

Japan Charged-Particle Nuclear Reaction Data Group (JCPRG)

EXFOR : Recent Compilation (Added in March 2007)

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Retrieval service is available at:

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

Quantity code

ALF	Alpha	FY	Fission product yield
AMP	Length or amplitude	INT	Cross section integral over incident energy
CHG	Fragment charge	KE	Kinetic energy
CS	Cross section	KER	Kerma factor
CSN	Differential with respect to number of particles	MLT	Multiplicity
CSP	Partial cross section	NQ	Nuclear quantity
CST	Temperature dependent cross section	NU	Nu
D3A	Triple differential $d\Omega_1/d\Omega_2/dE'$	NUD	Nu delayed
D3E	Triple differential $d\Omega/dE'_1/dE'_2$	NUF	Fragment neutrons
D4A	Quadruple diff. $d\Omega_1/d\Omega_2/dE'_1/dE'_2$	POL	Polarization
DA	Differential $d/d\Omega$	POD	Differential polarization
DAA	Double differential $d\Omega_1/d\Omega_2$	PY	Product yield (other than fission)
DAE	Double differential $d\Omega/dE'$	RI	Resonance integral
DAP	Partial differential $d/d\Omega$	RP	Resonance parameter
DAT	Temperature-dependent Legendre coefficient	RR	Reaction rate
DE	Differential d/dE'	SIF	Self indication
DEP	Energy spectrum for specific group	SPC	Gamma spectrum
DP	Diff. by linear momentum of outgoing part.	TSL	Thermal scattering
DT	Diff. by 4-momentum transfer squared	TT	Thick target yield
ETA	Eta	TTD	Differential thick target yield, $d/d\Omega$
EVL	Evaluation	TTP	Partial thick target yield

Special codes in outgoing particle field

abs	Absorption	fus	Fusion	sct	Scattering	tot	Total
el	Elastic	inel	Inelastic	tcx	Total charge changing		
fis	Fission	non	Nonelastic	ths	Thermal scattering		

Special codes in incident energy field

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

				1		Hydrogen				2		
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #		
				Min	Max						Ref	Vol Page
n,γ	^3H	CS	2JPNTIT	3.0+04	5.3+05	Jour	PR/C,74,025804	06	Y.Nagai+	22943		
d,p	^3H	PY	2GERTUB	7.0+03	5.0+04	Jour	NP/A,719,52	03	K.Czerski+	F0809		
$\alpha,n+p$	^4He	D3A	4UKRIJD	2.7+07	2.7+07	Jour	IZV,65,(5),692	01	O.K.Gorpinich+	D5019		

				1		Hydrogen				3		
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #		
				Min	Max						Ref	Vol Page
$d,2n$	^3He	DAP	4RUSKUR	3.1+07	3.1+07	Jour	ZEP,67,860	98	D.V.Aleksandrov+	F0774		
$\alpha,d+d$	^3H	D3A	4UKRIJD	6.7+07	6.7+07	Jour	IZV,69,(5),745	05	O.K.Gorpinich+	D5015		
$\alpha,n+d$	^4He	?	4UKRIJD	6.7+07	6.7+07	Jour	IZV,69,(5),742	05	O.K.Gorpinich+	D5013		
$\alpha,n+d$	^4He	?	4UKRIJD	6.7+07	6.7+07	Jour	IZV,69,(5),745	05	O.K.Gorpinich+	D5015		
$\alpha,n+t$	^3He	?	4UKRIJD	6.7+07	6.7+07	Jour	VAT/I,44,(5),31	04	O.K.Gorpinich+	D5023		
α,p	^6He	DAE	4UKRIJD	2.7+07	2.7+07	Jour	IZV,66,(5),743	02	O.K.Gorpinich+	D5020		

				2		Helium				3		
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #		
				Min	Max						Ref	Vol Page
$\gamma,n+p$	^1H	CS	2JPNAIS	1.0+07	1.6+07	Jour	PR/C,73,(3),034003	Mar 06	S.Naito+	K2005		
γ,p	^2H	CS	2JPNAIS	1.0+07	1.6+07	Jour	PR/C,73,(3),034003	Mar 06	S.Naito+	K2005		
γ,p	^2H	?	2JPNAIS	1.0+07	1.6+07	Jour	PR/C,73,(3),034003	Mar 06	S.Naito+	K2005		

