EXFOR News (June 2022)

New experimental data available from Nuclear Reaction Data Centres

EXFOR [1] is a world-wide data library for experimental neutron, charged-particle and photon induced reaction data compiled by the International Network of the Nuclear Reaction Data Centres (NRDC)[a] co-ordinated by the IAEA Nuclear Data Section. Regularly updated web retrieval databases are available at IAEA-NDS as well as NNDC, NEADB, JCPRG and CDFE.

This News lists newly created EXFOR entries as well as revised EXFOR entries where new data subentries are added. Entries from articles pubslished in past 10 years are flagged by asterisks (*). Please send an email to the NRDC Coordinator (n.otsuka@iaea.org) for inclusion in the EXFOR News distribution list as well as any question on EXFOR.

[1] N. Otuka, E. Dupont, V. Semkova, B. Pritychenko et al., Nucl.Data.Sheets **120**(2014)272.

Quantity codes

ALF	α-value ($\sigma_{\rm capt}/\sigma_{\rm fis}$)	KE	Kinetic energy
AMP	Scattering length	INT	Cross section integral over incident energy
CHG	Fragment charge	KER	Kerma factor
CS	Cross section	MAS	Fragment mass
CSP	Partial cross section	MFQ	Differential fission neutron multiplicity
CST	Temperature dependent cross section	MLT	Multiplicity
D3A	Triple differential $d\Omega_1/d\Omega_2/dE'$	NQ	Nuclear quantity
D3E	Triple differential $d\Omega/dE'_1/dE'_2$	NU	Fission neutron multiplicity $\bar{\nu}$
D4A	Quadruple diff. $d\Omega_1/d\Omega_2/dE'_1/dE'_2$	NUD	Delayed fission neutron multiplicity $\bar{\nu_d}$
DA	Differential $d/d\Omega$	POL	Polarization
DAA	Double differential $d\Omega_1/d\Omega_2$	POD	Differential polarization
DAE	Double differential $d\Omega/dE'$	PY	Product yield (other than fission)
DAP	Partial differential $d/d\Omega$	RI	Resonance integral
DAT	Temperature-dependent Legendre coefficient	RP	Resonance parameter
DE	Differential d/dE'	RR	Reaction rate
DEP	Energy spectrum for specific group	SIF	Self indication
DP	Diff. by linear momentum of outgoing part.	SPC	Gamma spectrum
DT	Diff. by 4-momentum transfer squared	TSL	Thermal scattering
ETA	η-value = $\bar{\nu}\sigma_{\rm fis}/(\sigma_{\rm capt}+\sigma_{\rm fis})$	TT	Thick target yield
EVL	Evaluation	TTD	Differential thick target yield, $d/d\Omega$
FY	Fission product yield	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), 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 #
	^{11}Be,non		?	2JPNIRS	5.7+08	1.2+09	Jour	NP/A,834,C470	10	D.Nishimura+	E2710
	^{8}B,non		?	2JPNIRS	3.6+08	7.6+08	Jour	NP/A,834,C470	10	D.Nishimura+	E2710
*	^{13}B,non		?	2JPNIRS	6.0+08	1.4+09	Jour	APP/B,48,461	17	M.Tanaka+	E2707
*	^{14}B,non		?	2JPNIRS	7.2+08	1.7+09	Jour	APP/B,48,461	17	M.Tanaka+	E2707
*	^{15}B,non		?	2JPNIRS	7.2+08	1.7+09	Jour	APP/B,48,461	17	M.Tanaka+	E2707
*	^{12}C,x	^{12}N	?	2JPNIRS	4.4+09	4.8+09	Jour	NP/A,1016,122317	21	S.-H.Zheng+	E2716

1 Hydrogen 2

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{11}Be,p	^{12}Be	?	2JPNOSA	3.0+08	3.0+08	Jour	PR/C,103,L031302	21	J.Chen+	E2690
*	^{14}C,^{3}He	^{13}B	?	1USAMSU	2.4+08	2.4+08	Jour	PR/C,93,044323	16	S.Bedoor+	C2235
*	^{15}C,^{3}He	^{14}B	?	1USAMSU	2.4+08	2.4+08	Jour	PR/C,93,044323	16	S.Bedoor+	C2235
*	^{25}Mg,p	^{26}Mg	DAP	1USATAM	2.5+08	2.5+08	Jour	PR/C,104,L022802	21	L.Canete+	C2658

1 Hydrogen 3

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,el	^{3}H	POD	1USANOT	5.4+06	5.5+06	Jour	NP/A,169,71	71	H.Paetzgen.Schieck+	C2671

1 Hydrogen

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{12}C,x	^{12}N	CS	2JPNIRS	4.4+09	4.8+09	Jour	NP/A,1016,122317	21	S.-H.Zheng+	E2716

2 Helium 3

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	p,el	^{3}He	DA	2JPNOSA	6.5+07	6.5+07	Jour	PR/C,103,044001	21	A.Watanabe+	E2696
*	p,el	^{3}He	POD	2JPNOSA	6.5+07	6.5+07	Jour	PR/C,103,044001	21	A.Watanabe+	E2696
*	p,el	^{3}He	POD	2JPNTOH	7.0+07	7.0+07	Jour	PR/C,103,044001	21	A.Watanabe+	E2696

