	5.2+06		Jour	PR,102,1560	Jun 56	D.A.Bromley+	C1086
<i>p,el</i>	<sup>59</sup> Co	DA	1USAMIT	7.5+06		Jour	PR,107,1602	Sep 57	W.F.Waldorf+	C1088
<i>p,el</i>	<sup>59</sup> Co	POD	1USALAS	1.4+07		Jour	PRL,10,246	Mar 63	L.Rosen+	C1100
<i>p,n</i>	<sup>59</sup> Ni	DA	1USARIC	2.4+06	5.7+06	Jour	PR,105,633	Jan 57	R.A.Chapman+	C1087
<i>α,el</i>	<sup>59</sup> Co	DA	1USAANL	4.3+07		Jour	PR,117,801	Feb 60	J.L.Yntema+	C1082

**28 Nickel**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	<sup>nat</sup> Ni	DA	1USAROC	5.2+06		Jour	PR,102,1560	Jun 56	D.A.Bromley+	C1086
<i>p,el</i>	<sup>nat</sup> Ni	DA	1USAMIT	7.5+06		Jour	PR,107,1602	Sep 57	W.F.Waldorf+	C1088
<i>p,x</i>	<sup>55</sup> Fe	CS	2JPNTOK	8.4+06	3.0+07	Prog	A-INS-1989,32	90	M.Furukawa+	E1864
<i>p,x</i>	<sup>55</sup> Fe	CS	2JPNTOK	8.5+06	3.0+07	Prog	A-INS-1990,35	91	M.Furukawa+	E1865
<i>p,x</i>	<sup>56</sup> Ni	CS	2JPNTOK	1.9+07	4.0+07	Prog	A-INS-1989,32	90	M.Furukawa+	E1864
<i>p,x</i>	<sup>57</sup> Ni	CS	2JPNTOK	1.6+07	4.0+07	Prog	A-INS-1989,32	90	M.Furukawa+	E1864
<i>p,x</i>	<sup>63</sup> Ni	CS	2JPNTOK	1.6+07	3.0+07	Prog	A-INS-1989,32	90	M.Furukawa+	E1864
<i>p,x</i>	<sup>63</sup> Ni	CS	2JPNTOK	1.6+07	3.4+07	Prog	A-INS-1990,35	91	M.Furukawa+	E1865
<i>d,el</i>	<sup>nat</sup> Ni	DA	1USAANL	2.2+07		Jour	PR,113,261	Jan 59	J.L.Yntema	C1056

**28 Nickel 58**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,γ</i>	<sup>59</sup> Ni	CS	1USALAS	Maxwl		Jour	PR/C,70,044318	Oct 04	S.Raman+	13947
<i>n,γ</i>	<sup>59</sup> Ni	CSP	1USALAS	Maxwl		Jour	PR/C,70,044318	Oct 04	S.Raman+	13947
<i>p,el</i>	<sup>58</sup> Ni	POD	1USALAS	1.4+07		Jour	PRL,8,379	May 62	L.Rosen+	C1099
<i>p,el</i>	<sup>58</sup> Ni	POD	1USALAS	1.4+07		Jour	PRL,10,246	Mar 63	L.Rosen+	C1100

<i>d</i> ,el	<sup>58</sup> Ni	DA	2JPNOSA	5.6+07		Jour	NP/A,340,(1),93	May 80	K.Hatanaka+	E0682
<i>d</i> ,el	<sup>58</sup> Ni	POD	2JPNOSA	5.6+07		Jour	NP/A,340,(1),93	May 80	K.Hatanaka+	E0682
$\alpha$ ,el	<sup>58</sup> Ni	DA	1USAMRY	1.4+08		Jour	PR/C,7,19389	May 73	D.A.Goldberg+	C1081
$\alpha$ ,el	<sup>58</sup> Ni	DA	1USAANL	4.3+07		Jour	PR,126,1514	May 62	H.W.Broek+	C1083
$\alpha$ ,inel	<sup>58</sup> Ni	DAP	1USAMRY	1.4+08		Jour	PR/C,7,19389	May 73	D.A.Goldberg+	C1081
$\alpha$ ,inel	<sup>58</sup> Ni	DAP	1USAANL	4.3+07		Jour	PR,126,1514	May 62	H.W.Broek+	C1083
$\alpha$ , <i>n</i>	<sup>61</sup> Zn	DAP	2UK LVP	1.1+07	1.6+07	Jour	JP/G,8,281	82	P.J.Smith+	O1193
$\alpha$ , <i>n</i>	<sup>61</sup> Zn	?	2UK LVP	1.5+07		Jour	JP/G,8,281	82	P.J.Smith+	O1193
<sup>8</sup> Li,el	<sup>58</sup> Ni	DA	1USANOT	1.4+07	2.0+07	Jour	PR/C,48,308	Jul 93	F.D.Becchetti+	C1096
<sup>8</sup> Li,inel	<sup>58</sup> Ni	DAP	1USANOT	2.0+07		Jour	PR/C,48,308	Jul 93	F.D.Becchetti+	C1096

28

Nickel

59

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n</i> , $\gamma$	<sup>60</sup> Ni	CS	1USALAS	Maxwl		Jour	PR/C,70,044318	Oct 04	S.Raman+	13947
<i>n</i> , $\gamma$	<sup>60</sup> Ni	CSP	1USALAS	Maxwl		Jour	PR/C,70,044318	Oct 04	S.Raman+	13947

28

Nickel

60

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n</i> , $\gamma$	<sup>61</sup> Ni	CS	1USALAS	Maxwl		Jour	PR/C,70,044318	Oct 04	S.Raman+	13947
<i>n</i> , $\gamma$	<sup>61</sup> Ni	CSP	1USALAS	Maxwl		Jour	PR/C,70,044318	Oct 04	S.Raman+	13947
<i>p</i> ,el	<sup>60</sup> Ni	POD	1USALAS	1.4+07		Jour	PRL,10,246	Mar 63	L.Rosen+	C1100
<i>p</i> , <i>x</i>	<sup>55</sup> Fe	CS	2JPNTOK	3.4+07	4.0+07	Prog	A-INS-1990,35	91	M.Furukawa+	E1865
<i>p</i> , <i>x</i>	<sup>59</sup> Ni	CS	2JPNTOK	1.7+07	4.0+07	Prog	A-INS-1990,35	91	M.Furukawa+	E1865
<i>d</i> ,el	<sup>60</sup> Ni	DA	1USAORL	3.4+07		Jour	NP/A,100,225	67	E.Newman+	C1067
<i>d</i> ,el	<sup>60</sup> Ni	DA	2JPNOSA	5.6+07		Jour	NP/A,340,(1),93	May 80	K.Hatanaka+	E0682
<i>d</i> ,el	<sup>60</sup> Ni	DA	1USAWIS	8.9+06	1.1+07	Jour	NP/A,110,585	68	P.Schwandt+	C1068
<i>d</i> ,el	<sup>60</sup> Ni	POD	2JPNOSA	5.6+07		Jour	NP/A,340,(1),93	May 80	K.Hatanaka+	E0682
<i>d</i> ,el	<sup>60</sup> Ni	POD	1USAWIS	8.9+06	1.1+07	Jour	NP/A,110,585	68	P.Schwandt+	C1068
$\alpha$ ,el	<sup>60</sup> Ni	DA	1USAANL	4.3+07		Jour	PR,126,1514	May 62	H.W.Broek+	C1083
$\alpha$ ,inel	<sup>60</sup> Ni	DAP	1USAANL	4.3+07		Jour	PR,126,1514	May 62	H.W.Broek+	C1083

