EXFOR News (October 2012)

New experimental data available from Nuclear Reaction Data Centres

EXFOR is a world-wide data library for experimental neutron induced, charged-particle induced and photonuclear reaction data compiled by the International Network of the Nuclear Reaction Data Centres (NRDC)[a] coordinated by the IAEA Nuclear Data Section. Regularly updated retrieval database is available at NNDC, NEADB, IAEA-NDS, JAEA, JCPRG and CDFE. Please send an email to n.otsuka@iaea.org if you would prefer to be advised electronically when EXFOR News is released.

Quantity codes

ALF	α-value ($\sigma_{\rm capt}/\sigma_{\rm fis}$)	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	Fission neutron multiplicity $\bar{\nu}$
D3A	Triple differential $\mathrm{d}\Omega_1/\mathrm{d}\Omega_2/\mathrm{d}E'$	NUD	Delayed fission neutron multiplicity $\bar{\nu}_d$
D3E	Triple differential $\mathrm{d}\Omega/\mathrm{d}E'_1/\mathrm{d}E'_2$	NUF	Fragment neutrons
D4A	Quadruple diff. $\mathrm{d}\Omega_1/\mathrm{d}\Omega_2/\mathrm{d}E'_1/\mathrm{d}E'_2$	POL	Polarization
DA	Differential $\mathrm{d}/\mathrm{d}\Omega$	POD	Differential polarization
DAA	Double differential $\mathrm{d}\Omega_1/\mathrm{d}\Omega_2$	PY	Product yield (other than fission)
DAE	Double differential $\mathrm{d}\Omega/\mathrm{d}E'$	RI	Resonance integral
DAP	Partial differential $\mathrm{d}/\mathrm{d}\Omega$	RP	Resonance parameter
DAT	Temperature-dependent Legendre coefficient	RR	Reaction rate
DE	Differential $\mathrm{d}/\mathrm{d}E'$	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	η-value $\bar{\nu}\sigma_{\rm fis}/(\sigma_{\rm capt}+\sigma_{\rm fis})$	TTD	Differential thick target yield, $\mathrm{d}/\mathrm{d}\Omega$
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)

[a] NNDC (USA), NEADB (France), NDS (Austria), CJD (Russia), CNDC (China), ATOMKI (Hungary), NDPCI (India), JAEA (Japan), JCPRG (Japan), KAERI (Korea), CAJaD (Russia), CDFE (Russia), CNPD (Russia), UkrNDC (Ukraine)

1 Hydrogen 1

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,π^-+π^++n	^{1}H	CS	4ZZZDUB			Jour	FCY/L,9,(1),77	12	Yu.A.Troyan+	41587

1 Hydrogen 2

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
^{8}Li,n	^{9}Be	?	1USANOT	1.5+06	2.8+06	Jour	NP/A,584,315	95	M.J.Balbes+	C1337
^{8}Li,t	^{7}Li	?	1USANOT	1.5+06	2.8+06	Jour	NP/A,584,315	95	M.J.Balbes+	C1337
^{10}Be,el	^{2}H	?	1USAORL	6.0+07	1.1+08	Jour	PRL,108,192701	12	K.T.Schmitt+	C1925
^{10}Be,p	^{11}Be	DAP	1USAORL	6.0+07	1.1+08	Jour	PRL,108,192701	12	K.T.Schmitt+	C1925
^{18}F,n	^{19}Ne	DAP	1USAORL	1.5+08	1.5+08	Jour	PR/C,85,037601	12	A.S.Adekola+	C1906

2 Helium 4

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
^{7}Be,0		RP	2UK BIR			Jour	PR/C,85,014304	12	M.Freer+	C1890
^{7}Be,el	^{4}He	DA	1USAORL	1.5+06	6.8+06	Jour	PR/C,85,014304	12	M.Freer+	C1890
^{7}Be,el	^{4}He	DA	2BLGLVN	7.2+05	2.1+06	Jour	PR/C,85,014304	12	M.Freer+	C1890
^{7}Be,p	^{10}B	DA	1USAORL	1.1+07	1.5+07	Jour	PR/C,85,014304	12	M.Freer+	C1890
^{7}Be,p	^{10}B	DA	2BLGLVN	9.0+06	9.8+06	Jour	PR/C,85,014304	12	M.Freer+	C1890

