

Japan Charged-Particle Nuclear Reaction Data Group (JCPRG)

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Retrieval service is available at:

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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					
<i>p,el</i>	¹ H	POD	1CANTMF	2.2+08		Jour	NP/A,629,433	98	A.R.Berdoz+	C1427
<i>d,γ</i>	³ He	POD	1USATNL	7.0+07		Rept	TUNL-36,56	97	R.S.Canon+	C1418
⁶ He, <i>n</i>	⁶ Li	DAP	1USAMSU	5.6+08		Jour	PR/C,54,2105	96	J.A.Brown+	C1399
¹⁴ O, <i>el</i>	¹ H	DA	1USALBL	9.1+05	5.4+06	Jour	PR/C,72,034312	05	F.Q.Guo+	C1369

1 Hydrogen 2

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,γ</i>	³ He	CS	1USATNL	1.0+05		Conf	99SANTA,,442	99	H.R.Weller	C1411
<i>d,γ</i>	⁴ He	CS	1USATNL	1.0+05		Conf	99SANTA,,442	99	H.R.Weller	C1411
⁶ He, <i>p</i>	⁷ He	DAP	1USAANL	6.9+07		Jour	PR/C,72,061301	05	A.H.Wuosmaa+	C1407

1 Hydrogen 3

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,n</i>	³ He	?	1USATNL	1.3+03	2.2+03	Rept	TUNL-36,45	97	C.R.Gould+	C1414

2 Helium 3

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>d,p</i>	⁴ He	DA	1USATNL	4.3+05		Rept	TUNL-36,49	97	C.R.Brune+	C1413
<i>d,p</i>	⁴ He	POD	1USATNL	1.1+05	3.2+05	Jour	NIM/A,365,36	95	W.Geist+	C1429

2 Helium 4

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,d</i>	³ He	DA	1CANTMF	2.1+08	5.1+08	Jour	PRL,41,1638	78	J.Kallne+	C1419

3 Lithium 7

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,γ</i>	⁸ Be	CSP	1USATNL	4.0+04	1.0+05	Conf	99SANTA,,442	99	H.R.Weller	C1411
<i>p,n</i>	⁷ Be	?	1USAMSU	3.5+07		Jour	PRL,44,972	80	S.M.Austin+	C1398
<i>d,n</i>	⁸ Be	CSP	1USATNL	3.3+07	5.7+07	Jour	PR/C,73,015801	06	A.Sabourov+	C1408

4 Beryllium

9

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,γ</i>	¹⁰ B	CSP	1USATNL	1.0+05		Conf	98VOLOS.,83	98	H.R.Weller+	C1412
<i>p,γ</i>	¹⁰ B	CSP	1USATNL	1.0+05		Conf	99SANTA.,442	99	H.R.Weller	C1411
<i>p,γ</i>	¹⁰ B	POD	1USATNL	2.8+05		Jour	PR/C,59,3425	99	S.J.Gaff+	C1430

5 Boron

11

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,γ</i>	¹² C	CSP	1USATNL	1.0+05		Conf	99SANTA.,442	99	H.R.Weller	C1411
<i>p,γ</i>	¹² C	POD	1USATNL	1.0+05		Rept	TUNL-36,66	97	R.S.Canon+	C1431
⁷ Li,2α	¹⁰ Be	CSP	1CANLUQ	1.4+06	6.1+06	Jour	NP/A,509,393	90	B.Dasmahapatra+	C1410
⁷ Li,2n	¹⁶ O	CSP	1CANLUQ	1.4+06	6.0+06	Jour	NP/A,509,393	90	B.Dasmahapatra+	C1410
⁷ Li,2n+α	¹² C	CSP	1CANLUQ	1.3+06	6.0+06	Jour	NP/A,509,393	90	B.Dasmahapatra+	C1410
⁷ Li,n+α	¹³ C	CSP	1CANLUQ	1.4+06	6.1+06	Jour	NP/A,509,393	90	B.Dasmahapatra+	C1410
⁷ Li,n+p	¹⁶ N	CSP	1CANLUQ	1.7+06	6.0+06	Jour	NP/A,509,393	90	B.Dasmahapatra+	C1410
⁷ Li,p	¹⁷ N	CSP	1CANLUQ	1.5+06	6.1+06	Jour	NP/A,509,393	90	B.Dasmahapatra+	C1410
⁷ Li,t	¹⁵ N	CSP	1CANLUQ	1.8+06	6.1+06	Jour	NP/A,509,393	90	B.Dasmahapatra+	C1410