28

Nickel

61

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>d</i> ,el	<sup>61</sup> Ni	DA	1USAPUP	1.4+07		Jour	NP/A,116,1	68	S.A.Hjorth+	C1075

28

Nickel

62

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p</i> ,el	<sup>62</sup> Ni	POD	1USALAS	1.4+07		Jour	PRL,10,246	Mar 63	L.Rosen+	C1100
<i>d</i> ,el	<sup>62</sup> Ni	DA	1USAPUP	1.4+07		Jour	NP/A,116,1	68	S.A.Hjorth+	C1075
$\alpha$ ,el	<sup>62</sup> Ni	DA	1USAANL	4.3+07		Jour	PR,126,1514	May 62	H.W.Broek+	C1083

$\alpha$ ,inel  $^{62}\text{Ni}$  DAP 1USAANL 4.3+07 Jour PR,126,1514 May 62 H.W.Broek+ C1083

**28 Nickel 64**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$d$ ,el	$^{64}\text{Ni}$	DA	2JPNOSA	5.6+07		Jour	NP/A,340,(1),93	May 80	K.Hatanaka+	E0682
$d$ ,el	$^{64}\text{Ni}$	POD	2JPNOSA	5.6+07		Jour	NP/A,340,(1),93	May 80	K.Hatanaka+	E0682

**29 Copper**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$K^-$ , $K^+$	incl	DAE	2JPNKEK	0.0+00		Jour	NP/A,644,(4),365	Dec 98	S.Aoki+	J1717
$p$ ,el	$^{nat}\text{Cu}$	DA	1USAMIT	7.5+06		Jour	PR,107,1602	Sep 57	W.F.Waldorf+	C1088
$p$ ,el	$^{nat}\text{Cu}$	DA	1USAHRV	9.6+07		Jour	PR,108,4271	Jul 57	G.Gerstein+	C1089
$p$ , $n$	incl	DAE	4RUSITE	1.0+09	1.6+09	Prog	ITEF-3-03	03	Yu.V.Trebukhovsky+	O1170
$p$ , $x$	$^{60}\text{Zn}$	CS	2JPNOK	4.7+07		Jour	NIM,134,(1),93	Apr 76	Y.Yoshizawa+	E1866
$p$ , $x$	$^{61}\text{Zn}$	CS	2JPNOK	3.0+07	4.7+07	Jour	NIM,134,(1),93	Apr 76	Y.Yoshizawa+	E1866
$p$ , $x$	$^{63}\text{Zn}$	CS	2JPNOK	2.5+07	5.2+07	Jour	NIM,134,(1),93	Apr 76	Y.Yoshizawa+	E1866
$d$ ,el	$^{nat}\text{Cu}$	DA	1USAANL	2.2+07		Jour	PR,113,261	Jan 59	J.L.Yntema	C1056
$\alpha$ , $d$	incl	PY	2JPNIRS	4.0+08		Jour	NIM/A,430,(2-3),400	Jul 99	T.Kurosawa+	E1809
$\alpha$ ,el	$^{nat}\text{Cu}$	DA	1USABNL	4.0+07		Jour	PR,101,1508	Mar 56	G.Igo+	C1084
$\alpha$ , $n$	incl	PY	2JPNIRS	4.0+08	7.2+08	Jour	NSE,132,(1),30	May 99	T.Kurosawa+	E1810
$\alpha$ , $p$	incl	PY	2JPNIRS	4.0+08		Jour	NIM/A,430,(2-3),400	Jul 99	T.Kurosawa+	E1809
$\alpha$ , $t$	incl	PY	2JPNIRS	4.0+08		Jour	NIM/A,430,(2-3),400	Jul 99	T.Kurosawa+	E1809
$^{12}\text{C}$ , $n$	incl	PY	2JPNIRS	1.2+09	4.8+09	Jour	NSE,132,(1),30	May 99	T.Kurosawa+	E1810

**29 Copper 63**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$p$ ,el	$^{63}\text{Cu}$	POD	1USALAS	1.4+07		Jour	PRL,10,246	Mar 63	L.Rosen+	C1100
$d$ ,el	$^{63}\text{Cu}$	DA	1USAPUP	1.4+07		Jour	NP/A,116,1	68	S.A.Hjorth+	C1075
$d$ ,el	$^{63}\text{Cu}$	DA	1USAORL	3.4+07		Jour	NP/A,100,225	67	E.Newman+	C1067
$\alpha$ ,el	$^{63}\text{Cu}$	DA	1USAANL	4.3+07		Jour	PR,117,801	Feb 60	J.L.Yntema+	C1082
$\alpha$ , $\gamma$	$^{67}\text{Ga}$	CS	1USABRK	8.6+06	5.9+06	Conf	2004SANTA,,(220)	04	M.S.Basunia+	C1050

**29 Copper 65**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$p$ ,el	$^{65}\text{Cu}$	POD	1USALAS	1.4+07		Jour	PRL,10,246	Mar 63	L.Rosen+	C1100
$d$ ,el	$^{65}\text{Cu}$	DA	1USAORL	3.4+07		Jour	NP/A,100,225	67	E.Newman+	C1067
$\alpha$ , $2n$	$^{67}\text{Ga}$	CS	3INDVEC	2.4+07	7.0+07	Jour	PRM,49,253	97	S.Mukherjee+	O1180
$\alpha$ ,el	$^{65}\text{Cu}$	DA	1USAANL	4.3+07		Jour	PR,117,801	Feb 60	J.L.Yntema+	C1082
$\alpha$ , $n$	$^{68}\text{Ga}$	CS	3INDVEC	2.6+07	7.1+07	Jour	PRM,49,253	97	S.Mukherjee+	O1180