2 Helium 4

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,el	^{4}He	DA	4KASKAZ	4.9+07	4.9+07	Rept	IYFK-P-88-01	88	N.T.Burtebaev+	D0925

3 Lithium 11

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	p,d	^{10}Li	DAP	1CANTMF	5.7+06	5.7+06	Jour	PL/B,755,481	16	A.Sanetullaev+	C2217
*	p,el	^{11}Li	DA	1CANTMF	5.7+06	5.7+06	Jour	PL/B,755,481	16	A.Sanetullaev+	C2217

4 Berylium 9

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	d,p	^{10}Be	POD	3POLIFJ	1.2+07	1.2+07	Rept	INP-801	72	A.Budzanowski+	D1009
*	^{13}B,non		CS	2JPNIRS	5.9+08	1.4+09	Jour	APP/B,48,461	17	M.Tanaka+	E2707
*	^{14}B,non		CS	2JPNIRS	7.2+08	1.7+09	Jour	APP/B,48,461	17	M.Tanaka+	E2707
*	^{15}B,non		CS	2JPNIRS	7.2+08	1.7+09	Jour	APP/B,48,461	17	M.Tanaka+	E2707
*	^{68}Co,x	^{68}Fe	CS	1USAMSU	6.5+09	6.5+09	Jour	PR/C,104,024313	21	A.Gade+	C2656

5 Boron 10

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	p,el	^{10}B	DA	3BZLUSP	1.0+06	3.8+06	Jour	PR/C,105,024609	22	G.Kaur+	D1020

5 Boron 11

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{16}O,p	^{26}Mg	DAP	1USAANL	1.9+07	1.9+07	Jour	PR/C,104,L022802	21	L.Canete+	C2658

6 Carbon

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{13}B,non		CS	2JPNIRS	6.0+08	1.4+09	Jour	APP/B,48,461	17	M.Tanaka+	E2707
*	^{14}B,non		CS	2JPNIRS	7.2+08	1.7+09	Jour	APP/B,48,461	17	M.Tanaka+	E2707
*	^{15}B,non		CS	2JPNIRS	7.2+08	1.7+09	Jour	APP/B,48,461	17	M.Tanaka+	E2707
*	^{12}C,x	^{12}N	CS	2JPNIRS	4.5+09	4.8+09	Jour	NP/A,1016,122317	21	S.-H.Zheng+	E2716

6 Carbon 12

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,el	^{12}C	CS	2FR PAR	1.6+08	1.6+08	Jour	JPR,21,317	60	J.-P.Garron+	O0360
	p,inel	^{12}C	CSP	2FR PAR	1.6+08	1.6+08	Jour	JPR,21,317	60	J.-P.Garron+	O0360
	d,p	^{13}C	POD	3POLIFJ	1.2+07	1.2+07	Jour	NP/A,161,610	71	A.Budzanowski+	D1010
*	α,el	^{12}C	DA	2JPNOSA	3.9+08	3.9+08	Jour	PTEP,2021,093D01	21	K.Inaba+	E2717
*	^{10}B,^{9}Be	^{13}N	DAP	3POLWWA	4.1+07	4.1+07	Jour	EPJ/A,58,24	22	S.V.Artemov+	D1017
	^{16}O,n	^{27}Si	DAP	1USAANL	2.6+07	2.6+07	Jour	PRL,102,162502	09	G.Lotay+	C2681

6 Carbon 13

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,el	^{13}C	DA	3AULCBR	3.5+06	6.5+06	Jour	NP/A,110,637	68	G.W.Kerr+	O0886
*	α,el	^{13}C	DA	2JPNOSA	3.9+08	3.9+08	Jour	PTEP,2021,093D01	21	K.Inaba+	E2717
*	α,inel	^{13}C	DAE	2JPNOSA	3.9+08	3.9+08	Jour	PTEP,2021,093D01	21	K.Inaba+	E2717
*	α,inel	^{13}C	DAP	2JPNOSA	3.9+08	3.9+08	Jour	PTEP,2021,093D01	21	K.Inaba+	E2717

7 Nitrogen

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,tot		CS	4UZ UZB	1.4+07	1.4+07	Jour	APP/BS,14,849	21	F.Kh.Ergashev+	31847

8 Oxygen

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,tot		CS	4UZ UZB	1.4+07	1.4+07	Jour	APP/BS,14,849	21	F.Kh.Ergashev+	31847

8 Oxygen 16

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,α	^{13}C	CSP	4RUSFEI	4.0+06	7.3+06	Jour	PR/C,105,024612	22	P.S.Prusachenko+	41747

9 Fluorine 18

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	p,α	^{15}O	CS	1USATAM	5.0+04	6.3+05	Jour	EPJ/A,52,24	16	R.G.Pizzone+	C2214
*	p,α	^{15}O	RR	1USATAM			Jour	EPJ/A,52,24	16	R.G.Pizzone+	C2214

9 Fluorine 19

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	p,α	^{16}O	DAP	1USAMIT	8.4+05	1.5+06	Jour	NIM/B,499,118	21	M.V.Pham+	C2655

9 Fluorine 27

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{9}Be,0		RP	1USAMSU	7.4+08	7.4+08	Jour	PRL,108,142503	12	E.Lunderberg+	C1923
*	^{9}Be,x	^{25}O	CS	1USAMSU	7.4+08	7.4+08	Jour	PRL,108,142503	12	E.Lunderberg+	C1923
*	^{9}Be,x	^{26}O	CSP	1USAMSU	7.4+08	7.4+08	Jour	PRL,108,142503	12	E.Lunderberg+	C1923