3 Lithium 6

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,t	^{4}He	CS	1USAORL	8.2+04	4.7+05	Jour	BAP,23,526(BI3)	Apr 78	C.Renner+	10841

3 Lithium 7

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
^{12}B,^{7}Be	^{12}Be	?	1USAMSU	9.6+08	9.6+08	Jour	PRL,108,122501	12	R.Meharchand+	C1910

4 Beryllium 9

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,p+α	^{5}He	D3A	1USAINU	1.5+08	1.5+08	Jour	PR/C,31,1662	85	C.W.Wang+	C1559

p,p+α	^{5}He	POD	1USAINU	1.5+08	1.5+08	Jour	PR/C,31,1662	85	C.W.Wang+	C1559
^{9}Be,x	^{15}C	?	1USABRK	2.8+07	3.8+07	Rept	AIP-1005,77	08	J.Gibelin+	C1646

6 Carbon 12

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
α,el	^{12}C	?	1USANOT	2.6+06	6.6+06	Jour	PRL,88,072501	02	P.Tischhauser+	C1461

6 Carbon 13

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
^{3}He,p	^{15}N	CSP	1USANRL	2.0+06	4.5+06	Jour	PR,107,538	57	E.G.Illsley+	C1361
^{3}He,p	^{15}N	DAP	1USANRL	2.0+06	4.5+06	Jour	PR,107,538	57	E.G.Illsley+	C1361
α,0		RP	1USAORL			Jour	PR/C,7,1356	73	J.K.Bair+	C0489
α,n		RP	1USAORL	7.7+05	5.0+06	Jour	PR/C,7,1356	73	J.K.Bair+	C0489
α,n	^{16}O	CS	1USAORL	7.6+05	4.1+06	Jour	PR/C,7,1356	73	J.K.Bair+	C0489

8 Oxygen 17

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
α,0		RP	1USAORL			Jour	PR/C,7,1356	73	J.K.Bair+	C0489
α,n		RP	1USAORL	7.7+05	5.3+06	Jour	PR/C,7,1356	73	J.K.Bair+	C0489
α,n	^{20}Ne	CS	1USAORL	9.3+05	5.3+06	Jour	PR/C,7,1356	73	J.K.Bair+	C0489

8 Oxygen 18

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
α,0		RP	1USAORL			Jour	PR/C,7,1356	73	J.K.Bair+	C0489
α,n		RP	1USAORL	8.6+05	2.5+06	Jour	PR/C,7,1356	73	J.K.Bair+	C0489
α,n	^{21}Ne	CS	1USAORL	8.6+05	2.0+06	Jour	PR/C,7,1356	73	J.K.Bair+	C0489

9 Fluorine 18

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,el		RP	1USAORL	6.8+05	1.7+06	Jour	PR/C,85,037601	12	A.S.Adekola+	C1906

12 Magnesium 24

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,inel	^{24}Mg	DAP	1USANRD	2.8+06	2.8+06	Rept	USNRDL-TR-916	65	F.C.Engesser+	14325

12 Magnesium 25

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,inel	^{25}Mg	DAP	1USANRD	2.8+06	2.8+06	Rept	USNRDL-TR-916	65	F.C.Engesser+	14325

12 Magnesium 26

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,inel	^{26}Mg	DAP	1USANRD	2.8+06	2.8+06	Rept	USNRDL-TR-916	65	F.C.Engesser+	14325

13 Aluminium 27

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,inel	^{27}Al	DAP	1USANRD	2.8+06	2.8+06	Rept	USNRDL-TR-916	65	F.C.Engesser+	14325
p,x	^{22}Na	?	1USABNL	4.2+08	2.8+10	Jour	PR,136,B1359	64	S.Meloni+	C0349