6 Carbon

12

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	¹² C	DA	1CANTMF	2.5+08		Jour	PR/C,37,544	88	H.O.Meyer+	C1420
<i>p,el</i>	¹² C	DA	1CANTMF	3.0+08		Jour	PR/C,31,1569	85	H.O.Meyer+	C1421
<i>p,el</i>	¹² C	POD	1CANTMF	2.5+08		Jour	PR/C,37,544	88	H.O.Meyer+	C1420
<i>d,n</i>	¹³ N	DAP	1USATNL	5.5+06	1.4+07	Jour	PR/C,24,1852	81	P.W.Lisowski+	C1415
<i>d,n</i>	¹³ N	?	1USATNL	4.6+06	1.1+07	Jour	PR/C,24,1852	81	P.W.Lisowski+	C1415
⁷ Li,fus		CS	1USAFSU	1.0+07	3.8+07	Jour	NP/A,359,455	81	L.C.Dennis+	C1393
⁷ Li,t	¹⁶ O	DAP	1USAFSU	3.1+07	3.6+07	Jour	NP/A,359,455	81	L.C.Dennis+	C1393
¹² C,inel	¹² C	DAA	1USAANL	2.5+07	3.4+07	Jour	PR/C,65,024609	Jan 02	A.H.Wuosmaa+	C1118
¹² C,inel	¹² C	DAP	1USAANL	2.5+07	3.4+07	Jour	PR/C,65,024609	Jan 02	A.H.Wuosmaa+	C1118

6 Carbon

13

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
⁷ Li,2α	¹² B	CSP	1CANLUQ	2.6+06	7.8+06	Jour	NP/A,509,393	90	B.Dasmahapatra+	C1410
⁷ Li,2n	¹⁸ F	CSP	1CANLUQ	2.0+06	7.8+06	Jour	NP/A,509,393	90	B.Dasmahapatra+	C1410
⁷ Li,n+α	¹⁵ N	CSP	1CANLUQ	1.5+06	7.8+06	Jour	NP/A,509,393	90	B.Dasmahapatra+	C1410
⁷ Li,n+p	¹⁸ O	CSP	1CANLUQ	1.5+06	7.9+06	Jour	NP/A,509,393	90	B.Dasmahapatra+	C1410
⁷ Li,p	¹⁹ O	CSP	1CANLUQ	2.0+06	7.8+06	Jour	NP/A,509,393	90	B.Dasmahapatra+	C1410
⁷ Li,t	¹⁷ O	CSP	1CANLUQ	2.0+06	7.8+06	Jour	NP/A,509,393	90	B.Dasmahapatra+	C1410
¹³ C,α	²² Ne	CSP	1USAPEN	6.2+06	1.3+07	Jour	PR/C,32,861	85	G.P.Gilfoyle+	C1391

$^{13}\text{C},\alpha$	^{22}Ne	DAP	1USAPEN	6.2+06	9.1+06	Jour	PR/C,34,152	86	G.P.Gilfoyle+	C1392
$^{13}\text{C},\alpha$	^{22}Ne	DAP	1USAPEN	9.2+06		Jour	PR/C,32,861	85	G.P.Gilfoyle+	C1391

7 Nitrogen 14

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
n,γ	^{15}N	CS	4RUSLIN	2.8-02		Jour	NIM/A,545,296	05	Yu.E.Loginov+	41463
p,γ	^{15}O	CSP	1USATNL	1.9+05	4.8+05	Jour	PRL,94,082503	05	R.C.Runkle+	C1340
d,n	^{15}O	?	1USATNL	7.5+06	1.4+07	Jour	PR/C,24,1852	81	P.W.Lisowski+	C1415

8 Oxygen 16

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
d,n	^{17}F	?	1USATNL	5.6+06	1.5+07	Jour	PR/C,24,1852	81	P.W.Lisowski+	C1415

9 Fluorine 19

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
n,α	^{16}N	CS	2TUKCNA	1.4+07	1.5+07	Jour	ANE,33,159	06	A.Durusoy+	22913
n,γ	^{20}F	CS	4RUSLIN	2.8-02		Jour	NIM/A,545,296	05	Yu.E.Loginov+	41463