10 Neon 20

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	α,2α	^{16}O	?	2JPNOSA	3.9+08	3.9+08	Jour	PL/B,819,136411	21	S.Adachi+	E2708
*	α,inel	^{20}Ne	DAE	2JPNOSA	3.9+08	3.9+08	Jour	PL/B,819,136411	21	S.Adachi+	E2708

10 Neon 21

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	$p,^{3}$He	^{19}F	DAP	1USAMSU	4.0+07	4.0+07	Jour	PRL,37,1129	76	H.Nann+	C2670
	p,t	^{19}Ne	DAP	1USAMSU	4.0+07	4.0+07	Jour	PRL,37,1129	76	H.Nann+	C2670

11 Sodium 23

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	$p,^{3}$He	^{21}Ne	DAP	1USAMSU	4.0+07	4.0+07	Jour	PRL,37,1129	76	H.Nann+	C2670
	p,t	^{21}Na	DAP	1USAMSU	4.0+07	4.0+07	Jour	PRL,37,1129	76	H.Nann+	C2670

12 Magnesium

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	p,x	^{22}Na	CS	3SAFITH	5.9+06	6.7+07	Jour	ARI,168,109514	21	G.F.Steyn+	D1013
*	p,x	^{24}Na	CS	3SAFITH	1.3+07	6.7+07	Jour	ARI,168,109514	21	G.F.Steyn+	D1013

12 Magnesium 24

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	α,inel	^{24}Mg	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,105,024311	22	A.Bahini+	D1019
*	^{6}Li,inel	^{24}Mg	DAP	2JPNOSA	6.0+08	6.0+08	Jour	PR/C,104,014607	21	J.C.Zamora+	E2709
*	^{6}Li,inel	^{24}Mg	?	2JPNOSA	6.0+08	6.0+08	Jour	PR/C,104,014607	21	J.C.Zamora+	E2709
	^{20}Ne,x	Many	CS	2BLGLEU	4.5+07	1.0+08	Jour	PR/C,27,207	83	M.Albinska+	D1014

12 Magnesium 25

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,^{3}He	^{23}Na	DAP	1USAMSU	4.0+07	4.0+07	Jour	PRL,37,1129	76	H.Nann+	C2670
	p,t	^{23}Mg	DAP	1USAMSU	4.0+07	4.0+07	Jour	PRL,37,1129	76	H.Nann+	C2670
*	d,p	^{26}Mg	DAP	2JPNOSA	5.6+07	5.6+07	Jour	PR/C,103,035809	21	Y.Chen+	E2691

13 Aluminium 26

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,γ	^{27}Si	RR	1USAANL			Jour	PRL,102,162502	09	G.Lotay+	C2681

13 Aluminium 27

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,tot		CS	4UZ UZB	1.4+07	1.4+07	Jour	APP/BS,14,849	21	F.Kh.Ergashev+	31847
	p,^{3}He	^{25}Mg	DAP	1USAMSU	4.0+07	4.0+07	Jour	PRL,37,1129	76	H.Nann+	C2670
	p,t	^{25}Al	DAP	1USAMSU	4.0+07	4.0+07	Jour	PRL,37,1129	76	H.Nann+	C2670
*	^{13}B,non		CS	2JPNIRS	6.0+08	1.4+09	Jour	APP/B,48,461	17	M.Tanaka+	E2707
*	^{14}B,non		CS	2JPNIRS	7.3+08	1.7+09	Jour	APP/B,48,461	17	M.Tanaka+	E2707
*	^{15}B,non		CS	2JPNIRS	7.2+08	1.7+09	Jour	APP/B,48,461	17	M.Tanaka+	E2707
*	^{12}C,x	^{12}N	CS	2JPNIRS	4.5+09	4.8+09	Jour	NP/A,1016,122317	21	S.-H.Zheng+	E2716

14 Silicon

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,tot		CS	4UZ UZB	1.4+07	1.4+07	Jour	APP/BS,14,849	21	F.Kh.Ergashev+	31847

14 Silicon 28

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	α,inel	^{28}Si	DAE	3SAFITH	2.0+08	2.0+08	Jour	PR/C,105,024311	22	A.Bahini+	D1019

	^{8}B,p+^{3}He+X	^{4}He	CS	2FR GAN	2.8+08	2.8+08	Jour	NP/A,616,231C	97	C.Borcea+	O1868

14 Silicon 29

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,^{3}He	^{27}Al	DAP	1USAMSU	4.0+07	4.0+07	Jour	PRL,37,1129	76	H.Nann+	C2670
	p,t	^{27}Si	DAP	1USAMSU	4.0+07	4.0+07	Jour	PRL,37,1129	76	H.Nann+	C2670

15 Phosphorus 31

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,^{3}He	^{29}Si	DAP	1USAMSU	4.0+07	4.0+07	Jour	PRL,37,1129	76	H.Nann+	C2670
	p,t	^{29}P	DAP	1USAMSU	4.0+07	4.0+07	Jour	PRL,37,1129	76	H.Nann+	C2670

16 Sulphur 33

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,^{3}He	^{31}P	DAP	1USAMSU	4.0+07	4.0+07	Jour	PRL,37,1129	76	H.Nann+	C2670
	p,t	^{31}S	DAP	1USAMSU	4.0+07	4.0+07	Jour	PRL,37,1129	76	H.Nann+	C2670