14 Silicon 28

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,inel	^{28}Si	DAP	1USANRD	2.8+06	2.8+06	Rept	USNRDL-TR-916	65	F.C.Engesser+	14325
α,inel	^{28}Si	DAP	1USATAM	2.4+08	2.4+08	Jour	PR/C,57,1134	Mar 98	D.H.Youngblood+	C1065

15 Phosphorus 31

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,α		RP	1USAORL	6.0+05	6.2+05	Jour	EPJ/A,47,66	11	B.H.Moazen+	C1882

17 Chlorine 35

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,α		RP	1USAORL	6.1+05	6.1+05	Jour	EPJ/A,47,66	11	B.H.Moazen+	C1882

18 Argon 40

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,2n	^{39}Ar	CSP	1USALAS	1.3+07	2.7+07	Jour	PR/C,85,064614	12	S.Macmullin+	14341
n,inel	^{40}Ar	CSP	1USALAS	1.5+06	3.0+07	Jour	PR/C,85,064614	12	S.Macmullin+	14341

20 Calcium 40

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
α,el	^{40}Ca	DA	1USATAM	2.4+08	2.4+08	Jour	PR/C,55,2811	97	D.H.Youngblood+	C0211
α,inel	^{40}Ca	DAP	1USATAM	2.4+08	2.4+08	Jour	PR/C,55,2811	97	D.H.Youngblood+	C0211
^{124}Sn,fus		CS	1USAORL	1.1+08	1.4+08	Jour	PR/C,85,054603	12	J.J.Kolata+	C1922
^{132}Sn,fus		CS	1USAORL	1.1+08	1.4+08	Jour	PR/C,85,054603	12	J.J.Kolata+	C1922

20 Calcium 48

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
^{124}Sn,fus		CS	1USAORL	1.1+08	1.6+08	Jour	PR/C,85,054603	12	J.J.Kolata+	C1922
^{132}Sn,fus		CS	1USAORL	1.1+08	1.5+08	Jour	PR/C,85,054603	12	J.J.Kolata+	C1922

22 Titanium

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,tot		CS	4RUSMIF	2.5-02	2.5-02	Jour	KSF,,(11),43	78	A.V.Antonov+	41584

22 Titanium 48

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,inel	^{48}Ti	DAP	1USANRD	2.8+06	2.8+06	Rept	USNRDL-TR-916	65	F.C.Engesser+	14325

22 Titanium 50

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,inel	^{50}Ti	DAP	1USANRD	2.8+06	2.8+06	Rept	USNRDL-TR-916	65	F.C.Engesser+	14325

23 Vanadium

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,tot		CS	4RUSMIF	2.5-02	2.5-02	Jour	KSF,,(11),43	78	A.V.Antonov+	41584

24 Chromium 52

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
d,p	^{53}Cr	DAP	1USARIC	4.4+06	6.3+06	Jour	NP,84,398	66	J.C.Legg+	C1209

26 Iron

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,inel	^{nat}Fe	DAP	1USANRD	2.8+06	2.8+06	Rept	USNRDL-TR-916	65	F.C.Engesser+	14325

26 Iron 54

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,inel	^{54}Fe	DAP	1USANRD	2.8+06	2.8+06	Rept	USNRDL-TR-916	65	F.C.Engesser+	14325

26 Iron 56

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,inel	^{56}Fe	DAP	1USANRD	2.8+06	2.8+06	Rept	USNRDL-TR-916	65	F.C.Engesser+	14325
n,x+n	inclusive	DA	2SWDUPP	9.6+07	9.6+07	Jour	PR/C,84,044619	11	I.C.Sagradogarcia+	23059
α,inel	^{56}Fe	DAP	1USATAM	2.4+08	2.4+08	Jour	PR/C,73,014314	06	Y.W.Lui+	C1439