**30                      Zinc**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p</i> ,el	<sup>nat</sup> Zn	DA	1USAROC	5.2+06		Jour	PR,102,1560	Jun 56	D.A.Bromley+	C1086
<i>p</i> , $\gamma$	incl	CSP	1USAINU	1.4+08		Jour	PR/C,45,1815	Apr 92	J.Clayton+	C1098
<i>p</i> , $\gamma$	incl	DAE	1USAINU	1.0+08	1.4+08	Jour	PR/C,45,1815	Apr 92	J.Clayton+	C1098
<i>p</i> , $\gamma$	incl	DAP	1USAINU	1.0+08	1.4+08	Jour	PR/C,45,1815	Apr 92	J.Clayton+	C1098
<i>d</i> ,el	<sup>nat</sup> Zn	DA	1USAANL	2.2+07		Jour	PR,113,261	Jan 59	J.L.Yntema	C1056
$\alpha$ ,el	<sup>nat</sup> Zn	DA	1USAANL	4.3+07		Jour	PR,117,801	Feb 60	J.L.Yntema+	C1082
$\alpha$ ,inel	<sup>nat</sup> Zn	DAP	1USAANL	4.3+07		Jour	PR,117,801	Feb 60	J.L.Yntema+	C1082

**30                      Zinc                      64**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p</i> ,el	<sup>64</sup> Zn	POD	1USALAS	1.4+07		Jour	PRL,10,246	Mar 63	L.Rosen+	C1100

**30                      Zinc                      66**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p</i> ,el	<sup>66</sup> Zn	POD	1USALAS	1.4+07		Jour	PRL,10,246	Mar 63	L.Rosen+	C1100
<i>d</i> ,el	<sup>66</sup> Zn	DA	1USAPUP	1.4+07		Jour	NP/A,116,1	68	S.A.Hjorth+	C1075

**30                      Zinc                      68**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p</i> ,el	<sup>68</sup> Zn	POD	1USALAS	1.4+07		Jour	PRL,10,246	Mar 63	L.Rosen+	C1100
<i>d</i> ,el	<sup>68</sup> Zn	DA	1USAWIS	1.0+07	1.2+07	Jour	NP/A,316,116	Oct 79	R.P.Goddard+	C1071
<i>d</i> ,el	<sup>68</sup> Zn	DA	1USAPUP	1.4+07		Jour	NP/A,116,1	68	S.A.Hjorth+	C1075
<i>d</i> ,el	<sup>68</sup> Zn	DA	1USAWIS	9.0+06	1.3+07	Jour	NP/A,232,381	74	J.M.Lohr+	C1070
<i>d</i> ,el	<sup>68</sup> Zn	POD	1USAWIS	1.0+07	1.2+07	Jour	NP/A,316,116	Oct 79	R.P.Goddard+	C1071
<i>d</i> ,el	<sup>68</sup> Zn	POD	1USAWIS	9.0+06	1.3+07	Jour	NP/A,232,381	74	J.M.Lohr+	C1070

**32                      Germanium                      70**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>d</i> , <sup>3</sup> He	<sup>69</sup> Ga	DAP	2FR PAR	2.6+07		Jour	PR/C,18,86	78	G.Rotbard+	O1167

32

Germanium

72

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,t</i>	<sup>70</sup> Ge	CSP	2FR PAR	2.6+07		Jour	PR/C,16,1840	77	F.Guilbaut+	O1160
<i>p,t</i>	<sup>70</sup> Ge	DAP	2FR PAR	2.6+07		Jour	PR/C,16,1840	77	F.Guilbaut+	O1160
<i>d,<sup>3</sup>He</i>	<sup>71</sup> Ga	DAP	2FR PAR	2.6+07		Jour	PR/C,18,86	78	G.Rotbard+	O1167

32

Germanium

74

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,t</i>	<sup>72</sup> Ge	CSP	2FR PAR	2.6+07		Jour	PR/C,16,1840	77	F.Guilbaut+	O1160
<i>p,t</i>	<sup>72</sup> Ge	DAP	2FR PAR	2.6+07		Jour	PR/C,16,1840	77	F.Guilbaut+	O1160
<i>d,<sup>3</sup>He</i>	<sup>73</sup> Ga	DAP	2FR PAR	2.6+07		Jour	PR/C,18,86	78	G.Rotbard+	O1167

32

Germanium

76

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,t</i>	<sup>74</sup> Ge	CSP	2FR PAR	2.6+07		Jour	PR/C,16,1840	77	F.Guilbaut+	O1160
<i>p,t</i>	<sup>74</sup> Ge	DAP	2FR PAR	2.6+07		Jour	PR/C,16,1840	77	F.Guilbaut+	O1160
<i>d,<sup>3</sup>He</i>	<sup>75</sup> Ga	DAP	2FR PAR	2.6+07		Jour	PR/C,18,86	78	G.Rotbard+	O1167

34

Selenium

74

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>d,el</i>	<sup>74</sup> Se	DA	1USAPUP	1.4+07		Jour	NP/A,116,1	68	S.A.Hjorth+	C1075

34

Selenium

82

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>d,el</i>	<sup>82</sup> Se	DA	1USAPUP	1.4+07		Jour	NP/A,116,1	68	S.A.Hjorth+	C1075

35

Bromine

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,x</i>	<sup>77</sup> Br	CS	2JPNTOK	2.6+07	5.1+07	Jour	ARI,36,(6),481	85	K.Sakamoto+	E1867
<i>p,x</i>	<sup>77</sup> Kr	CS	2JPNTOK	2.9+07	5.1+07	Jour	ARI,36,(6),481	85	K.Sakamoto+	E1867
<i>p,x</i>	<sup>79</sup> Kr	CS	2JPNTOK	3.7+06	5.1+07	Jour	ARI,36,(6),481	85	K.Sakamoto+	E1867

**35 Bromine 79**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,4n</i>	<sup>76</sup> Kr	CS	2JPNTOK	3.9+07	5.1+07	Jour	ARI,36,(6),481	85	K.Sakamoto+	E1867
<i>p,x</i>	<sup>76</sup> Br	CS	2JPNTOK	3.3+07	5.1+07	Jour	ARI,36,(6),481	85	K.Sakamoto+	E1867

**37 Rubidium**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,x</i>	<sup>84</sup> Rb	CS	2JPNTOK	1.5+07	5.1+07	Jour	ARI,36,(6),481	85	K.Sakamoto+	E1867
<i>p,x</i>	<sup>83</sup> Sr	CS	2JPNTOK	3.0+07	5.1+07	Jour	ARI,36,(6),481	85	K.Sakamoto+	E1867
<i>p,x</i>	<sup>85</sup> Sr	CS	2JPNTOK	8.5+06	5.1+07	Jour	ARI,36,(6),481	85	K.Sakamoto+	E1867

**37 Rubidium 87**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,n</i>	<sup>87</sup> Sr	CS	2JPNTOK	8.4+06	5.1+07	Jour	ARI,36,(6),481	85	K.Sakamoto+	E1867
<i>p,x</i>	<sup>86</sup> Rb	CS	2JPNTOK	1.5+07	5.1+07	Jour	ARI,36,(6),481	85	K.Sakamoto+	E1867