17 Chlorine

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{11}B,x	^{43}Sc	CS	3INDTRM	3.5+07	6.2+07	Jour	ARI,178,109966	21	K.Ghosh+	D6411
*	^{11}B,x	^{44}Sc	CS	3INDTRM	3.5+07	6.2+07	Jour	ARI,178,109966	21	K.Ghosh+	D6411

17 Chlorine 35

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,^{3}He	^{33}S	DAP	1USAMSU	4.0+07	4.0+07	Jour	PRL,37,1129	76	H.Nann+	C2670
	p,t	^{33}Cl	DAP	1USAMSU	4.0+07	4.0+07	Jour	PRL,37,1129	76	H.Nann+	C2670

19 Potassium 39

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,^{3}He	^{37}Ar	DAP	1USAMSU	4.0+07	4.0+07	Jour	PRL,37,1129	76	H.Nann+	C2670
	p,t	^{37}K	DAP	1USAMSU	4.0+07	4.0+07	Jour	PRL,37,1129	76	H.Nann+	C2670

20 Calcium 40

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	d,inel	^{40}Ca	DAP	3POLIFJ	1.3+07	1.3+07	Rept	INP-442	66	H.Niewodniczanski+	D1011
	d,p	^{41}Ca	DAP	3POLIFJ	1.3+07	1.3+07	Rept	INP-442	66	H.Niewodniczanski+	D1011
	α,el	^{40}Ca	DA	3POLIFJ	2.4+07	2.9+07	Rept	INP-403	65	A.Budzanowski+	D1012

22 Titanium

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	p,x	^{43}Sc	CS	3KORKRM	1.0+07	4.3+07	Jour	JRN,318,2049	18	M.Shahid+	D7033
*	p,x	^{44}Sc	CS	3KORKRM	4.4+06	4.3+07	Jour	JRN,318,2049	18	M.Shahid+	D7033
*	p,x	^{46}Sc	CS	3KORKRM	4.4+06	4.3+07	Jour	JRN,318,2049	18	M.Shahid+	D7033
*	p,x	^{47}Sc	CS	3KORKRM	4.4+06	4.3+07	Jour	JRN,318,2049	18	M.Shahid+	D7033
*	p,x	^{48}Sc	CS	3KORKRM	2.2+07	4.3+07	Jour	JRN,318,2049	18	M.Shahid+	D7033
*	p,x	^{48}V	CS	3KORKRM	7.4+06	4.3+07	Jour	JRN,318,2049	18	M.Shahid+	D7033

23 Vanadium 51

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,p	^{51}Ti	CS	3INDTRM	7.9+06	1.7+07	Jour	EPJ/A,57,337	21	R.K.Singh+	33168

26 Iron 56

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,n	^{56}Co	CSP	1USAMSU	5.6+06	7.8+06	Jour	PR/C,7,2379	73	L.E.Samuelson+	C2669
	p,n	^{56}Co	DAP	1USAMSU	5.8+06	7.4+06	Jour	PR/C,7,2379	73	L.E.Samuelson+	C2669

27 Cobalt 59

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,γ	^{60}Ni	DAP	1USATNL	5.7+06	1.6+07	Jour	PR/C,17,1853	78	J.D.Turner+	C2673
	p,γ	^{60}Ni	?	1USATNL	6.8+06	1.2+07	Jour	PR/C,17,1853	78	J.D.Turner+	C2673

28 Nickel

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,γ		CS	1USAANL	5.0+04	3.0+06	Conf	75WASH,,901	75	W.P.Poenitz	12670

28 Nickel 60

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,x+α	inclusive	CSP	1USAROC	1.7+07	1.7+07	Jour	PR/C,5,463	72	Louisc.Vaz+	C2677
	α,x+α	inclusive	DAE	1USAROC	1.7+07	1.7+07	Jour	PR/C,5,463	72	Louisc.Vaz+	C2677
	α,x+p	inclusive	CSP	1USAROC	1.7+07	1.7+07	Jour	PR/C,5,463	72	Louisc.Vaz+	C2677
	α,x+p	inclusive	DAE	1USAROC	1.7+07	1.7+07	Jour	PR/C,5,463	72	Louisc.Vaz+	C2677

28 Nickel 62

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,x+α	inclusive	CSP	1USAROC	1.6+07	1.6+07	Jour	PR/C,5,463	72	Louisc.Vaz+	C2677
	α,x+α	inclusive	DAE	1USAROC	1.6+07	1.6+07	Jour	PR/C,5,463	72	Louisc.Vaz+	C2677
	α,x+p	inclusive	CSP	1USAROC	1.6+07	1.6+07	Jour	PR/C,5,463	72	Louisc.Vaz+	C2677
	α,x+p	inclusive	DAE	1USAROC	1.6+07	1.6+07	Jour	PR/C,5,463	72	Louisc.Vaz+	C2677