				3		Lithium				6		
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #		
				Min	Max						Ref	Vol Page
p,el	^6Li	DA	2SWTPSI	7.2+07	7.2+07	Jour	NP/A,571,(3),541	May 94	R.Henneck+	D0426		
p,el	^6Li	POD	2SWTPSI	7.2+07	7.2+07	Jour	NP/A,571,(3),541	May 94	R.Henneck+	D0426		
α,el		RP	2SWTZUR	2.6+06	3.5+06	Jour	NP/A,101,321	67	V.Meyer+	F0788		
α,el	^6Li	DA	2SWTZUR	1.4+06	3.7+06	Jour	NP/A,101,321	67	V.Meyer+	F0788		

				3		Lithium				7		
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #		
				Min	Max						Ref	Vol Page
$d,^2\text{He}$	^7He	DAE	2NEDKVI	1.7+08	1.7+08	Jour	PL/B,639,623	06	N.Ryezayeva+	D0423		

γ ,abs		CS	2JPNETL	1.5+07	1.5+07	Jour	NST,35,(10),733	Oct 98	H.Harada+	K2001
γ ,el		RP	2JPNETL	1.5+07	1.5+07	Jour	NST,35,(10),733	Oct 98	H.Harada+	K2001
p , n	^{13}N	DAP	2UK NIN	3.0+07	5.0+07	Jour	NP/A,143,385	70	A.S.Clough+	F0789

6

Carbon

14

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
^6Li , ^6He	^{14}N	DAP	4RUSKUR	9.3+07	9.3+07	Jour	NP/A,639,599	98	S.B.Sakuta+	D5028

8

Oxygen

16

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
^3He , n	^{18}Ne	DAP	3SAFSUN	4.9+06	5.6+06	Jour	NP/A,92,401	67	W.R.Mcmurray+	F0787
α , γ	^{20}Ne	MLT	2GERIFS	1.1+06	3.1+06	Jour	NP/A,621,149	97	R.Kunz+	F0808

8

Oxygen

22

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p ,el	^{22}O	DA	2FR GAN	4.7+07	4.7+07	Jour	PRL,96,012501	06	E.Becheva+	F0738
p ,inel	^{22}O	DAP	2FR GAN	4.7+07	4.7+07	Jour	PRL,96,012501	06	E.Becheva+	F0738

9

Fluorine

19

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p , α	^{16}O	DA	3YUGBKB	3.0+05	1.1+06	Jour	NP/A,331,491	79	K.M.Subotic+	F0795
p , γ		RP	3YUGBKB	3.4+05	9.4+05	Jour	NP/A,331,491	79	K.M.Subotic+	F0795
p , γ	^{20}Ne	DAP	3YUGBKB	2.9+05	1.1+06	Jour	NP/A,331,491	79	K.M.Subotic+	F0795
d , n	^{20}Ne	DAP	2GERHAM	2.5+06	3.3+06	Jour	NP,52,273	64	R.H.Siemssen+	F0790
^3He , d	^{20}Ne	DAP	2UK OXF	1.0+07	1.6+07	Jour	NP/A,223,207	74	T.Vertse+	F0792
^3He ,el	^{19}F	DA	2UK OXF	1.6+07	1.6+07	Jour	NP/A,223,207	74	T.Vertse+	F0792
^3He ,inel	^{19}F	DAP	2UK OXF	1.6+07	1.6+07	Jour	NP/A,223,207	74	T.Vertse+	F0792

10

Neon

22

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p ,0		RP	4UKRUFT	8.5+05	1.9+06	Jour	IZV,70,(5),751	06	A.S.Kachan+	D5016
p , γ		RP	4UKRUFT	1.6+06	1.8+06	Jour	IZV,68,(11),1577	04	A.N.Vodin+	D5011
p , γ	^{23}Na	DAP	4UKRUFT	1.7+06	1.8+06	Jour	IZV,68,(11),1577	04	A.N.Vodin+	D5011
p , γ	^{23}Na	DAP	4UKRUFT	8.5+05	1.9+06	Jour	IZV,70,(5),751	06	A.S.Kachan+	D5016

				20		Calcium				40		
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #		
				Min	Max						Ref	Vol Page
${}^3\text{He},n$	${}^{42}\text{Ti}$	DAP	2GERBER	1.3+07	1.3+07	Jour	NP/A,284,14	77	W.Bohne+	F0797		