**39 Yttrium 89**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,γ</i>	<sup>90</sup> Zr	CS	2GRCATH	1.8+06	4.8+06	Jour	PR/C,70,015802	04	P.Tsagari+	O1182

**40 Zirconium**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,n</i>	incl	DAE	4RUSITE	1.0+09	1.6+09	Prog	ITEF-3-03	03	Yu.V.Trebukhovsky+	O1170

**40 Zirconium 90**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>d,el</i>	<sup>90</sup> Zr	DA	1USAWIS	1.0+07	1.2+07	Jour	NP/A,316,116	Oct 79	R.P.Goddard+	C1071
<i>d,el</i>	<sup>90</sup> Zr	DA	1USAWIS	1.1+07		Jour	NP/A,206,459	73	R.D.Rathmell+	C1073
<i>d,el</i>	<sup>90</sup> Zr	DA	1USAORL	3.4+07		Jour	NP/A,100,225	67	E.Newman+	C1067
<i>d,el</i>	<sup>90</sup> Zr	DA	1USAWIS	5.5+06		Jour	PR/C,12,1469	Nov 75	L.D.Knutson+	C1064
<i>d,el</i>	<sup>90</sup> Zr	DA	2JPNOSA	5.6+07		Jour	NP/A,340,(1),93	May 80	K.Hatanaka+	E0682
<i>d,el</i>	<sup>90</sup> Zr	DA	1USAWIS	9.0+06	1.3+07	Jour	NP/A,232,381	74	J.M.Lohr+	C1070
<i>d,el</i>	<sup>90</sup> Zr	POD	1USAWIS	1.0+07	1.2+07	Jour	NP/A,316,116	Oct 79	R.P.Goddard+	C1071
<i>d,el</i>	<sup>90</sup> Zr	POD	1USAWIS	1.1+07		Jour	NP/A,206,459	73	R.D.Rathmell+	C1073

<i>d</i> ,el	<sup>90</sup> Zr	POD	1USAWIS	5.5+06		Jour	PR/C,12,1469	Nov 75	L.D.Knutson+	C1064
<i>d</i> ,el	<sup>90</sup> Zr	POD	2JPNOSA	5.6+07		Jour	NP/A,340,(1),93	May 80	K.Hatanaka+	E0682
<i>d</i> ,el	<sup>90</sup> Zr	POD	1USAWIS	9.0+06	1.3+07	Jour	NP/A,232,381	74	J.M.Lohr+	C1070
<i>d</i> , <i>p</i>	<sup>91</sup> Zr	DAP	1USAWIS	1.1+07	1.2+07	Jour	NP/A,206,459	73	R.D.Rathmell+	C1073
<i>d</i> , <i>p</i>	<sup>91</sup> Zr	POD	1USAWIS	1.1+07	1.2+07	Jour	NP/A,206,459	73	R.D.Rathmell+	C1073
$\alpha$ ,inel	<sup>90</sup> Zr	DAP	1USATAM	2.4+08		Jour	PR/C,69,054312	04	D.H.Youngblood+	C1114

**40                      Zirconium                      91**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>d</i> ,el	<sup>91</sup> Zr	DA	1USAORL	3.4+07		Jour	NP/A,100,225	67	E.Newman+	C1067

**40                      Zirconium                      92**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>d</i> ,el	<sup>92</sup> Zr	DA	1USAORL	3.4+07		Jour	NP/A,100,225	67	E.Newman+	C1067

**40                      Zirconium                      94**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>d</i> ,el	<sup>94</sup> Zr	DA	1USAORL	3.4+07		Jour	NP/A,100,225	67	E.Newman+	C1067

**40                      Zirconium                      96**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>d</i> ,el	<sup>96</sup> Zr	DA	1USAORL	3.4+07		Jour	NP/A,100,225	67	E.Newman+	C1067

**41                      Niobium                      93**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>d</i> ,el	<sup>93</sup> Nb	DA	1USAORL	3.4+07		Jour	NP/A,100,225	67	E.Newman+	C1067
$\alpha$ ,el	<sup>93</sup> Nb	DA	1USABNL	4.0+07		Jour	PR,101,1508	Mar 56	G.Igo+	C1084

**42                      Molybdenum**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$\alpha$ ,el	<sup>nat</sup> Mo	DA	1USABNL	4.0+07		Jour	PR,101,1508	Mar 56	G.Igo+	C1084

**42 Molybdenum 92**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,2n</i>	<sup>91</sup> Mo	CSP	1USALAS	4.5+06	2.1+08	Jour	PR/C,62,054608	Oct 00	P.E.Garrett+	13949
<i>n,2n+2p</i>	<sup>89</sup> Zr	?	1USALAS	1.2+07	2.1+08	Jour	PR/C,62,054608	Oct 00	P.E.Garrett+	13949
<i>n,2n+p</i>	<sup>90</sup> Nb	CSP	1USALAS	2.2+07	2.0+08	Jour	PR/C,62,054608	Oct 00	P.E.Garrett+	13949
<i>n,2p</i>	<sup>91</sup> Zr	CSP	1USALAS	1.6+07	1.6+08	Jour	PR/C,62,054608	Oct 00	P.E.Garrett+	13949
<i>n,3n</i>	<sup>90</sup> Mo	CSP	1USALAS	5.0+07	2.1+08	Jour	PR/C,62,054608	Oct 00	P.E.Garrett+	13949
<i>n,3n+2p</i>	<sup>88</sup> Zr	?	1USALAS	2.0+06	2.1+08	Jour	PR/C,62,054608	Oct 00	P.E.Garrett+	13949
<i>n,3n+p</i>	<sup>89</sup> Nb	CSP	1USALAS	3.2+07	2.0+08	Jour	PR/C,62,054608	Oct 00	P.E.Garrett+	13949
<i>n,4n+2p</i>	<sup>87</sup> Zr	?	1USALAS	2.7+07	1.9+08	Jour	PR/C,62,054608	Oct 00	P.E.Garrett+	13949
<i>n,4n+p</i>	<sup>88</sup> Nb	CSP	1USALAS	4.9+07	2.1+08	Jour	PR/C,62,054608	Oct 00	P.E.Garrett+	13949
<i>n,5n+2p</i>	<sup>86</sup> Zr	?	1USALAS	4.2+07	2.2+08	Jour	PR/C,62,054608	Oct 00	P.E.Garrett+	13949
<i>n,inel</i>	<sup>92</sup> Mo	CSP	1USALAS	2.5+06	2.3+07	Jour	PR/C,62,054608	Oct 00	P.E.Garrett+	13949
<i>n,n+2p</i>	<sup>90</sup> Zr	CSP	1USALAS	2.1+07	2.1+08	Jour	PR/C,62,054608	Oct 00	P.E.Garrett+	13949
<i>n,n+p</i>	<sup>91</sup> Nb	CSP	1USALAS	2.0+06	2.1+08	Jour	PR/C,62,054608	Oct 00	P.E.Garrett+	13949
<i>d,el</i>	<sup>92</sup> Mo	DA	1USAPUP	1.4+07		Jour	NP/A,116,1	68	S.A.Hjorth+	C1075