29 Copper

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,γ		CS	1USAANL	5.1+05	3.0+06	Conf	75WASH,,901	75	W.P.Poenitz	12670
*	α,x	^{57}Co	CS	3INDVEC	3.9+07	4.9+07	Jour	NP/A,1015,122309	21	S.W.Raja+	D6405
*	α,x	^{58}Co	CS	3INDVEC	2.7+07	4.9+07	Jour	NP/A,1015,122309	21	S.W.Raja+	D6405
*	α,x	^{65}Zn	CS	3INDVEC	2.0+07	4.9+07	Jour	NP/A,1015,122309	21	S.W.Raja+	D6405
*	α,x	^{66}Ga	CS	3INDVEC	1.4+07	4.9+07	Jour	NP/A,1015,122309	21	S.W.Raja+	D6405
*	α,x	^{67}Ga	CS	3INDVEC	1.4+07	4.9+07	Jour	NP/A,1015,122309	21	S.W.Raja+	D6405
*	^{7}Li,x	^{63}Zn	CS	3INDTRM	3.2+07	4.2+07	Jour	PR/C,104,064606	21	R.Kumar+	D6415
*	^{7}Li,x	^{65}Zn	CS	3INDTRM	1.6+07	4.2+07	Jour	PR/C,104,064606	21	R.Kumar+	D6415
*	^{7}Li,x	^{69}Zn	CS	3INDTRM	2.2+07	4.2+07	Jour	PR/C,104,064606	21	R.Kumar+	D6415
*	^{7}Li,x	^{65}Ga	CS	3INDTRM	3.6+07	4.2+07	Jour	PR/C,104,064606	21	R.Kumar+	D6415
*	^{7}Li,x	^{66}Ga	CS	3INDTRM	1.6+07	4.2+07	Jour	PR/C,104,064606	21	R.Kumar+	D6415
*	^{7}Li,x	^{67}Ga	CS	3INDTRM	1.6+07	4.2+07	Jour	PR/C,104,064606	21	R.Kumar+	D6415
*	^{7}Li,x	^{68}Ga	CS	3INDTRM	1.6+07	4.2+07	Jour	PR/C,104,064606	21	R.Kumar+	D6415
*	^{7}Li,x	^{66}Ge	CS	3INDTRM	3.2+07	4.2+07	Jour	PR/C,104,064606	21	R.Kumar+	D6415
*	^{7}Li,x	^{67}Ge	CS	3INDTRM	1.6+07	4.2+07	Jour	PR/C,104,064606	21	R.Kumar+	D6415
*	^{7}Li,x	^{69}Ge	CS	3INDTRM	1.6+07	4.2+07	Jour	PR/C,104,064606	21	R.Kumar+	D6415
*	^{12}C,tcc		CS	2JPNIRS	4.4+09	4.8+09	Jour	RM,126,106125	19	D.H.Zhang+	E2702
*	^{12}C,x	Many	CS	2JPNIRS	4.4+09	4.8+09	Jour	RM,126,106125	19	D.H.Zhang+	E2702
*	^{12}C,x	^{12}N	CS	2JPNIRS	4.4+09	4.8+09	Jour	NP/A,1016,122317	21	S.-H.Zheng+	E2716

29 Copper 63

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	p,γ	^{64}Zn	DAP	3IRNNRT	2.0+06	3.0+06	Jour	NIM/B,509,60	21	T.Tajvidi+	D1008

*	p,inel	^{63}Cu	DAP	3IRNNRT	2.0+06	2.9+06	Jour	NIM/B,509,60	21	T.Tajvidi+	D1008
	p,x+α	inclusive	CSP	1USAROC	1.2+07	1.2+07	Jour	PR/C,5,463	72	Louisc.Vaz+	C2677
	p,x+α	inclusive	DAE	1USAROC	1.2+07	1.2+07	Jour	PR/C,5,463	72	Louisc.Vaz+	C2677
	p,x+p	inclusive	CSP	1USAROC	1.2+07	1.2+07	Jour	PR/C,5,463	72	Louisc.Vaz+	C2677
	p,x+p	inclusive	DAE	1USAROC	1.2+07	1.2+07	Jour	PR/C,5,463	72	Louisc.Vaz+	C2677

29 Copper 65

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	p,γ	^{66}Zn	DAP	3IRNNRT	2.0+06	2.9+06	Jour	NIM/B,509,60	21	T.Tajvidi+	D1008
*	p,inel	^{65}Cu	DAP	3IRNNRT	2.0+06	3.0+06	Jour	NIM/B,509,60	21	T.Tajvidi+	D1008
	p,x+α	inclusive	CSP	1USAROC	1.1+07	1.1+07	Jour	PR/C,5,463	72	Louisc.Vaz+	C2677
	p,x+α	inclusive	DAE	1USAROC	1.1+07	1.1+07	Jour	PR/C,5,463	72	Louisc.Vaz+	C2677
	p,x+p	inclusive	CSP	1USAROC	1.1+07	1.1+07	Jour	PR/C,5,463	72	Louisc.Vaz+	C2677
	p,x+p	inclusive	DAE	1USAROC	1.1+07	1.1+07	Jour	PR/C,5,463	72	Louisc.Vaz+	C2677

30 Zinc

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,γ		CS	1USAANL	5.0+05	3.0+06	Conf	75WASH,,901	75	W.P.Poenitz	12670

30 Zinc 66

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,el	^{66}Zn	DA	1USAOSU	3.9+06	5.8+06	Jour	PR/C,8,1413	73	J.W.D.Sinclair+	C2674
	p,inel	^{66}Zn	DAP	1USAOSU	3.1+06	5.4+06	Jour	PR/C,8,1413	73	J.W.D.Sinclair+	C2674