				20		Calcium				42		
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #		
				Min	Max						Ref	Vol Page
${}^3\text{He},n$	${}^{44}\text{Ti}$	DAP	2GERBER	1.3+07	1.3+07	Jour	NP/A,284,14	77	W.Bohne+	F0797		

				22		Titanium						
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #		
				Min	Max						Ref	Vol Page
d,x	${}^{48}\text{V}$	CS	3HUNDEB	3.0+06	2.1+07	Jour	ARI,48,657	97	S.Takacs+	D4046		

				26		Iron						
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #		
				Min	Max						Ref	Vol Page
d,x	${}^{56}\text{Co}$	CS	3HUNDEB	6.9+06	2.1+07	Conf	96DENTON,,659	96	S.Takacs+	D4044		

				26		Iron				54		
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #		
				Min	Max						Ref	Vol Page
${}^3\text{He},x+d$	inclusive	DA	4UKRIJD	9.5+07	9.5+07	Jour	IZV,68,(2),238	04	E.P.Kadkin+	D5007		
${}^3\text{He},x+p$	inclusive	DA	4UKRIJD	9.5+07	9.5+07	Jour	IZV,68,(2),238	04	E.P.Kadkin+	D5007		

				27		Cobalt				59		
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #		
				Min	Max						Ref	Vol Page
p,x	${}^3\text{He}$	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,73,044606	06	H.Machner+	D0424		
p,x	${}^6\text{He}$	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,73,044606	06	H.Machner+	D0424		
p,x	${}^6\text{Li}$	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,73,044606	06	H.Machner+	D0424		
p,x	${}^7\text{Li}$	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,73,044606	06	H.Machner+	D0424		
p,x	${}^8\text{Li}$	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,73,044606	06	H.Machner+	D0424		
p,x	${}^9\text{Li}$	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,73,044606	06	H.Machner+	D0424		
p,x	${}^7\text{Be}$	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,73,044606	06	H.Machner+	D0424		
p,x	${}^9\text{Be}$	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,73,044606	06	H.Machner+	D0424		
p,x	${}^{10}\text{Be}$	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,73,044606	06	H.Machner+	D0424		
p,x	${}^{10}\text{B}$	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,73,044606	06	H.Machner+	D0424		
p,x	${}^{11}\text{B}$	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,73,044606	06	H.Machner+	D0424		

p,x	^{12}B	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,73,044606	06	H.Machner+	D0424
p,x	^{12}C	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,73,044606	06	H.Machner+	D0424
p,x	^{13}C	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,73,044606	06	H.Machner+	D0424
$p,x+\alpha$	inclusive	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,73,044606	06	H.Machner+	D0424

28 Nickel

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
d,x	^{61}Cu	CS	3HUNDEB	2.3+06	2.0+07	Jour	RCA,76,15	97	S.Takacs+	D4045

28 Nickel 58

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$^3\text{He},x+d$	inclusive	DA	4UKRIJD	9.5+07	9.5+07	Jour	IZV,68,(2),238	04	E.P.Kadkin+	D5007
$^3\text{He},x+p$	inclusive	DA	4UKRIJD	9.5+07	9.5+07	Jour	IZV,68,(2),238	04	E.P.Kadkin+	D5007

28 Nickel 64

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$^3\text{He},x+d$	inclusive	DA	4UKRIJD	9.5+07	9.5+07	Jour	IZV,68,(2),238	04	E.P.Kadkin+	D5007
$^3\text{He},x+p$	inclusive	DA	4UKRIJD	9.5+07	9.5+07	Jour	IZV,68,(2),238	04	E.P.Kadkin+	D5007

29 Copper

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
\bar{p},el	^{nat}Cu	DA	2JPNLEP			Jour	PRL,52,(9),731	Feb 84	K.Nakamura+	J2000
\bar{p},non		CS	2JPNLEP			Jour	PRL,52,(9),731	Feb 84	K.Nakamura+	J2000
p,x	^{61}Co	CS	3SARRIY	2.0+07	2.7+07	Jour	RCA,94,391	06	F.S.Al-Saleh+	D0422
p,x	^{61}Cu	CS	3SARRIY	2.0+07	2.7+07	Jour	RCA,94,391	06	F.S.Al-Saleh+	D0422
p,x	^{62}Zn	CS	3SARRIY	1.3+07	2.7+07	Jour	RCA,94,391	06	F.S.Al-Saleh+	D0422
p,x	^{63}Zn	CS	3SARRIY	4.6+06	2.7+07	Jour	RCA,94,391	06	F.S.Al-Saleh+	D0422
p,x	^{65}Zn	CS	3SARRIY	2.6+06	2.7+07	Jour	RCA,94,391	06	F.S.Al-Saleh+	D0422
d,x	^{65}Zn	CS	3HUNDEB	5.2+06	2.0+07	Conf	96DENTON,,659	96	S.Takacs+	D4044