10 Neon 21

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p,γ		RP	1CANTMF	2.6+05	1.1+06	Jour	NIM/A,553,491	05	S.Engel+	C1403

12 Magnesium 24

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p,el	^{24}Mg	DA	1CANTMF	2.5+08		Jour	PR/C,38,229	88	K.H.Hicks+	C1426
p,el	^{24}Mg	POD	1CANTMF	2.5+08		Jour	PR/C,38,229	88	K.H.Hicks+	C1426
p,γ		RP	1CANTMF	2.1+05	7.9+05	Jour	NIM/A,553,491	05	S.Engel+	C1403
p,inel	^{24}Mg	DAP	1CANTMF	2.5+08		Jour	PR/C,38,229	88	K.H.Hicks+	C1426
p,inel	^{24}Mg	POD	1CANTMF	2.0+08	2.5+08	Jour	PR/C,38,229	88	K.H.Hicks+	C1426

13 Aluminium 27

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

n,α	incl	CS	2ZZZGEL	6.5+06	1.6+07	Jour	NSE,128,47	98	C.Tsbaris+	22733
n,α	incl	DA	2ZZZGEL	6.5+06	1.6+07	Jour	NSE,128,47	98	C.Tsbaris+	22733
p,γ	^{28}Si	CSP	1CANLUQ	3.1+06	3.6+06	Jour	PR/C,34,2319	86	C.Pruneau+	C1409
$^3\text{He},d$	^{28}Si	DAP	1USAPTN	2.0+07		Jour	NP/A,459,239	86	A.E.Champagne+	C1389

14 Silicon 28

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p,el	^{28}Si	DA	1CANTMF	2.0+08	4.0+08	Jour	PR/C,38,229	88	K.H.Hicks+	C1426
p,el	^{28}Si	POD	1CANTMF	2.0+08	2.5+08	Jour	PR/C,38,229	88	K.H.Hicks+	C1426
p,inel	^{28}Si	DAP	1CANTMF	2.0+08	4.0+08	Jour	PR/C,38,229	88	K.H.Hicks+	C1426
p,inel	^{28}Si	DAP	1CANTMF	4.0+08	2.0+08	Jour	PR/C,37,1119	88	O.Hausser+	C1422
d,n	^{29}P	?	1USATNL	6.5+06	1.4+07	Jour	PR/C,24,1852	81	P.W.Lisowski+	C1415
$^6\text{Li},\alpha$	^{30}P	DAP	1USAFSU	3.4+07		Rept	TUNL-36,54	97	C.R.Brune+	C1417

19 Potassium 39

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$d,^3\text{He}$	^{38}Ar	DAP	1USAANL	2.3+07		Jour	NP/A,394,109	83	C.M.Bhat+	C1390
$^{12}\text{C},\text{el}$	^{39}K	DA	1USAFSU	5.4+07	6.3+07	Jour	NP/A,337,520	80	C.W.Glover+	C1395

19 Potassium 41

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$d,^3\text{He}$	^{40}Ar	DAP	1USAANL	2.3+07		Jour	NP/A,394,109	83	C.M.Bhat+	C1390

20 Calcium 40

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
α,el	^{40}Ca	DA	1USAMRY	1.4+08		Jour	PR/C,10,1362	74	D.A.Goldberg+	C1387
α,γ		RP	1USAANL	4.2+06		Jour	PRL,96,041102	06	H.Nassar+	C1406
α,γ	^{44}Ti	CS	1USAANL	3.1+06		Jour	PRL,96,041102	06	H.Nassar+	C1406
$^7\text{Li},\text{el}$	^{40}Ca	DA	1USAFSU	3.4+07		Jour	NP/A,341,137	80	C.W.Glover+	C1394
$^{10}\text{B},\text{el}$	^{40}Ca	DA	1USAFSU	4.7+07		Jour	NP/A,337,520	80	C.W.Glover+	C1395
$^{11}\text{B},\text{el}$	^{40}Ca	DA	1USAFSU	5.2+07		Jour	NP/A,337,520	80	C.W.Glover+	C1395

20 Calcium 44

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$^7\text{Li},\text{el}$	^{44}Ca	DA	1USAFSU	3.4+07		Jour	NP/A,341,137	80	C.W.Glover+	C1394