30 Zinc 70

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,2n	^{69}Zn	CS	3BANSAV	1.4+07	1.5+07	Jour	RCA,110,1	22	M.S.Uddin	31846

32 Germanium 70

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,el	^{70}Ge	DA	1USARUT	5.0+06	5.3+06	Jour	PRL,26,1341	71	G.M.Temmer+	C2678
	p,inel	^{70}Ge	DAP	1USARUT	5.0+06	5.3+06	Jour	PRL,26,1341	71	G.M.Temmer+	C2678

32 Germanium 74

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,α	^{71}Zn	CS	3BANSAV	1.4+07	1.5+07	Jour	RCA,110,1	22	M.S.Uddin	31846

33 Arsenic 75

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,n	^{75}Se	CS	1USARIC	4.0+06	4.8+06	Jour	NP/A,100,168	67	C.Fan+	C2676

34 Selenium 76

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{18}O,el	^{76}Se	DA	2ITYLNS	2.8+08	2.8+08	Jour	PR/C,104,054610	21	L.Lafauci+	D8041
*	^{18}O,inel	^{76}Se	DAP	2ITYLNS	2.8+08	2.8+08	Jour	PR/C,104,054610	21	L.Lafauci+	D8041

36 Krypton 84

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	p,γ	^{85}Rb	CS	1CANTMF	2.4+06	2.4+06	Jour	PRL,127,112701	21	G.Lotay+	C2660
*	p,γ	^{85}Rb	CSP	1CANTMF	2.4+06	2.4+06	Jour	PRL,127,112701	21	G.Lotay+	C2660

37 Rubidium 83

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	p,γ	^{84}Sr	CS	1CANTMF	2.3+06	2.4+06	Jour	PRL,127,112701	21	G.Lotay+	C2660
*	p,γ	^{84}Sr	CSP	1CANTMF	2.3+06	2.4+06	Jour	PRL,127,112701	21	G.Lotay+	C2660

38 Strontium 88

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	$n,2n$	^{87}Sr	CS	3INDTRM	1.4+07	1.7+07	Jour	ARI,182,110142	22	M.Mehta+	33171

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	CS	3BANSAV	1.4+07	1.5+07	Jour	RCA,110,1	22	M.S.Uddin	31846

41 Niobium 93

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,2n	^{92}Nb	CS	3INDTRM	1.4+07	2.0+07	Jour	ARI,182,110142	22	M.Mehta+	33171
	n,γ	^{94}Nb	CS	1USAANL	3.0+05	2.5+06	Conf	75WASH,,901	75	W.P.Poenitz	12670

42 Molybdenum 92

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,inel	^{92}Mo	SPC	4RUSKUR	Fiss		Prog	YFI-21,12	76	A.M.Demidov+	40387

42 Molybdenum 100

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{28}Si,fus		CS	2ITYPAD	6.5+07	9.7+07	Jour	JP/G,48,055101	21	A.M.Stefanini+	D8043

48 Cadmium 112

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,0		RP	4RUSKUR			Rept	YFI-12,24	72	Yu.G.Shchepkin+	40129

50 Tin 116

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,inel	^{116}Sn	DAP	1USAINU	1.3+08	1.3+08	Jour	PL/B,166,372	86	S.Y.Vanderwerf+	C2672
p,inel	^{116}Sn	POD	1USAINU	1.3+08	1.3+08	Jour	PL/B,166,372	86	S.Y.Vanderwerf+	C2672

50 Tin 124

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	p,n	^{124}Sb	CS	2JPNOSA	5.1+06	1.3+07	Jour	RCA,109,453	21	N.Miyazawa+	E2714

52 Tellurium 128

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	γ,el	^{128}Te	CS	1USATNL	2.8+06	8.9+06	Jour	PR/C,103,044317	21	J.Isaak+	L0273
*	γ,inel	^{128}Te	CSP	1USATNL	3.9+06	8.9+06	Jour	PR/C,103,044317	21	J.Isaak+	L0273
*	γ,sct	^{128}Te	CS	1USATNL	2.8+06	8.9+06	Jour	PR/C,103,044317	21	J.Isaak+	L0273

52 Tellurium 130

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	γ,el	^{130}Te	CS	1USATNL	5.5+06	8.5+06	Jour	PR/C,103,044317	21	J.Isaak+	L0273
*	γ,inel	^{130}Te	CSP	1USATNL	5.5+06	8.5+06	Jour	PR/C,103,044317	21	J.Isaak+	L0273
*	γ,sct	^{130}Te	CS	1USATNL	5.5+06	8.5+06	Jour	PR/C,103,044317	21	J.Isaak+	L0273

54 Xenon 128

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	γ,el	^{128}Xe	CS	1USATNL	5.8+06	8.8+06	Jour	PR/C,90,054310	14	R.Massarczyk+	L0199
*	γ,sct	^{128}Xe	CS	1USATNL	5.8+06	8.8+06	Jour	PR/C,90,054310	14	R.Massarczyk+	L0199

54 Xenon 134

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	γ,el	^{134}Xe	CS	1USATNL	5.8+06	8.8+06	Jour	PR/C,90,054310	14	R.Massarczyk+	L0199
*	γ,sct	^{134}Xe	CS	1USATNL	5.8+06	8.8+06	Jour	PR/C,90,054310	14	R.Massarczyk+	L0199