28 Nickel 58

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,2n	^{57}Ni	?	2GERKIG	1.5+07	1.5+07	Jour	NIM/A,366,349	95	H.M.Agrawal+	23176
α,el	^{58}Ni	DA	1USATAM	2.4+08	2.4+08	Jour	PR/C,61,067307	00	Y.W.Lui+	C1152
α,inel	^{58}Ni	DAP	1USATAM	2.4+08	2.4+08	Jour	PRL,76,1429	96	D.H.Youngblood+	C0183
α,inel	^{58}Ni	DAP	1USATAM	2.4+08	2.4+08	Jour	PR/C,61,067307	00	Y.W.Lui+	C1152

28 Nickel 60

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
α,inel	^{60}Ni	DAP	1USATAM	2.4+08	2.4+08	Jour	PR/C,73,014314	06	Y.W.Lui+	C1439

29 Copper

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,el	^{nat}Cu	DA	1USAROC	5.2+06	5.2+06	Jour	PR,102,1560	56	D.A.Bromley+	C1086

40 Zirconium 90

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,2n	^{89}Zr	?	2GERKIG	1.4+07	1.5+07	Jour	NIM/A,366,349	95	H.M.Agrawal+	23176

42 Molybdenum

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,tot		CS	4RUSMIF	2.5-02	2.5-02	Jour	KSF,,(11),43	78	A.V.Antonov+	41584

42 Molybdenum 92

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,γ	^{93}Mo	CS	1USABRK	8.0+04	8.9+05	Jour	PR/C,85,054616	12	B.L.Goldblum+	14338

42 Molybdenum 100

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
^{124}Sn,2n	^{222}U	CS	1USAORL	2.2+08	2.2+08	Jour	PR/C,85,044620	12	R.Yanez+	C1924
^{124}Sn,fus		CS	1USAORL	2.6+08	2.7+08	Jour	PR/C,85,044620	12	R.Yanez+	C1924
^{132}Sn,2n	^{230}U	CS	1USAORL	2.2+08	2.2+08	Jour	PR/C,85,044620	12	R.Yanez+	C1924

48 Cadmium 108

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,inel	^{108}Cd	CSP	4RUSLEB	6.4+05	1.1+06	Jour	IZV,37,(9),1900	Sep 73	E.S.Konobeevskiy+	40214

48 Cadmium 110

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,el	^{110}Cd	DA	4RUSJIA	7.0+04	4.0+05	Jour	IZV,58,(11),216	94	E.S.Konobeevsky+	41585

48 Cadmium 116

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,el	^{116}Cd	DA	4RUSJIA	7.0+04	4.0+05	Jour	IZV,58,(11),216	94	E.S.Konobeevsky+	41585
n,inel	^{116}Cd	CSP	4RUSLEB	5.2+05	9.0+05	Jour	IZV,37,(9),1900	Sep 73	E.S.Konobeevskiy+	40214

49 Indium 115

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,tot		CS	4RUSRUS	8.7-01	1.3+01	Jour	AE,16,(6),523	Jun 64	R.B.Begzhanov+	40687

50 Tin 116

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,t	^{114}Sn	DAP	1USAMSU	4.2+07	4.2+07	Jour	PR/C,23,589	81	G.M.Crawley+	C1349

50 Tin 122

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,t	^{120}Sn	DAP	1USAMSU	4.2+07	4.2+07	Jour	PR/C,23,589	81	G.M.Crawley+	C1349

52 Tellurium 122

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,inel	^{122}Te	CSP	4RUSJIA	2.0+06	2.0+06	Conf	87KIEV,3,217	87	Yu.M.Burmistrov+	41007
n,inel	^{122}Te	CSP	4RUSLEB	5.7+05	8.8+05	Jour	IZV,37,(9),1900	Sep 73	E.S.Konobeevskiy+	40214

52 Tellurium 124

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

n,inel	^{124}Te	CSP	4RUSJIA	2.0+06	2.0+06	Conf	87KIEV,3,217	87	Yu.M.Burmistrov+	41007
n,inel	^{124}Te	CSP	4RUSLEB	6.1+05	9.0+05	Jour	IZV,37,(9),1900	Sep 73	E.S.Konobeevskiy+	40214