20 Calcium 48											
Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation		Date	Author	Data #
				Min	Max		Ref	Vol Page			
${}^7\text{Li,el}$	${}^{48}\text{Ca}$	DA	1USAFSU	3.4+07		Jour	NP/A,341,137		80	C.W.Glover+	C1394
22 Titanium 46											
α,el	${}^{46}\text{Ti}$	DA	1USAMRD	1.4+08		Jour	PRL,42,54		79	P.L.Roberson+	C1402
22 Titanium 48											
α,el	${}^{48}\text{Ti}$	DA	1USAMRD	1.4+08		Jour	PRL,42,54		79	P.L.Roberson+	C1402
22 Titanium 50											
α,el	${}^{50}\text{Ti}$	DA	1USAMRD	1.4+08		Jour	PRL,42,54		79	P.L.Roberson+	C1402
26 Iron 54											
${}^7\text{Li,el}$	${}^{54}\text{Fe}$	DA	1USAFSU	3.6+07	4.8+07	Jour	NP/A,341,137		80	C.W.Glover+	C1394
26 Iron 56											
${}^7\text{Li,el}$	${}^{56}\text{Fe}$	DA	1USAFSU	3.4+07		Jour	NP/A,341,137		80	C.W.Glover+	C1394
27 Cobalt 59											
α,inel	${}^{59}\text{Co}$	CS	1USAYAL	1.2+07	1.9+07	Jour	PR,168,1224		68	J.M.D'Auria+	C1432
α,n	${}^{62}\text{Cu}$	CS	1USAYAL	8.0+06	2.0+07	Jour	PR,168,1224		68	J.M.D'Auria+	C1432

α,p	incl	CS	1USAYAL	1.2+07	1.9+07	Jour	PR,168,1224	68	J.M.D'Auria+	C1432
α,p	incl	DAE	1USAYAL	1.2+07	1.9+07	Jour	PR,168,1224	68	J.M.D'Auria+	C1432

28 Nickel 58

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
n,α	incl	CS	2ZZZGEL	5.0+06	1.6+07	Jour	NSE,128,47	98	C.Tsbaris+	22733
n,α	incl	DA	2ZZZGEL	5.0+06	1.6+07	Jour	NSE,128,47	98	C.Tsbaris+	22733
n,α	incl	DAE	2ZZZGEL	9.0+06		Jour	NSE,128,47	98	C.Tsbaris+	22733
n,α	incl	DE	2ZZZGEL	9.0+06		Jour	NSE,128,47	98	C.Tsbaris+	22733
n,p	incl	CS	2ZZZGEL	2.0+06	1.5+07	Jour	NSE,128,47	98	C.Tsbaris+	22733
n,p	incl	DA	2ZZZGEL	2.0+06	1.5+07	Jour	NSE,128,47	98	C.Tsbaris+	22733
n,p	incl	DAE	2ZZZGEL	9.0+06		Jour	NSE,128,47	98	C.Tsbaris+	22733
n,p	incl	DE	2ZZZGEL	9.0+06		Jour	NSE,128,47	98	C.Tsbaris+	22733
${}^7\text{Li,el}$	${}^{58}\text{Ni}$	DA	1USAFSU	3.4+07		Jour	NP/A,341,137	80	C.W.Glover+	C1394

28 Nickel 60

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$\alpha,n+p$	${}^{62}\text{Cu}$	CS	1USABRK	3.0+07	3.2+07	Prog	UCRL-8678	59	O.R.J.Silva	C1400
${}^7\text{Li,el}$	${}^{60}\text{Ni}$	DA	1USAFSU	3.4+07		Jour	NP/A,341,137	80	C.W.Glover+	C1394

28 Nickel 62

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$\alpha,n+p$	${}^{64}\text{Cu}$	CS	1USABRK	1.3+07	5.0+07	Prog	UCRL-8678	59	O.R.J.Silva	C1400

29 Copper

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
${}^3\text{He,el}$	${}^{nat}\text{Cu}$	DA	1USABRK	3.1+07		Prog	UCRL-9996	61	G.Igo+	C1401

29 Copper 63

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
n,p	incl	CS	2ZZZGEL	2.0+06	1.5+07	Jour	NSE,128,47	98	C.Tsbaris+	22733
n,p	incl	DA	2ZZZGEL	2.0+06	1.5+07	Jour	NSE,128,47	98	C.Tsbaris+	22733
n,p	incl	DAE	2ZZZGEL	9.0+06		Jour	NSE,128,47	98	C.Tsbaris+	22733
n,p	incl	DE	2ZZZGEL	9.0+06		Jour	NSE,128,47	98	C.Tsbaris+	22733