34 Selenium 74

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
n,γ	^{75}Se	CS	2GERKFK			Jour	PR/C,73,015803	06	I.Dillmann+	22892

38 Strontium 84											
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation		Date	Author	Data #
				Min	Max		Ref Vol	Page			
<i>n,γ</i>	⁸⁵ Sr	CS	2GERKFK			Jour	PR/C,73,015803		06	I.Dillmann+	22892
42 Molybdenum 92											
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation		Date	Author	Data #
				Min	Max		Ref Vol	Page			
<i>p,d</i>	⁹¹ Mo	DAP	2FR GRE	4.0+07	4.0+07	Jour	NP/A,202,473		73	M.A.Moinester+	F0801
42 Molybdenum 94											
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation		Date	Author	Data #
				Min	Max		Ref Vol	Page			
<i>p,d</i>	⁹³ Mo	DAP	2FR GRE	4.0+07	4.0+07	Jour	NP/A,202,473		73	M.A.Moinester+	F0801
48 Cadmium 106											
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation		Date	Author	Data #
				Min	Max		Ref Vol	Page			
<i>p,γ</i>	¹⁰⁷ In	CS	3HUNDEB	2.4+06	4.7+06	Jour	EPJ/AS,27,141		06	Gy.Gyurky+	D4151
<i>α,el</i>	¹⁰⁶ Cd	DA	3HUNDEB	1.6+07	1.9+07	Jour	EPJ/AS,27,197		06	G.G.Kiss+	D4136
<i>α,γ</i>	¹¹⁰ Sn	CS	3HUNDEB	5.0+06	1.1+07	Jour	EPJ/AS,27,197		06	G.G.Kiss+	D4136
<i>α,γ</i>	¹¹⁰ Sn	CS	3HUNDEB	7.6+06	1.2+07	Jour	PR/C,74,025805		06	Gy.Gyurky+	D4169
<i>α,n</i>	¹⁰⁹ Sn	CS	3HUNDEB	1.0+07	1.2+07	Jour	PR/C,74,025805		06	Gy.Gyurky+	D4169
<i>α,p</i>	¹⁰⁹ In	CS	3HUNDEB	9.0+06	9.9+06	Jour	PR/C,74,025805		06	Gy.Gyurky+	D4169
48 Cadmium 108											
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation		Date	Author	Data #
				Min	Max		Ref Vol	Page			
<i>p,γ</i>	¹⁰⁹ In	CS	3HUNDEB	2.4+06	4.7+06	Jour	EPJ/AS,27,141		06	Gy.Gyurky+	D4151
48 Cadmium 114											
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation		Date	Author	Data #
				Min	Max		Ref Vol	Page			
<i>p,n</i>	¹¹⁴ In	CS	4RUSSUL	6.3+06	6.6+06	Jour	IZV,65,1612		01	P.P.Zarubin+	F0687

				50		Tin				112
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max					
α,el	^{112}Sn	DA	3HUNDEB	1.0+07	2.0+07	Jour	PR/C,71,065802	05	D.Galaviz+	D4162
α,γ	^{116}Te	CS	3HUNDEB	7.0+06	1.1+07	Jour	PR/C,71,065802	05	D.Galaviz+	D4162

				50		Tin				118
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max					
p,n	^{118}Sb	DE	4RUSFEI	6.9+06	1.1+07	Jour	YF,69,387	06	B.V.Zhuravlev+	F0735

				50		Tin				124
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max					
α,el	^{124}Sn	DA	3HUNDEB	2.0+07	2.0+07	Jour	PR/C,71,065802	05	D.Galaviz+	D4162

				52		Tellurium				120
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max					
n,γ	^{121}Te	CS	2GERKFK	Maxwl		Jour	EPJ/A,27,129	06	I.Dillmann+	22939