54 Xenon 136

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,tot		CS	1USAORL	1.7+04	5.0+05	Jour	PR/C,31,2041	85	B.Fogelberg+	12922

55 Cesium 134

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,el		RP	4RUSNIR		3.0+02	Jour	AE,63,346	87	V.A.Anufriev+	41022
	n,γ	^{135}Cs	RI	4RUSNIR		3.0+02	Jour	AE,63,346	87	V.A.Anufriev+	41022

55 Cesium 135

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,el		RP	4RUSNIR		3.0+02	Jour	AE,63,346	87	V.A.Anufriev+	41022
	n,γ	^{136}Cs	RI	4RUSNIR		3.0+02	Jour	AE,63,346	87	V.A.Anufriev+	41022

57 Lanthanum 139

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,x	Many	CS	4ZZZDUB	6.6+08	6.6+08	Jour	DOK,119,56	58	A.K.Lavrukhina+	O0625

58 Cerium 140

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{48}Ti,fus		CS	3INDNSD	1.4+08	1.9+08	Jour	NP/A,1019,122384	22	D.P.Kaur+	D6416

58 Cerium 142

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{48}Ti,fus		CS	3INDNSD	1.4+08	1.9+08	Jour	NP/A,1019,122384	22	D.P.Kaur+	D6416

60 Neodymium 142

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,2n	^{141}Nd	CS	3INDPOO	1.5+07	1.5+07	Jour	NP/A,1020,122399	22	G.T.Bholane+	33170
*	^{16}O,fus		CS	3INDTRM	5.4+07	9.3+07	Jour	PR/C,104,054602	21	A.C.Visakh+	D6412

60 Neodymium 146

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,p	^{146}Pr	CS	3INDPOO	1.5+07	1.5+07	Jour	NP/A,1020,122399	22	G.T.Bholane+	33170

60 Neodymium 148

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,2n	^{147}Nd	CS	3INDPOO	1.5+07	1.5+07	Jour	NP/A,1020,122399	22	G.T.Bholane+	33170

60 Neodymium 150

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,2n	^{149}Nd	CS	3INDPOO	1.5+07	1.5+07	Jour	NP/A,1020,122399	22	G.T.Bholane+	33170
*	^{16}O,fus		CS	3INDTRM	5.0+07	9.4+07	Jour	PR/C,104,054602	21	A.C.Visakh+	D6412

64 Gadolinium 148

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,t	^{146}Gd	CSP	1USAPTN	2.5+07	3.5+07	Jour	PR/C,39,2180	89	L.G.Mann+	C2675
	p,t	^{146}Gd	DAP	1USAPTN	2.5+07	3.5+07	Jour	PR/C,39,2180	89	L.G.Mann+	C2675

65 Terbium 159

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{9}Be,x	^{160}Tb	CS	3INDTRM	2.7+07	4.3+07	Jour	EPJ/A,57,320	21	M.Kaushik+	D6414

67 Holmium 165

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,γ	^{166}Ho	CS	1USAANL	4.0+05	3.0+06	Conf	75WASH,,901	75	W.P.Poenitz	12670

69 Thulium 169

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,2n	^{168}Tm	CS	3CPRAEP	1.4+07	1.4+07	Jour	CNPR,32,435	15	Jiang Jing+	32847

73 Tantalum

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	p,x	^{175}Hf	CS	3KORKRM	3.0+07	4.4+07	Jour	JRN,318,1863	18	M.Shahid+	D7031
*	p,x	^{179}Hf	CS	3KORKRM	3.3+07	4.4+07	Jour	JRN,318,1863	18	M.Shahid+	D7031
*	p,x	^{180}Hf	CS	3KORKRM	2.2+07	4.4+07	Jour	JRN,318,1863	18	M.Shahid+	D7031
*	p,x	^{176}Ta	CS	3KORKRM	4.1+07	4.4+07	Jour	JRN,318,1863	18	M.Shahid+	D7031
*	p,x	^{177}Ta	CS	3KORKRM	3.5+07	4.4+07	Jour	JRN,318,1863	18	M.Shahid+	D7031
*	p,x	^{178}Ta	CS	3KORKRM	1.3+07	4.4+07	Jour	JRN,318,1863	18	M.Shahid+	D7031
*	p,x	^{180}Ta	CS	3KORKRM	9.4+06	4.4+07	Jour	JRN,318,1863	18	M.Shahid+	D7031
*	p,x	^{177}W	CS	3KORKRM	3.3+07	4.4+07	Jour	JRN,318,1863	18	M.Shahid+	D7031