30

Zinc

64

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$d,^6\text{Li}$	^{60}Ni	DAP	1USATNL	1.6+07		Jour	PR/C,45,2824	92	J.E.Bowsher+	C1416
$d,^6\text{Li}$	^{60}Ni	POD	1USATNL	1.6+07		Jour	PR/C,45,2824	92	J.E.Bowsher+	C1416

40

Zirconium

90

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p,el	^{90}Zr	DA	1CANTMF	4.0+08		Jour	JP/G,15,91	89	L.Lee+	C1424
p,el	^{90}Zr	POD	1CANTMF	4.0+08		Jour	JP/G,15,91	89	L.Lee+	C1424
p,inel	^{90}Zr	DAP	1CANTMF	4.0+08		Jour	JP/G,15,91	89	L.Lee+	C1424
p,inel	^{90}Zr	POD	1CANTMF	4.0+08		Jour	JP/G,15,91	89	L.Lee+	C1424
α,el	^{90}Zr	DA	1USAMRY	1.4+08		Jour	PR/C,10,1362	74	D.A.Goldberg+	C1387
$^7\text{Li},\text{el}$	^{90}Zr	DA	1USAFSU	3.4+07		Jour	NP/A,341,137	80	C.W.Glover+	C1394

40

Zirconium

94

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
n,α	^{91}Sr	CS	2ZZZGEL	1.5+07	1.9+07	Rept	EUR-20820-EN	03	V.Semkova+	22822
n,p	^{94}Y	CS	2ZZZGEL	1.5+07	1.9+07	Rept	EUR-20820-EN	03	V.Semkova+	22822

42

Molybdenum

95

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
d,t	^{94}Mo	DA	1USATNL	7.0+06		Jour	PRL,68,1112	92	R.K.Das+	C1428
d,t	^{94}Mo	POD	1USATNL	7.0+06		Jour	PRL,68,1112	92	R.K.Das+	C1428

42

Molybdenum

96

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$\alpha,2n$	^{98}Ru	SPC	1USAYAL	2.4+07	3.0+07	Jour	PR/C,70,044312	04	R.B.Cakirli+	C1405

47

Silver

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p,α		POD	1CANTMF	5.2+08	2.4+08	Jour	PR/C,25,828	82	R.E.L.Green+	C1423
$p,^3\text{He}$		POD	1CANTMF	5.2+08	2.4+08	Jour	PR/C,25,828	82	R.E.L.Green+	C1423

50 Tin 119

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>d,t</i>	¹¹⁸ Sn	DA	1USATNL	6.0+06	7.0+06	Jour	PRL,68,1112	92	R.K.Das+	C1428
<i>d,t</i>	¹¹⁸ Sn	POD	1USATNL	6.0+06	7.0+06	Jour	PRL,68,1112	92	R.K.Das+	C1428

53 Iodine 127

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,2γ</i>	¹²⁸ I	SPC	4ZZZDUB	2.5-02		Jour	IZV,61,(11),2093	Nov 97	M.A.Ali+	41459

53 Iodine 128

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,2γ</i>	¹²⁹ I	SPC	4ZZZDUB	2.5-02		Jour	IZV,61,(11),2093	Nov 97	M.A.Ali+	41459

54 Xenon 129

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
³ He, <i>d</i>	¹³⁰ Cs	DAP	1CANCRC	2.7+07		Jour	NP/A,357,356	81	J.C.Hardy+	C1388

55 Cesium 137

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,γ</i>	¹³⁸ Cs	CS	2JPNKTO	2.5-02		Jour	NST,37,(10),827	Oct 00	H.Wada+	22649
<i>n,γ</i>	¹³⁸ Cs	CS	2JPNJAE	2.5-02		Jour	NST,30,(11),1099	Nov 93	T.Sekine+	22737
<i>n,γ</i>	¹³⁸ Cs	RI	2JPNJAE	5.0-01		Jour	NST,30,(11),1099	Nov 93	T.Sekine+	22737

62 Samarium 148

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	¹⁴⁸ Sm	DA	1USAMRD	6.6+07		Jour	PR/C,39,1730	89	A.Guterman+	C1397
<i>p,inel</i>	¹⁴⁸ Sm	DAP	1USAMRD	6.6+07		Jour	PR/C,39,1730	89	A.Guterman+	C1397