**42 Molybdenum 94**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,inel</i>	<sup>94</sup> Mo	SPC	1USAKTY	2.8+06	3.9+06	Jour	PR/C,67,024307	Feb 03	C.Fransen+	13954

**42 Molybdenum 100**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,d</i>	<sup>99</sup> Mo	DAP	2JPNTSU	2.1+07		Jour	NP/A,714,(1-2),3	Feb 03	S.Hirowatari+	E1816
<i>p,d</i>	<sup>99</sup> Mo	POD	2JPNTSU	2.1+07		Jour	NP/A,714,(1-2),3	Feb 03	S.Hirowatari+	E1816
<i>d,el</i>	<sup>100</sup> Mo	DA	1USAPUP	1.4+07		Jour	NP/A,116,1	68	S.A.Hjorth+	C1075

**45 Rhodium 103**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>d,el</i>	<sup>103</sup> Rh	DA	1USAANL	2.2+07		Jour	PR,113,261	Jan 59	J.L.Yntema	C1056
<i>α,2n</i>	<sup>105</sup> Ag	CS	3INDVEC	1.8+07	4.8+07	Jour	PRM,62,1059	04	M.S.Gadkari+	O1169
<i>α,2n+α</i>	<sup>101</sup> Rh	CS	3INDVEC	2.8+07	4.8+07	Jour	PRM,62,1059	04	M.S.Gadkari+	O1169
<i>α,3n</i>	<sup>104</sup> Ag	CS	3INDVEC	2.8+07	4.8+07	Jour	PRM,62,1059	04	M.S.Gadkari+	O1169
<i>α,3n+α</i>	<sup>100</sup> Rh	CS	3INDVEC	4.2+07	4.8+07	Jour	PRM,62,1059	04	M.S.Gadkari+	O1169
<i>α,4n</i>	<sup>103</sup> Ag	CS	3INDVEC	3.1+07	4.8+07	Jour	PRM,62,1059	04	M.S.Gadkari+	O1169
<i>α,el</i>	<sup>103</sup> Rh	DA	1USAANL	4.3+07		Jour	PR,117,801	Feb 60	J.L.Yntema+	C1082
<i>α,n</i>	<sup>106</sup> Ag	CS	3INDVEC	1.8+07	4.8+07	Jour	PRM,62,1059	04	M.S.Gadkari+	O1169
<i>α,n+α</i>	<sup>102</sup> Rh	CS	3INDVEC	2.8+07	4.8+07	Jour	PRM,62,1059	04	M.S.Gadkari+	O1169

**47 Silver**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$K^-, K^+$	incl	DAE	2JPNKEK	0.0+00		Jour	NP/A,644,(4),365	Dec 98	S.Aoki+	J1717
$p, el$	$^{nat}Ag$	DA	1USAHRV	9.5+07		Jour	PR,108,4271	Jul 57	G.Gerstein+	C1089
$d, el$	$^{nat}Ag$	DA	1USAANL	2.2+07		Jour	PR,113,261	Jan 59	J.L.Yntema	C1056
$\alpha, el$	$^{nat}Ag$	DA	1USABNL	4.0+07		Jour	PR,101,1508	Mar 56	G.Igo+	C1084
$\alpha, el$	$^{nat}Ag$	DA	1USAANL	4.3+07		Jour	PR,117,801	Feb 60	J.L.Yntema+	C1082

**47 Silver 107**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$p, n$	$^{107}Cd$	DAP	1USALRL	1.8+07	2.5+07	Jour	PR/C,13,2224	Nov 76	S.M.Grimes+	C0922
$\alpha, 2n$	$^{109}In$	CS	2JPNTOK	1.6+07	3.8+07	Jour	NP,41,(2),275	Mar 63	S.Fukushima+	E1874
$\alpha, 3n$	$^{108}In$	CS	2JPNTOK	2.5+07	3.8+07	Jour	NP,41,(2),275	Mar 63	S.Fukushima+	E1874
$\alpha, n$	$^{110}In$	CS	2JPNTOK	9.0+06	2.4+07	Jour	NP,41,(2),275	Mar 63	S.Fukushima+	E1874
$\alpha, x$	$^{105}Ag$	CS	2JPNTOK	3.1+07	3.8+07	Jour	NP,41,(2),275	Mar 63	S.Fukushima+	E1874
$\alpha, x$	$^{106}Ag$	CS	2JPNTOK	2.0+07	3.8+07	Jour	NP,41,(2),275	Mar 63	S.Fukushima+	E1874
$\alpha, x$	$^{109}Cd$	CS	2JPNTOK	1.6+07	3.8+07	Jour	NP,41,(2),275	Mar 63	S.Fukushima+	E1874

**47 Silver 109**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$p, n$	$^{109}Cd$	DAE	1USALRL	1.8+07		Jour	PR/C,13,2224	Nov 76	S.M.Grimes+	C0922

**48 Cadmium**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$\alpha, x$	$^{113}Sn$	TT	2JPNOSA	1.5+07	2.1+07	Jour	BCJ,36,(10),1225	Oct 63	S.Fukushima+	E1875
$\alpha, x$	$^{117}Sn$	TT	2JPNOSA	1.2+07	2.1+07	Jour	BCJ,36,(10),1225	Oct 63	S.Fukushima+	E1875

**48 Cadmium 110**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$\alpha, inel$	$^{110}Cd$	DAP	1USATAM	2.4+08		Jour	PR/C,69,034611	04	Y.W.Lui+	C1107

**49 Indium**

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

<i>d,x</i>	<sup>113</sup> Sn	TT	2JPNOSA	7.1+06	1.1+07	Jour	BCJ,36,(10),1225	Oct 63	S.Fukushima+	E1875
<i>α,x</i>	<sup>117</sup> Sn	CS	2JPNOSA	1.2+07	3.9+07	Jour	BCJ,36,(10),1225	Oct 63	S.Fukushima+	E1875
<i>α,x</i>	<sup>117</sup> Sn	TT	2JPNOSA	1.7+07	2.1+07	Jour	BCJ,36,(10),1225	Oct 63	S.Fukushima+	E1875

**49**

**Indium**

**113**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>d,el</i>	<sup>113</sup> In	DA	1USAPUP	1.4+07		Jour	NP/A,116,1	68	S.A.Hjorth+	C1075

**49**

**Indium**

**115**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>d,el</i>	<sup>115</sup> In	DA	1USAPUP	1.4+07		Jour	NP/A,116,1	68	S.A.Hjorth+	C1075