52 Tellurium 126

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,inel	^{126}Te	CSP	4RUSJIA	2.0+06	2.0+06	Conf	87KIEV,3,217	87	Yu.M.Burmistrov+	41007

52 Tellurium 128

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,inel	^{128}Te	CSP	4RUSJIA	2.0+06	2.0+06	Conf	87KIEV,3,217	87	Yu.M.Burmistrov+	41007

52 Tellurium 130

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,inel	^{130}Te	CSP	4RUSJIA	2.0+06	2.0+06	Conf	87KIEV,3,217	87	Yu.M.Burmistrov+	41007

56 Barium 130

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,γ	^{131}Ba	CS	1USAORU	Maxwl		Jour	PR/C,85,064301	12	A.Y.Dauenhauer+	14340
n,γ	^{131}Ba	RI	1USAORU		5.0-01	Jour	PR/C,85,064301	12	A.Y.Dauenhauer+	14340

56 Barium 132

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,γ	^{133}Ba	CS	1USAORU	Maxwl		Jour	PR/C,85,064301	12	A.Y.Dauenhauer+	14340
n,γ	^{133}Ba	RI	1USAORU		5.0-01	Jour	PR/C,85,064301	12	A.Y.Dauenhauer+	14340

56 Barium 134

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,γ	^{135}Ba	CS	1USAORU	Maxwl		Jour	PR/C,85,064301	12	A.Y.Dauenhauer+	14340
n,γ	^{135}Ba	RI	1USAORU		5.0-01	Jour	PR/C,85,064301	12	A.Y.Dauenhauer+	14340

56 Barium 136

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,γ	^{137}Ba	CS	1USAORU	Maxwl		Jour	PR/C,85,064301	12	A.Y.Dauenhauer+	14340
n,γ	^{137}Ba	RI	1USAORU		5.0-01	Jour	PR/C,85,064301	12	A.Y.Dauenhauer+	14340

56 Barium 138

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,γ	^{139}Ba	CS	1USAORU	Maxwl		Jour	PR/C,85,064301	12	A.Y.Dauenhauer+	14340
n,γ	^{139}Ba	RI	1USAORU		5.0-01	Jour	PR/C,85,064301	12	A.Y.Dauenhauer+	14340

62 Samarium 147

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,γ		RP	1USALAS		7.0+02	Jour	PRL,108,142502	12	P.E.Koehler+	14334
n,γ	^{148}Sm	CS	1USALAS	3.7+02	4.3+02	Jour	PRL,108,142502	12	P.E.Koehler+	14334

62 Samarium 149

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,0		RP	4RUSRUS			Jour	AE,16,(6),523	Jun 64	R.B.Begzhanov+	40687
n,tot		CS	4RUSRUS	5.0-01	5.8+00	Jour	AE,16,(6),523	Jun 64	R.B.Begzhanov+	40687

62 Samarium 152

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,p	^{152}Pm	CS	2TUKSTU	1.4+07	1.5+07	Jour	ARI,70,765	12	I.A.Reyhancan	23183

64 Gadolinium 157

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,γ	^{158}Gd	CSP	1USABRK	5.0+04	2.8+06	Jour	PR/C,85,054619	12	N.D.Scielzo+	14339

73 Tantalum 181

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

p,x	Many	CS	1USALAS	6.0+08	8.0+08	Jour	NP/A,760,225	05	K.C.Kelley+	C1225

74 Tungsten

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,tot		CS	4RUSMIF	2.5-02	2.5-02	Jour	KSF,,(11),43	78	A.V.Antonov+	41584
p,x	Many	CS	1USALAS	6.0+08	8.0+08	Jour	NP/A,760,225	05	K.C.Kelley+	C1225

76 Osmium 184

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,γ	^{185}Os	CS	1USAORU	Maxwl		Jour	PR/C,85,044319	12	K.S.Krane	14332
n,γ	^{185}Os	RI	1USAORU		5.0-01	Jour	PR/C,85,044319	12	K.S.Krane	14332