				53		Iodine				127
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max					
0,0		NQ	2ZZZGEL	Spont		Jour	PR/C,74,054602	06	G.Noguere+	22948
$n,0$		RP	2ZZZGEL		1.0+03	Jour	PR/C,74,054602	06	G.Noguere+	22948
n,el		RP	2ZZZGEL	7.5+00	1.0+06	Jour	PR/C,74,054602	06	G.Noguere+	22948
n,el	^{127}I	AMP	2ZZZGEL		2.5-02	Jour	PR/C,74,054602	06	G.Noguere+	22948
n,γ		RP	2ZZZGEL	3.5+03	1.0+06	Jour	PR/C,74,054602	06	G.Noguere+	22948
n,γ	^{128}I	CS	2ZZZGEL	5.5+03	1.1+05	Jour	PR/C,74,054602	06	G.Noguere+	22948

				53		Iodine				129
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max					
0,0		NQ	2ZZZGEL	Spont		Jour	PR/C,74,054602	06	G.Noguere+	22948
$n,0$		RP	2ZZZGEL		1.0+03	Jour	PR/C,74,054602	06	G.Noguere+	22948
n,el		RP	2ZZZGEL	4.1+01	1.0+05	Jour	PR/C,74,054602	06	G.Noguere+	22948
n,el	^{129}I	AMP	2ZZZGEL		2.5-02	Jour	PR/C,74,054602	06	G.Noguere+	22948
n,γ		RP	2ZZZGEL	3.5+03	1.0+05	Jour	PR/C,74,054602	06	G.Noguere+	22948
n,γ	^{130}I	CS	2ZZZGEL	5.5+03	1.1+05	Jour	PR/C,74,054602	06	G.Noguere+	22948

56 Barium 130

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
n,γ	^{131}Ba	CS	2GERKFK	Maxwl		Jour	EPJ/A,27,129	06	I.Dillmann+	22939

56 Barium 132

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
n,γ	^{133}Ba	CS	2GERKFK	Maxwl		Jour	EPJ/A,27,129	06	I.Dillmann+	22939

57 Lanthanum 139

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$p,0$		RP	2FR SAC	9.8+03	1.0+07	Jour	NP/A,202,609	73	M.Lamehi-Rachti+	F0800
p,el	^{139}La	DA	2FR SAC	9.4+06	1.2+07	Jour	NP/A,202,609	73	M.Lamehi-Rachti+	F0800
p,inel	^{139}La	DAP	2FR SAC	9.8+06	1.2+07	Jour	NP/A,202,609	73	M.Lamehi-Rachti+	F0800

74 Tungsten

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p,x	^{177}Ta	CS	3HUNDEB	2.0+07	3.3+07	Jour	NIM/B,252,160	06	F.Tarkanyi+	D4163
p,x	^{183}Ta	CS	3HUNDEB	6.8+06	3.3+07	Jour	NIM/B,252,160	06	F.Tarkanyi+	D4163
p,x	^{181}Re	CS	3HUNDEB	1.2+07	3.3+07	Jour	NIM/B,252,160	06	F.Tarkanyi+	D4163
p,x	^{182}Re	CS	3HUNDEB	5.7+06	3.3+07	Jour	NIM/B,252,160	06	F.Tarkanyi+	D4163
p,x	^{183}Re	CS	3HUNDEB	6.8+06	3.3+07	Jour	NIM/B,252,160	06	F.Tarkanyi+	D4163
p,x	^{184}Re	CS	3HUNDEB	6.8+06	3.3+07	Jour	NIM/B,252,160	06	F.Tarkanyi+	D4163
p,x	^{186}Re	CS	3HUNDEB	5.7+06	3.3+07	Jour	NIM/B,252,160	06	F.Tarkanyi+	D4163

76 Osmium 186

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
n,el	^{186}Os	?	2JPNITT			Jour	NIM/A,564,370	Apr 06	M.Segawa+	22953

78 Platinum

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
α,x	^{194}Au	CS	2BLGVUB	3.0+07	3.8+07	Jour	NIM/B,251,333	06	A.Hermanne+	D4132