**50**

**Tin**

**112**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>d,el</i>	<sup>112</sup> Sn	DA	1USAPUP	1.4+07		Jour	NP/A,116,1	68	S.A.Hjorth+	C1075
<i>α,inel</i>	<sup>112</sup> Sn	DAP	1USATAM	2.4+08		Jour	PR/C,70,014307	04	Y.W.Lui+	C1108

**50**

**Tin**

**116**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,n</i>	<sup>116</sup> Sb	DAE	1USAWIS	1.4+07	7.0+06	Jour	NP,71,529	Apr 65	R.M.Wood+	C0923
<i>p,t</i>	<sup>114</sup> Sn	DAP	2GERMUN	2.6+07		Jour	PR/C,69,024619	04	P.Guazzoni+	O1094
<i>α,el</i>	<sup>116</sup> Sn	DA	1USATAM	2.4+08		Jour	PR/C,57,2887	Nov 97	H.L.Clark+	C1066
<i>α,inel</i>	<sup>116</sup> Sn	DAP	1USATAM	2.4+08		Jour	PR/C,57,2887	Nov 97	H.L.Clark+	C1066
<i>α,inel</i>	<sup>116</sup> Sn	DAP	1USATAM	2.4+08		Jour	PR/C,69,034315	Mar 04	D.H.Youngblood+	C1104

**50**

**Tin**

**118**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,n</i>	<sup>118</sup> Sb	DAE	1USAWIS	1.0+07	1.4+07	Jour	NP,71,529	Apr 65	R.M.Wood+	C0923
<i>d,el</i>	<sup>118</sup> Sn	DA	1USAPUP	1.4+07		Jour	NP/A,116,1	68	S.A.Hjorth+	C1075
<i>d,el</i>	<sup>118</sup> Sn	DA	2JPNOSA	5.6+07		Jour	NP/A,340,(1),93	May 80	K.Hatanaka+	E0682
<i>d,el</i>	<sup>118</sup> Sn	POD	2JPNOSA	5.6+07		Jour	NP/A,340,(1),93	May 80	K.Hatanaka+	E0682

**50 Tin 120**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>d,el</i>	<sup>120</sup> Sn	DA	1USAWIS	1.1+07	1.3+07	Jour	NP/A,232,381	74	J.M.Lohr+	C1070
<i>d,el</i>	<sup>120</sup> Sn	POD	1USAWIS	1.1+07	1.3+07	Jour	NP/A,232,381	74	J.M.Lohr+	C1070

**50 Tin 124**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,inel</i>	<sup>124</sup> Sn	CSP	1USAKTY	2.2+06	4.5+06	Jour	NP/A,747,206	05	D.Bandyopadhyay+	13956
<i>d,el</i>	<sup>124</sup> Sn	DA	1USAPUP	1.4+07		Jour	NP/A,116,1	68	S.A.Hjorth+	C1075
<i>α,inel</i>	<sup>124</sup> Sn	DAP	1USATAM	2.4+08		Jour	PR/C,70,014307	04	Y.W.Lui+	C1108

**52 Tellurium 126**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,inel</i>	<sup>126</sup> Te	DE	1USAKTY	2.2+06	3.3+06	Jour	PR/C,69,064323	Jun 04	J.R.Vanhoy+	13952
<i>n,inel</i>	<sup>126</sup> Te	SPC	1USAKTY	2.4+06	3.3+06	Jour	PR/C,69,064323	Jun 04	J.R.Vanhoy+	13952

**53 Iodine 127**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,3n</i>	<sup>125</sup> Xe	CS	2JPNTOK	2.0+07	5.1+07	Jour	ARI,36,(6),481	85	K.Sakamoto+	E1867
<i>p,5n</i>	<sup>123</sup> Xe	CS	2JPNTOK	4.4+07	5.0+07	Jour	ARI,36,(6),481	85	K.Sakamoto+	E1867
<i>p,n</i>	<sup>127</sup> Xe	CS	2JPNTOK	8.2+06	5.1+07	Jour	ARI,36,(6),481	85	K.Sakamoto+	E1867
<i>p,x</i>	<sup>124</sup> I	CS	2JPNTOK	3.3+07	5.1+07	Jour	ARI,36,(6),481	85	K.Sakamoto+	E1867
<i>p,x</i>	<sup>126</sup> I	CS	2JPNTOK	1.3+07	5.1+07	Jour	ARI,36,(6),481	85	K.Sakamoto+	E1867
<i>p,x</i>	<sup>123</sup> Xe	CS	2JPNIRS	4.2+07	5.8+07	Jour	RI,35,(5),235	86	K.Suzuki	E1868
<i>p,x</i>	<sup>125</sup> Xe	CS	2JPNIRS	2.0+07	5.8+07	Jour	RI,35,(5),235	86	K.Suzuki	E1868
<i>p,x</i>	<sup>127</sup> Xe	CS	2JPNIRS	7.0+06	2.0+07	Jour	RI,35,(5),235	86	K.Suzuki	E1868

**55 Cesium 133**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,3n</i>	<sup>131</sup> Ba	CS	2JPNTOK	2.0+07	5.1+07	Jour	ARI,36,(6),481	85	K.Sakamoto+	E1867
<i>p,5n</i>	<sup>129</sup> Ba	CS	2JPNTOK	4.2+07	5.1+07	Jour	ARI,36,(6),481	85	K.Sakamoto+	E1867
<i>p,n</i>	<sup>133</sup> Ba	CS	2JPNTOK	1.5+06	3.9+07	Jour	ARI,36,(6),481	85	K.Sakamoto+	E1867
<i>p,x</i>	<sup>130</sup> Cs	CS	2JPNTOK	3.6+07	4.8+07	Jour	ARI,36,(6),481	85	K.Sakamoto+	E1867
<i>p,x</i>	<sup>132</sup> Cs	CS	2JPNTOK	1.3+07	5.1+07	Jour	ARI,36,(6),481	85	K.Sakamoto+	E1867



**60 Neodymium 143**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$n,\alpha$	$^{140}\text{Ce}$	CS	1USAORL	1.3+03	4.4+05	Jour	NP/A,688,86	May 01	P.E.Koehler+	13939

**62 Samarium 152**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$^3\text{He},d$	$^{153}\text{Eu}$	DAP	1CANMCM	2.4+07		Jour	NP/A,747,131	Jan 05	D.G.Burke	C1121
$\alpha,t$	$^{153}\text{Eu}$	DAP	1CANMCM	2.5+07		Jour	NP/A,747,131	Jan 05	D.G.Burke	C1121

**64 Gadolinium 154**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$t,\alpha$	$^{153}\text{Eu}$	DAP	1USALAS	1.5+07		Jour	NP/A,747,131	Jan 05	D.G.Burke	C1121

**67 Holmium 165**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$p,n$	$^{165}\text{Er}$	CS	2GERHEI	1.8+07	7.9+06	Jour	RCA,92,219	04	G.J.Beyer+	O1200