76 Osmium 189

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,γ	^{190}Os	CS	1USAORU	Maxwl		Jour	PR/C,85,044319	12	K.S.Krane	14332
n,γ	^{190}Os	RI	1USAORU		5.0-01	Jour	PR/C,85,044319	12	K.S.Krane	14332

76 Osmium 190

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,γ	^{191}Os	CS	1USAORU	Maxwl		Jour	PR/C,85,044319	12	K.S.Krane	14332
n,γ	^{191}Os	RI	1USAORU		5.0-01	Jour	PR/C,85,044319	12	K.S.Krane	14332

76 Osmium 192

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,γ	^{193}Os	RI	1USAORU		5.0-01	Jour	PR/C,85,044319	12	K.S.Krane	14332

79 Gold 197

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x	Many	CS	1USALAS	6.0+08	8.0+08	Jour	NP/A,760,225	05	K.C.Kelley+	C1225

82 Lead 208

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,x+n	inclusive	DA	2SWDUPP	9.6+07	9.6+07	Jour	PR/C,84,044619	11	I.C.Sagradogarcia+	23059

88 Radium 226

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,fis		DA	4RUSRI	3.6+06	1.9+07	Jour	NP/A,213,(3),436	73	E.A.Zhagrov+	40419

90 Thorium 232

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,0		RP	1USALAS			Jour	PR/C,58,(2),1236	98	S.L.Stephenson+	14323
n,2n	^{231}Th	CS	2TUKCNA	1.4+07	1.5+07	Jour	ANE,38,2359	11	I.A.Reyhancan	23177

92 Uranium 233

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,fis		DA	4RUSRI	1.6+07	1.6+07	Jour	NP/A,213,(3),436	73	E.A.Zhagrov+	40419

92 Uranium 235

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,fis	Many	FY	2FR CAD	2.5-02	2.5-02	Jour	IRE,58,(4),2064	11	F.Carrel+	23178

93 Neptunium 238

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,fis	Many	CHG	2FR ILL	2.5-02	2.5-02	Jour	NP/A,688,633	01	I.Tsekhanovich+	23179
n,fis	Many	FY	2FR ILL	2.5-02	2.5-02	Jour	NP/A,688,633	01	I.Tsekhanovich+	23179
n,fis	Many	KE	2FR ILL	2.5-02	2.5-02	Jour	NP/A,688,633	01	I.Tsekhanovich+	23179
n,fis	Many	NU	2FR ILL	2.5-02	2.5-02	Jour	NP/A,688,633	01	I.Tsekhanovich+	23179
n,fis	Many	?	2FR ILL	2.5-02	2.5-02	Jour	NP/A,688,633	01	I.Tsekhanovich+	23179

94 Plutonium 239

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,fis	Many	FY	2FR CAD	2.5-02	2.5-02	Jour	IRE,58,(4),2064	11	F.Carrel+	23178

95 Americium 241

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,fis		NU	4RUSRI	2.9+06	1.5+07	Rept	ISTC-1828-01	04	L.V.Drapchinsky	41589
n,fis		?	4RUSRI	2.9+06	1.5+07	Rept	ISTC-1828-01	04	L.V.Drapchinsky	41589
n,fis	n	KE	4RUSRI	2.9+06	1.5+07	Rept	ISTC-1828-01	04	L.V.Drapchinsky	41589

95 Americium 242

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,fis		?	4RUSLIN	2.5-02	2.5-02	Jour	NSTS,2,362	02	B.Gerasimenko+	41421
n,fis	n	KE	4RUSRI	2.5-02	2.5-02	Jour	NSTS,2,362	02	B.Gerasimenko+	41421

95 Americium 243

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,fis		CS	2ZZZCER	5.0+05	2.0+07	Conf	2010KRAKOW,,113	10	F.Belloni+	23148
n,fis		NU	4RUSRI	2.9+06	1.5+07	Rept	ISTC-1828-01	04	L.V.Drapchinsky	41589
n,fis		?	4RUSRI	2.9+06	1.5+07	Rept	ISTC-1828-01	04	L.V.Drapchinsky	41589
n,fis		?	2ZZZCER	5.0+05	2.0+07	Conf	2010KRAKOW,,113	10	F.Belloni+	23148
n,fis	n	KE	4RUSRI	2.9+06	1.5+07	Rept	ISTC-1828-01	04	L.V.Drapchinsky	41589