α,x	^{196}Au	CS	2BLGVUB	2.4+07	3.8+07	Jour	NIM/B,251,333	06	A.Hermanne+	D4132
α,x	^{198}Au	CS	2BLGVUB	2.1+07	3.8+07	Jour	NIM/B,251,333	06	A.Hermanne+	D4132
α,x	^{199}Au	CS	2BLGVUB	1.4+07	3.8+07	Jour	NIM/B,251,333	06	A.Hermanne+	D4132
α,x	^{200}Au	CS	2BLGVUB	3.1+07	3.8+07	Jour	NIM/B,251,333	06	A.Hermanne+	D4132
α,x	^{192}Hg	CS	2BLGVUB	2.4+07	3.7+07	Jour	NIM/B,251,333	06	A.Hermanne+	D4132
α,x	^{193}Hg	CS	2BLGVUB	2.7+07	3.8+07	Jour	NIM/B,251,333	06	A.Hermanne+	D4132
α,x	^{195}Hg	CS	2BLGVUB	1.9+07	3.8+07	Jour	NIM/B,251,333	06	A.Hermanne+	D4132
α,x	^{197}Hg	CS	2BLGVUB	1.6+07	3.8+07	Jour	NIM/B,251,333	06	A.Hermanne+	D4132
α,x	^{199}Hg	CS	2BLGVUB	1.6+07	3.8+07	Jour	NIM/B,251,333	06	A.Hermanne+	D4132

79

Gold

197

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
n,el	^{197}Au	CS	2JPNIT	2.2+04	5.9+04	Jour	NIM/A,564,370	Apr 06	M.Segawa+	22953
p,x	^3He	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,73,044606	06	H.Machner+	D0424
p,x	^6He	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,73,044606	06	H.Machner+	D0424
p,x	^6Li	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,73,044606	06	H.Machner+	D0424
p,x	^7Li	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,73,044606	06	H.Machner+	D0424
p,x	^8Li	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,73,044606	06	H.Machner+	D0424
p,x	^9Li	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,73,044606	06	H.Machner+	D0424
p,x	^7Be	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,73,044606	06	H.Machner+	D0424
p,x	^9Be	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,73,044606	06	H.Machner+	D0424
p,x	^{10}Be	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,73,044606	06	H.Machner+	D0424
p,x	^{10}B	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,73,044606	06	H.Machner+	D0424
p,x	^{11}B	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,73,044606	06	H.Machner+	D0424
p,x	^{12}B	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,73,044606	06	H.Machner+	D0424
p,x	^{12}C	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,73,044606	06	H.Machner+	D0424
p,x	^{13}C	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,73,044606	06	H.Machner+	D0424
$p,x+\alpha$	inclusive	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,73,044606	06	H.Machner+	D0424
$d,2n$	^{197}Hg	CS	4UKRIJD	8.0+06	5.0+07	Jour	YF,67,899	04	V.A.Zheltonozhcky+	D5008

82

Lead

204

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$n,0$		RP	2ZZZCER			Jour	PR/C,75,015806	07	C.Domingo-Pardo+	22945
n,γ	^{205}Pb	CS	2ZZZCER	Maxwl	4.4+05	Jour	PR/C,75,015806	07	C.Domingo-Pardo+	22945

82

Lead

207

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$n,0$		RP	2ZZZCER			Jour	PR/C,74,055802	06	C.Domingo-Pardo+	22946
n,γ	^{208}Pb	CS	2ZZZCER	Maxwl		Jour	PR/C,74,055802	06	C.Domingo-Pardo+	22946

${}^6\text{He},7n$	${}^{208}\text{At}$	CS	4ZZZDUB	7.8+07	7.8+07	Jour	IZV,70,1558	06	A.A.Hassan+	F0734
${}^6\text{He},8n$	${}^{207}\text{At}$	CS	4ZZZDUB	9.4+07	9.4+07	Jour	IZV,70,1558	06	A.A.Hassan+	F0734
${}^6\text{He},\text{fis}$		CS	4ZZZDUB	5.0+07	1.7+08	Jour	IZV,70,1558	06	A.A.Hassan+	F0734
${}^6\text{He},\text{fus}$		CS	4ZZZDUB	1.9+07	5.1+07	Jour	IZV,70,1558	06	A.A.Hassan+	F0734
${}^{12}\text{C},{}^{13}\text{C}$	${}^{208}\text{Bi}$	DA	3INDTAT	6.2+07	8.7+07	Jour	PR/C,60,034611	99	S.Santra+	D6002
${}^{12}\text{C},\text{el}$	${}^{209}\text{Bi}$	DA	3INDTAT	5.9+07	8.7+07	Jour	PR/C,60,034611	99	S.Santra+	D6002
${}^{12}\text{C},\text{inel}$	${}^{209}\text{Bi}$	DA	3INDTAT	6.2+07	8.7+07	Jour	PR/C,60,034611	99	S.Santra+	D6002