62 Samarium 149

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,2γ</i>	¹⁵⁰ Sm	SPC	4ZZZDUB	2.5-02		Jour	IZV,57,(9),128	Sep 93	E.V.Vasil'Eva+	41460
<i>d,t</i>	¹⁴⁸ Sm	DA	1USATNL	8.0+06		Jour	PRL,68,1112	92	R.K.Das+	C1428
<i>d,t</i>	¹⁴⁸ Sm	POD	1USATNL	8.0+06		Jour	PRL,68,1112	92	R.K.Das+	C1428

62 Samarium 154

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	¹⁵⁴ Sm	DA	1USAMRD	6.6+07		Jour	PR/C,39,1730	89	A.Guterman+	C1397
<i>p,inel</i>	¹⁵⁴ Sm	DAP	1USAMRD	6.6+07		Jour	PR/C,39,1730	89	A.Guterman+	C1397

66 Dysprosium 161

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,γ</i>	¹⁶² Dy	SPC	2FR ILL	Maxwl		Jour	NP/A,764,42	06	A.Aprahamian+	22912

73 Tantalum 181

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,2γ</i>	¹⁸² Ta	SPC	4ZZZDUB	2.5-02		Jour	IZV,61,(11),2082	Nov 97	M.A.Ali+	41458

74 Tungsten 184

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
⁷ Li, <i>α</i>	¹⁸⁷ Re	?	1USABRK	4.2+07	5.5+07	Jour	PR/C,72,054605	05	R.M.Clark+	C1404
⁷ Li, <i>t</i>	¹⁸⁸ Os	?	1USABRK	4.2+07	5.5+07	Jour	PR/C,72,054605	05	R.M.Clark+	C1404

79 Gold 197

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,el</i>	¹⁹⁷ Au	DA	4UKRIJD	1.3+05		Jour	YK,1994,(1),15	May 94	L.L.Litvinskiy+	41185
<i>n,inel</i>	¹⁹⁷ Au	DAP	4UKRIJD	1.3+05		Jour	YK,1994,(1),15	May 94	L.L.Litvinskiy+	41185

92 Uranium 235

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,f</i>		FY	2FR ILL	Maxwl		Jour	NP/A,742,291	04	C.Wagemans+	22896
<i>n,f</i>		FY	2FR ILL	Maxwl		Conf	2004SANTA,,857	04	O.Serot+	22900
<i>n,f</i>		FY	2FR CAD	Maxwl		Conf	2004SANTA,,857	04	O.Serot+	22900
<i>n,f</i>		KE	2FR ILL	2.5-02		Jour	NP/A,742,291	04	C.Wagemans+	22896
<i>n,f</i>	Many	FY	4UZ UZB	Maxwl		Jour	YF,68,(2),201	Feb 05	V.P.Pikul+	41465

92 Uranium 236

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
¹² C, <i>el</i>	²³⁶ U	DA	1USAWAU	6.0+07	6.7+07	Jour	PR/C,34,1353	86	T.Murakami+	C1396
¹² C, <i>f</i>		CS	1USAWAU	6.2+07	6.7+07	Jour	PR/C,34,1353	86	T.Murakami+	C1396

92 Uranium 238

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,f</i>		CS	2TUKANR	Fast		Jour	RCA,85,85	99	I.Celenk+	22785
<i>n,f</i>		KE	4RUSFEI	1.6+07	1.8+07	Jour	YF,59,(11),1934	96	G.N.Smirenkina+	41461
<i>n,f</i>		NU	4RUSFEI	1.6+07	1.8+07	Jour	YF,59,(11),1934	96	G.N.Smirenkina+	41461
<i>n,f</i>		?	4RUSFEI	1.6+07	1.8+07	Jour	YF,59,(11),1934	96	G.N.Smirenkina+	41461
<i>n,f</i>		?	4RUSFEI	5.0+06	1.3+07	Jour	YF,64,(1),3	Jan 01	A.M.Trufanov+	41450
<i>n,f</i>		?	4RUSFEI	6.0+06	7.0+06	Jour	YF,67,(7),1270	Jul 04	G.N.Lovchikova+	41447
<i>n,γ</i>	²³⁹ U	CS	2UK HAR	2.5+00	5.3+00	Priv	MOXON	Mar 06	M.C.Moxon	22541
<i>n,γ</i>	²³⁹ U	?	2UK HAR	5.3+00	2.5+00	Priv	MOXON	Mar 06	M.C.Moxon	22541
<i>p,f</i>	Many	FY	1USALAS	1.2+07	5.6+06	Jour	RCA,64,145	94	A.Turkevich	C1385
<i>p,n</i>	²³⁸ Np	CS	1USALAS	5.6+06	1.2+07	Jour	RCA,64,145	94	A.Turkevich	C1385