**69 Thulium 169**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$\alpha,2n$	$^{171}\text{Lu}$	CS	3INDVEC	3.9+07	6.6+07	Jour	PRM,38,279	92	S.Mukherjee+	O1179
$\alpha,3n$	$^{170}\text{Lu}$	CS	3INDVEC	3.9+07	6.7+07	Jour	PRM,38,279	92	S.Mukherjee+	O1179
$\alpha,4n$	$^{169}\text{Lu}$	CS	3INDVEC	3.8+07	6.5+07	Jour	PRM,38,279	92	S.Mukherjee+	O1179
$\alpha,n$	$^{172}\text{Lu}$	CS	3INDVEC	3.4+07	7.1+07	Jour	PRM,38,279	92	S.Mukherjee+	O1179
$\alpha,x$	$^{165}\text{Tm}$	CS	3INDVEC	3.8+07	6.6+07	Jour	PRM,38,279	92	S.Mukherjee+	O1179
$\alpha,x$	$^{167}\text{Tm}$	CS	3INDVEC	3.8+07	6.6+07	Jour	PRM,38,279	92	S.Mukherjee+	O1179
$\alpha,x$	$^{168}\text{Tm}$	CS	3INDVEC	3.8+07	6.6+07	Jour	PRM,38,279	92	S.Mukherjee+	O1179
$\alpha,x$	$^{169}\text{Yb}$	CS	3INDVEC	4.3+07	6.6+07	Jour	PRM,38,279	92	S.Mukherjee+	O1179

**71 Lutetium 176**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$d,el$	$^{176}\text{Lu}$	DA	1USAFSU	1.2+07		Jour	PR,187,1516	Nov 69	M.M.Minor+	C1078
$d,inel$	$^{176}\text{Lu}$	DAP	1USAFSU	1.2+07		Jour	PR,187,1516	Nov 69	M.M.Minor+	C1078
$d,p$	$^{177}\text{Lu}$	DAP	1USAFSU	1.2+07		Jour	PR,187,1516	Nov 69	M.M.Minor+	C1079
$d,t$	$^{175}\text{Lu}$	DAP	1USAFSU	1.2+07		Jour	PR,187,1516	Nov 69	M.M.Minor+	C1079

**73 Tantalum**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p</i> ,el	<sup>nat</sup> Ta	DA	1USABRK	3.2+08		Jour	PR,102,1659	May 56	O.Chamberlain+	C1085
<i>p</i> ,el	<sup>nat</sup> Ta	POD	1USABRK	3.2+08		Jour	PR,102,1659	May 56	O.Chamberlain+	C1085

**73 Tantalum 181**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p</i> ,el	<sup>181</sup> Ta	DA	1USABRK	3.2+08		Jour	PR,102,1659	May 56	O.Chamberlain+	C1085
<i>p</i> ,el	<sup>181</sup> Ta	DA	1USAHRV	9.5+07		Jour	PR,108,4271	Jul 57	G.Gerstein+	C1089
<i>p</i> , <i>n</i>	incl	TTD	2JPNTOH	5.0+07		Jour	NSE,146,(2),200	Feb 04	T.Aoki+	E1856
<i>d</i> ,el	<sup>181</sup> Ta	DA	1USAINU	1.1+07		Jour	PR,108,1289	Dec 57	J.R.Reed+	C1054
<i>d</i> , <i>x</i>	<sup>126</sup> Xe	CS	1USABRK	3.4+06	1.8+07	Jour	PR,95,1502	Sep 54	S.J.Balestrini	C1047
<i>d</i> , <i>x</i>	<sup>127</sup> Xe	CS	1USABRK	3.4+06	1.8+07	Jour	PR,95,1502	Sep 54	S.J.Balestrini	C1047
<i>d</i> , <i>x</i>	<sup>128</sup> Xe	CS	1USABRK	3.4+06	1.8+07	Jour	PR,95,1502	Sep 54	S.J.Balestrini	C1047
$\alpha$ ,el	<sup>181</sup> Ta	DA	1USAINU	2.2+07		Jour	PR,108,1289	Dec 57	J.R.Reed+	C1054
<sup>40</sup> Ar, <i>x</i>	Many	CS	2JPNIPC	3.8+09		Jour	PR/C,67,(1),014610	Jan 03	A.Ozawa+	E1814

**74 Tungsten**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p</i> , <i>n</i>	incl	DAE	4RUSITE	8.0+08	1.6+09	Prog	ITEF-3-03	03	Yu.V.Trebukhovsky+	O1170
<i>p</i> , <i>n</i>	incl	TTD	2JPNTOH	5.0+07		Jour	NSE,146,(2),200	Feb 04	T.Aoki+	E1856

**74 Tungsten 186**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<sup>7</sup> Li, <i>5n</i>	<sup>188</sup> Ir	SPC	1USAYAL	5.2+07		Jour	PR/C,70,044305	Oct 04	D.L.Balabanski+	C1090

**78 Platinum**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>d</i> ,el	<sup>nat</sup> Pt	DA	1USAANL	2.2+07		Jour	PR,113,261	Jan 59	J.L.Yntema	C1056

## 78

## Platinum

## 196

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$n,inel$	$^{196}\text{Pt}$	CSP	1USALAS	1.0+06	7.7+06	Jour	PR/C,65,064309	02	E.Tavukcu+	13910

## 79

## Gold

## 197

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$d,el$	$^{197}\text{Au}$	DA	1USAINU	1.1+07		Jour	PR,108,1289	Dec 57	J.R.Reed+	C1054
$d,el$	$^{197}\text{Au}$	DA	1USAANL	2.2+07		Jour	PR,113,261	Jan 59	J.L.Yntema	C1056
$\alpha,2n$	$^{199}\text{Tl}$	CS	3INDVEC	2.0+07	4.7+07	Jour	PRM,44,535	95	D.J.Shah+	O1181
$\alpha,3n$	$^{198}\text{Tl}$	CS	3INDVEC	3.2+07	4.7+07	Jour	PRM,44,535	95	D.J.Shah+	O1181
$\alpha,el$	$^{197}\text{Au}$	DA	1USAINU	2.2+07		Jour	PR,108,1289	Dec 57	J.R.Reed+	C1054
$\alpha,el$	$^{197}\text{Au}$	DA	1USAANL	4.3+07		Jour	PR,117,801	Feb 60	J.L.Yntema+	C1082
$\alpha,n$	$^{200}\text{Tl}$	CS	3INDVEC	2.0+07	4.7+07	Jour	PRM,44,535	95	D.J.Shah+	O1181
$\alpha,n+\alpha$	$^{196}\text{Au}$	CS	3INDVEC	3.2+07	4.7+07	Jour	PRM,44,535	95	D.J.Shah+	O1181
$\alpha,x$	$^{198}\text{Au}$	CS	3INDVEC	3.8+07	4.7+07	Jour	PRM,44,535	95	D.J.Shah+	O1181
$^8\text{Li},el$	$^{197}\text{Au}$	DA	1USANOT	1.4+07		Jour	PR/C,48,308	Jul 93	F.D.Becchetti+	C1096