90 Thorium 230

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
n,fis		CS	2FR CSN	3.3+05	9.9+06	Jour	NP/A,735,345	04	M.Petit+	22952

91 Protactinium 231

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
n,fis		CS	2FR CSN	1.0+06	9.9+06	Jour	NP/A,735,345	04	M.Petit+	22952

91 Protactinium 233

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
n,fis		CS	2FR CSN	1.0+06	9.9+06	Jour	NP/A,735,345	04	M.Petit+	22952
n,γ	${}^{234}\text{Pa}$	CSP	2FR CSN	1.0+05	9.0+05	Jour	NP/A,775,175	06	S.Boyer+	22947

92 Uranium

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$n,x+\alpha$	inclusive	KER	2BLGLVN	3.4+07	6.3+07	Thes	RAEYMACKERS	04	E.Raeymackers	22942
$n,x+d$	inclusive	KER	2BLGLVN	2.8+07	6.3+07	Thes	RAEYMACKERS	04	E.Raeymackers	22942
$n,x+p$	inclusive	KER	2BLGLVN	2.6+07	6.3+07	Thes	RAEYMACKERS	04	E.Raeymackers	22942
$n,x+t$	inclusive	KER	2BLGLVN	4.1+07	6.3+07	Thes	RAEYMACKERS	04	E.Raeymackers	22942

92 Uranium 233

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$d,p+\text{fis}$		CSP	4RUSEPA	1.2+07	1.2+07	Conf	2004SANTA,1,660	04	V.I.Serov+	F0807

92 Uranium 234

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,0</i>		RP	2ZZZCER			Conf	2006VANCOU,C032	06	W.Dridi+	22940
<i>n,γ</i>		RP	2ZZZCER		2.0+02	Conf	2006VANCOU,C032	06	W.Dridi+	22940

92 Uranium 235

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,fis</i>	Many	CHG	2FR ILL	2.5-02	2.5-02	Rept	ISINN-13,342	06	V.G.Tishchenko+	22938
<i>n,fis</i>	Many	?	2FR ILL	2.5-02	2.5-02	Rept	ISINN-13,342	06	V.G.Tishchenko+	22938

92 Uranium 238

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
⁷ Li,fis		CS	2BLGLVN	3.1+07	3.6+07	Jour	PR/C,74,044606	06	R.Raabe+	D0425
⁷ Li,fis		DA	2BLGLVN	3.1+07	3.6+07	Jour	PR/C,74,044606	06	R.Raabe+	D0425
⁷ Li,fus		CS	2BLGLVN	3.1+07	3.6+07	Jour	PR/C,74,044606	06	R.Raabe+	D0425
⁷ Be,fis		CS	2BLGLVN	3.9+07	5.4+07	Jour	PR/C,74,044606	06	R.Raabe+	D0425
⁷ Be,fis		DA	2BLGLVN	3.9+07	5.4+07	Jour	PR/C,74,044606	06	R.Raabe+	D0425
⁷ Be,fus		CS	2BLGLVN	3.9+07	5.4+07	Jour	PR/C,74,044606	06	R.Raabe+	D0425
⁹ Be,fis		CS	2BLGLVN	4.6+07	5.4+07	Jour	PR/C,74,044606	06	R.Raabe+	D0425
⁹ Be,fis		DA	2BLGLVN	4.6+07	5.4+07	Jour	PR/C,74,044606	06	R.Raabe+	D0425
⁹ Be,fus		CS	2BLGLVN	4.6+07	5.4+07	Jour	PR/C,74,044606	06	R.Raabe+	D0425

94 Plutonium 239

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>d,p+fis</i>		CSP	4RUSEPA	1.2+07	1.2+07	Conf	2004SANTA,1,660	04	V.I.Serov+	F0807

94 Plutonium 240

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,tot</i>		?	2ZZZGEL	1.3-02	1.0+03	Priv	SIEGLER	Jan 07	P.Siegler+	22954

98 Californium 252

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
0,fis	Many	CHG	2FR ILL	Spont		Rept	ISINN-13,342	06	V.G.Tishchenko+	22938
0,fis	Many	?	2FR ILL	Spont		Rept	ISINN-13,342	06	V.G.Tishchenko+	22938