93 Neptunium 237

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,f</i>		CS	2JPNKTO	1.1+00	4.6+03	Jour	NST,30,863	93	A.Yamanaka+	22731
<i>n,f</i>		FY	2FR ILL	Maxwl		Jour	NP/A,742,291	04	C.Wagemans+	22896
<i>n,f</i>		FY	2FR CAD	Maxwl		Conf	2004SANTA,,857	04	O.Serot+	22900
<i>n,γ</i>	²³⁸ Np	RI	2JPNKTO	3.6-01		Jour	NST,40,559	03	T.Katoh+	22835

93 Neptunium 238

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,f</i>		FY	2FR CAD	Maxwl		Conf	2004SANTA,,857	04	O.Serot+	22900

94 Plutonium 238

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
0,f		FY	2BLGGHT	Spont		Jour	NP/A,742,291	04	C.Wagemans+	22896
0,f		FY	2FR CAD	Spont		Conf	2004SANTA,,857	04	O.Serot+	22900
<i>n,f</i>		FY	2FR CAD	Maxwl		Conf	2004SANTA,,857	04	O.Serot+	22900

94 Plutonium 239

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,f</i>		FY	2FR ILL	Maxwl		Jour	NP/A,742,291	04	C.Wagemans+	22896
<i>n,f</i>		FY	2FR ILL	Maxwl		Conf	2004SANTA,,857	04	O.Serot+	22900
<i>n,f</i>		FY	2FR CAD	Maxwl		Conf	2004SANTA,,857	04	O.Serot+	22900
<i>n,f</i>	Many	KE	2FR ILL	2.5-02		Jour	ASL,49,(1),117	Feb 99	M.Woestheinrich+	22734
<i>n,f</i>	Many	?	2FR ILL	2.5-02		Jour	ASL,49,(1),117	Feb 99	M.Woestheinrich+	22734

94 Plutonium 240

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
0,f		FY	2BLGGHT	Spont		Jour	NP/A,742,291	04	C.Wagemans+	22896
0,f		FY	2FR CAD	Spont		Conf	2004SANTA,,857	04	O.Serot+	22900

94 Plutonium 241

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,f</i>		FY	2FR ILL	Maxwl		Jour	NP/A,742,291	04	C.Wagemans+	22896
<i>n,f</i>		FY	2FR ILL	Maxwl		Conf	2004SANTA,,857	04	O.Serot+	22900
<i>n,f</i>		FY	2FR CAD	Maxwl		Conf	2004SANTA,,857	04	O.Serot+	22900

94 Plutonium 242

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
0,f		FY	2BLGGHT	Spont		Jour	NP/A,742,291	04	C.Wagemans+	22896
0,f		FY	2FR CAD	Spont		Conf	2004SANTA,,857	04	O.Serot+	22900

94 Plutonium 244

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
0,f		FY	2BLGGHT	Spont		Jour	NP/A,742,291	04	C.Wagemans+	22896
0,f		FY	2FR CAD	Spont		Conf	2004SANTA,,857	04	O.Serot+	22900

95 Americium 241

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,2n</i>	²⁴⁰ Am	CS	4RUSRI	1.3+07	1.5+07	Jour	YF,63,(9),1588	Sep 00	A.A.Filatenkov+	41462
<i>n,3n</i>	²³⁹ Am	CS	4RUSRI	1.5+07		Jour	YF,63,(9),1588	Sep 00	A.A.Filatenkov+	41462
<i>n,α</i>	²³⁸ Np	CS	4RUSRI	1.5+07		Jour	YF,63,(9),1588	Sep 00	A.A.Filatenkov+	41462
<i>n,f</i>		FY	2FR ILL	Maxwl		Jour	NP/A,742,291	04	C.Wagemans+	22896
<i>n,f</i>		FY	2FR ILL	Maxwl		Conf	2004SANTA,,857	04	O.Serot+	22900
<i>n,f</i>		FY	2FR CAD	Maxwl		Conf	2004SANTA,,857	04	O.Serot+	22900
<i>n,f</i>		?	2GERKFK	0.0+00		Jour	NSE,78,(3),248	Jul 81	W.Hage+	20775