## 80

## Mercury

## 199

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$n,\gamma$	$^{200}\text{Hg}$	SPC	1USABNL	Maxwl	1.6+02	Jour	PR/C,9,366	Jan 74	D.Breitig+	13934

## 82

## Lead

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$K^-,K^+$	incl	DAE	2JPNKEK	0.0+00		Jour	NP/A,644,(4),365	Dec 98	S.Aoki+	J1717
$\pi^+,n$	incl	DAE	2JPNKEK	8.7+08		Jour	NST,38,(6),363	Jun 01	Y.Iwamoto+	J1765
$\pi^-,n$	incl	DAE	2JPNKEK	8.7+08		Jour	NST,38,(6),363	Jun 01	Y.Iwamoto+	J1765
$p,el$	$^{nat}\text{Pb}$	DA	1USAHRV	9.5+07		Jour	PR,108,4271	Jul 57	G.Gerstein+	C1089
$p,\gamma$	incl	CSP	1USAINU	1.4+08		Jour	PR/C,45,1815	Apr 92	J.Clayton+	C1098
$p,\gamma$	incl	DAE	1USAINU	1.0+08	1.4+08	Jour	PR/C,45,1815	Apr 92	J.Clayton+	C1098
$p,\gamma$	incl	DAP	1USAINU	1.0+08	1.4+08	Jour	PR/C,45,1815	Apr 92	J.Clayton+	C1098
$p,n$	incl	DAE	4RUSITE	8.0+08	1.6+09	Prog	ITEF-3-03	03	Yu.V.Trebukhovsky+	O1170
$\alpha,d$	incl	PY	2JPNIRS	4.0+08		Jour	NIM/A,430,(2-3),400	Jul 99	T.Kurosawa+	E1809
$\alpha,n$	incl	PY	2JPNIRS	4.0+08	7.2+08	Jour	NSE,132,(1),30	May 99	T.Kurosawa+	E1810
$\alpha,p$	incl	PY	2JPNIRS	4.0+08		Jour	NIM/A,430,(2-3),400	Jul 99	T.Kurosawa+	E1809
$\alpha,t$	incl	PY	2JPNIRS	4.0+08		Jour	NIM/A,430,(2-3),400	Jul 99	T.Kurosawa+	E1809
$^{12}\text{C},n$	incl	PY	2JPNIRS	1.2+09	4.8+09	Jour	NSE,132,(1),30	May 99	T.Kurosawa+	E1810



## 92

## Uranium

238

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,f</i>	Many	FY	2JPNJAE	1.2+07		Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305

## 93

## Neptunium

237

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,<math>\gamma</math></i>	<sup>238</sup> Np	RI	1USAORL	5.5-01		Rept	BNL-50242,(T-577)	Jun 70	E.Hellstrand+	13935
<i>p,f</i>	Many	FY	2JPNJAE	1.2+07		Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>85</sup> Kr	?	2JPNJAE	9.6+06	3.2+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>87</sup> Kr	?	2JPNJAE	1.0+07	3.2+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>88</sup> Kr	?	2JPNJAE	9.9+06	3.2+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>91</sup> Sr	?	2JPNJAE	9.8+06	3.2+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>92</sup> Sr	?	2JPNJAE	9.8+06	3.2+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>93</sup> Y	?	2JPNJAE	1.0+07	3.2+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>95</sup> Zr	?	2JPNJAE	9.9+06	3.2+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>99</sup> Mo	?	2JPNJAE	1.4+07	3.6+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>103</sup> Ru	?	2JPNJAE	9.4+06	3.2+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>105</sup> Rh	?	2JPNJAE	9.4+06	3.2+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>112</sup> Pd	?	2JPNJAE	9.4+06	3.2+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>111</sup> Ag	?	2JPNJAE	1.0+07	3.2+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>113</sup> Ag	?	2JPNJAE	1.1+07	3.2+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>115</sup> Cd	?	2JPNJAE	9.6+06	3.1+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>117</sup> Cd	?	2JPNJAE	1.2+07	3.1+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>126</sup> Sb	?	2JPNJAE	1.1+07	3.2+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>127</sup> Sb	?	2JPNJAE	9.8+06	3.1+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>128</sup> Sb	?	2JPNJAE	9.8+06	3.2+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>129</sup> Sb	?	2JPNJAE	9.7+06	2.9+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>132</sup> Te	?	2JPNJAE	9.9+06	3.2+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>131</sup> I	?	2JPNJAE	9.7+06	3.2+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>133</sup> I	?	2JPNJAE	9.8+06	3.2+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>135</sup> I	?	2JPNJAE	9.9+06	3.2+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>136</sup> Cs	?	2JPNJAE	1.0+07	3.2+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>139</sup> Ba	?	2JPNJAE	9.4+06	3.2+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>140</sup> La	?	2JPNJAE	9.9+06	3.2+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>142</sup> La	?	2JPNJAE	1.1+07	3.2+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>141</sup> Ce	?	2JPNJAE	1.0+07	3.2+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>143</sup> Ce	?	2JPNJAE	9.8+06	3.2+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>149</sup> Nd	?	2JPNJAE	9.7+06	3.1+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>p,f</i>	<sup>153</sup> Sm	?	2JPNJAE	1.2+07	2.8+07	Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305

## 94

## Plutonium

239

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,f</i>	Many	FY	2JPNJAE	1.2+07		Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305
<i>d,p+f</i>	Many	FY	2JPNJAE	1.4+07		Jour	PR/C,67,(1),014604	Jan 03	K.Nishio+	E1813
<i>d,p+f</i>	Many	FY	2JPNJAE	1.4+07		Jour	PR/C,67,(1),014604	Jan 03	K.Nishio+	E1813

**94                      Plutonium                      244**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,f</i>	Many	FY	2JPNJAE	1.2+07		Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305

**95                      Americium                      241**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,γ</i>	<sup>242</sup> Am	RI	1USAORL	5.5-01		Rept	BNL-50242,(T-577)	Jun 70	E.Hellstrand+	13935

**95                      Americium                      243**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,f</i>	Many	FY	2JPNJAE	1.2+07		Jour	PR/C,40,(5),2144	Nov 89	T.Ohtsuki+	E1305

**98                      Californium                      252**

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
0,f	<sup>105</sup> Tc	SPC	1USAVBT	Spont		Jour	PR/C,70,044310	Nov 04	Y.X.Luo+	13944
0,f	<sup>107</sup> Tc	SPC	1USAVBT	Spont		Jour	PR/C,70,044310	Nov 04	Y.X.Luo+	13944
0,f	<sup>109</sup> Tc	SPC	1USAVBT	Spont		Jour	PR/C,70,044310	Nov 04	Y.X.Luo+	13944