96 Curium 243

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,fis		?	4RUSLIN	2.5-02	2.5-02	Rept	ISTC-1828-01	04	L.V.Drapchinsky	41589
n,fis	n	KE	4RUSRI	2.5-02	2.5-02	Rept	ISTC-1828-01	04	L.V.Drapchinsky	41589

96 Curium 244

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
0,fis		?	4RUSRI	Spont		Conf	97TRIEST,2,1310	97	G.S.Boykov+	41340

96 Curium 245

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,fis		?	4RUSLIN	2.5-02	2.5-02	Jour	NSTS,2,362	02	B.Gerasimenko+	41421
n,fis	n	KE	4RUSRI	2.5-02	2.5-02	Jour	NSTS,2,362	02	B.Gerasimenko+	41421
n,fis	^{246}Cm	CS	2FR ILL	2.5-02	2.5-02	Conf	2009BUDA,81	09	A.Letourneau+	22941

96 Curium 246

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
0,fis		?	4RUSRI	Spont		Conf	97TRIEST,2,1310	97	G.S.Boykov+	41340
0,fis	n	KE	4RUSRI	Spont		Conf	97TRIEST,2,1310	97	G.S.Boykov+	41340

98 Californium 252

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
0,fis		DA	2ZZZGEL	Spont		Jour	NP/A,490,307	88	C.Budtz-Joergensen+	23175
0,fis	Many	FY	2ZZZGEL	Spont		Jour	NP/A,490,307	88	C.Budtz-Joergensen+	23175
0,fis	Many	FY	4RUSLIN	Spont		Jour	YF,47,(3),622	Mar 88	V.T.Grachev+	41030
0,fis	Many	KE	2ZZZGEL	Spont		Jour	NP/A,490,307	88	C.Budtz-Joergensen+	23175
0,fis		MLT	2NORKJL	Spont		Jour	NP/A,153,82	70	K.Skarsvag	23174
0,fis	Many	NQ	2ZZZGEL	Spont		Jour	NP/A,490,307	88	C.Budtz-Joergensen+	23175
0,fis	Many	NU	2ZZZGEL	Spont		Jour	NP/A,490,307	88	C.Budtz-Joergensen+	23175
0,fis		?	2NORKJL	Spont		Jour	NP/A,153,82	70	K.Skarsvag	23174
0,fis		?	2ZZZGEL	Spont		Jour	NP/A,490,307	88	C.Budtz-Joergensen+	23175
0,fis	Many	?	2ZZZGEL	Spont		Jour	NP/A,490,307	88	C.Budtz-Joergensen+	23175
0,fis	n	?	2ZZZGEL	Spont		Jour	NP/A,490,307	88	C.Budtz-Joergensen+	23175
0,fis	^{3}H	KE	4RUSLIN	Spont		Jour	YF,47,(3),622	Mar 88	V.T.Grachev+	41030
0,fis	^{4}He	KE	4RUSLIN	Spont		Jour	YF,47,(3),622	Mar 88	V.T.Grachev+	41030
0,fis	^{4}He	?	4RUSLIN	Spont		Jour	YF,47,(3),622	Mar 88	V.T.Grachev+	41030
0,fis	^{6}He	KE	4RUSLIN	Spont		Jour	YF,47,(3),622	Mar 88	V.T.Grachev+	41030

100 Fermium 244

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
0,fis		NU	4ZZZDUB	Spont		Jour	FCY/L,9,(1),45	12	A.I.Svirikhin+	41586

102 Nobelium 252

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
0,fis		KE	4ZZZDUB	Spont		Jour	FCY/L,9,(1),45	12	A.I.Svirikhin+	41586