95 Americium 242

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,f</i>		FY	2FR CAD	Maxwl		Conf	2004SANTA,,857	04	O.Serot+	22900

95 Americium 243

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,f</i>		FY	2FR ILL	Maxwl		Jour	NP/A,742,291	04	C.Wagemans+	22896
<i>n,f</i>		FY	2FR CAD	Maxwl		Conf	2004SANTA,,857	04	O.Serot+	22900

96 Curium 242

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
0,f		FY	2BLGGHT	Spont		Jour	NP/A,742,291	04	C.Wagemans+	22896
0,f		FY	2FR CAD	Spont		Conf	2004SANTA,,857	04	O.Serot+	22900

96 Curium 243

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,f</i>		FY	2FR CAD	Maxwl		Conf	2004SANTA,,857	04	O.Serot+	22900

96 Curium 244

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
0,f		FY	2BLGGHT	Spont		Jour	NP/A,742,291	04	C.Wagemans+	22896
0,f		FY	2FR CAD	Spont		Conf	2004SANTA,,857	04	O.Serot+	22900
n,f		FY	2FR CAD	Maxwl		Conf	2004SANTA,,857	04	O.Serot+	22900

96 Curium 245

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
n,f		FY	2FR ILL	Maxwl		Jour	NP/A,742,291	04	C.Wagemans+	22896
n,f		FY	2FR CAD	Maxwl		Conf	2004SANTA,,857	04	O.Serot+	22900

96 Curium 246

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
0,f		FY	2BLGGHT	Spont		Jour	NP/A,742,291	04	C.Wagemans+	22896
0,f		FY	2FR CAD	Spont		Conf	2004SANTA,,857	04	O.Serot+	22900

96 Curium 247

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
n,f		FY	2FR ILL	Maxwl		Jour	NP/A,742,291	04	C.Wagemans+	22896
n,f		FY	2FR ILL	Maxwl		Conf	2004SANTA,,857	04	O.Serot+	22900
n,f		FY	2FR CAD	Maxwl		Conf	2004SANTA,,857	04	O.Serot+	22900

96 Curium 248

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
0,f		FY	2BLGGHT	Spont		Jour	NP/A,742,291	04	C.Wagemans+	22896
0,f		FY	2FR CAD	Spont		Conf	2004SANTA,,857	04	O.Serot+	22900

98 Californium 250

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
0,f		FY	2BLGGHT	Spont		Jour	NP/A,742,291	04	C.Wagemans+	22896
0,f		FY	2FR CAD	Spont		Conf	2004SANTA,,857	04	O.Serot+	22900

98 Californium 251

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,f</i>		FY	2FR ILL	Maxwl		Conf	2004SANTA,,857	04	O.Serot+	22900
<i>n,f</i>		FY	2FR CAD	Maxwl		Conf	2004SANTA,,857	04	O.Serot+	22900

98 Californium 252

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
0,f		FY	2BLGGHT	Spont		Jour	NP/A,742,291	04	C.Wagemans+	22896
0,f		FY	2FR CAD	Spont		Conf	2004SANTA,,857	04	O.Serot+	22900
0,f		KE	2BLGGHT	Spont		Jour	NP/A,742,291	04	C.Wagemans+	22896
0,f	¹⁰ Be	?	4ZZZDUB	Spont		Jour	YF,67,(10),1885	Oct 04	G.M.Ter-Akopian+	41464
0,f	Many	KE	4ZZZDUB	Spont		Jour	YF,67,(10),1885	Oct 04	G.M.Ter-Akopian+	41464
0,f	Many	?	4ZZZDUB	Spont		Jour	YF,67,(10),1885	Oct 04	G.M.Ter-Akopian+	41464

100 Fermium 256

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
0,f		FY	2FR CAD	Spont		Conf	2004SANTA,,857	04	O.Serot+	22900

100 Fermium 257

Reaction	Product	Quantity	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
0,f		FY	2BLGGHT	Spont		Jour	NP/A,742,291	04	C.Wagemans+	22896
0,f		FY	2FR CAD	Spont		Conf	2004SANTA,,857	04	O.Serot+	22900