*	p,x	^{178}W	CS	3KORKRM	2.4+07	4.4+07	Jour	JRN,318,1863	18	M.Shahid+	D7031

73 Tantalum 181

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,γ	^{182}Ta	CS	1USAANL	4.0+05	3.5+06	Conf	75WASH,,901	75	W.P.Poenitz	12670
*	^{12}C,x	Many	CS	3INDTRM	5.2+07	7.3+07	Jour	PR/C,105,014629	22	P.Kaur+	D6417
*	^{12}C,x	^{189}Pt	CS	3INDTRM	5.7+07	7.3+07	Jour	PR/C,105,014629	22	P.Kaur+	D6417
*	^{14}N,3n	^{192}Hg	CS	3INDTRM	6.6+07	8.7+07	Jour	PR/C,104,034616	21	M.S.Asnain+	D6406
*	^{14}N,4n	^{191}Hg	CS	3INDTRM	6.6+07	8.7+07	Jour	PR/C,104,034616	21	M.S.Asnain+	D6406
*	^{14}N,5n	^{190}Hg	CS	3INDTRM	7.2+07	8.7+07	Jour	PR/C,104,034616	21	M.S.Asnain+	D6406
*	^{14}N,6n	^{189}Hg	CS	3INDTRM	8.3+07	8.7+07	Jour	PR/C,104,034616	21	M.S.Asnain+	D6406
*	^{14}N,x	^{181}Re	CS	3INDTRM	6.9+07	8.7+07	Jour	PR/C,104,034616	21	M.S.Asnain+	D6406
*	^{14}N,x	^{183}Os	CS	3INDTRM	7.7+07	8.7+07	Jour	PR/C,104,034616	21	M.S.Asnain+	D6406
*	^{14}N,x	^{185}Ir	CS	3INDTRM	7.6+07	8.7+07	Jour	PR/C,104,034616	21	M.S.Asnain+	D6406
*	^{14}N,x	^{186}Ir	CS	3INDTRM	8.0+07	8.7+07	Jour	PR/C,104,034616	21	M.S.Asnain+	D6406
*	^{14}N,x	^{187}Ir	CS	3INDTRM	7.7+07	8.7+07	Jour	PR/C,104,034616	21	M.S.Asnain+	D6406
*	^{14}N,x	^{186}Pt	CS	3INDTRM	8.1+07	8.7+07	Jour	PR/C,104,034616	21	M.S.Asnain+	D6406
*	^{14}N,x	^{187}Pt	CS	3INDTRM	6.9+07	8.7+07	Jour	PR/C,104,034616	21	M.S.Asnain+	D6406
*	^{14}N,x	^{189}Pt	CS	3INDTRM	6.8+07	8.7+07	Jour	PR/C,104,034616	21	M.S.Asnain+	D6406
*	^{14}N,x	^{189}Au	CS	3INDTRM	8.3+07	8.7+07	Jour	PR/C,104,034616	21	M.S.Asnain+	D6406
*	^{14}N,x	^{190}Au	CS	3INDTRM	6.8+07	8.7+07	Jour	PR/C,104,034616	21	M.S.Asnain+	D6406
*	^{14}N,x	^{191}Au	CS	3INDTRM	6.6+07	8.7+07	Jour	PR/C,104,034616	21	M.S.Asnain+	D6406

74 Tungsten 184

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,fis		CS	4RUSLIN	1.0+09	1.0+09	Jour	ZP/A,318,97	84	L.N.Andronenko+	O0617

78 Platinum 196

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{54}Cr,el	^{196}Pt	DA	3AULCBR	2.2+08	2.2+08	Jour	PRL,127,222501	21	T.Tanaka+	D1021

78 Platinum 198

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{52}Cr,sct	^{198}Pt	DA	3AULCBR	2.2+08	2.2+08	Jour	PRL,127,222501	21	T.Tanaka+	D1021

79 Gold 197

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,γ	^{198}Au	CS	1USAANL	3.0+05	3.0+06	Conf	75WASH,,901	75	W.P.Poenitz	12670
	d,el	^{197}Au	DA	3POLIFJ	1.3+07	1.3+07	Jour	APP,23,619	63	L.Freindl+	D1016
*	^{11}Be,el	^{197}Au	DA	1CANTMF	3.0+07	3.7+07	Jour	PRL,118,152502	17	V.Pesudo+	C2259
*	^{11}Be,inel	^{197}Au	DAP	1CANTMF	3.0+07	3.7+07	Jour	PRL,118,152502	17	V.Pesudo+	C2259
*	^{11}Be,x	^{10}Be	DA	1CANTMF	3.2+07	4.0+07	Jour	PRL,118,152502	17	V.Pesudo+	C2259

81 Thallium 203

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,x+γ	inclusive	DAP	1USATUL	1.6+06	2.0+06	Thes	COTTLES	75	V.M.Cottles	12702

81 Thallium 204

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,tot		CS	1USAMTR	1.4+01	3.5+02	Conf	68WASH,2,893	68	T.Watanabe+	12506

81 Thallium 205

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,x+γ	inclusive	DAP	1USATUL	1.6+06	2.0+06	Thes	COTTLES	75	V.M.Cottles	12702

82 Lead

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	n,x+n	inclusive	DAE	1USATNL	1.0+07	1.2+07	Conf	79KNOX,,139	79	A.G.Beyerle+	12739
*	p,x	^{199}Pb	CS	3KORKAE	7.2+07	9.2+07	Jour	KPS,72,228	18	J.E.Lee+	D7032
*	p,x	^{200}Pb	CS	3KORKAE	7.2+07	9.2+07	Jour	KPS,72,228	18	J.E.Lee+	D7032
*	p,x	^{201}Pb	CS	3KORKAE	7.2+07	9.2+07	Jour	KPS,72,228	18	J.E.Lee+	D7032
*	^{12}C,x	^{12}N	CS	2JPNIRS	4.5+09	4.8+09	Jour	NP/A,1016,122317	21	S.-H.Zheng+	E2716

82 Lead 204

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
n,γ	^{205}Pb	CS	1USAORL	2.7+04	8.4+04	Jour	PR/C,29,2126	84	D.J.Horen+	12758

82 Lead 208

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	p,inel	^{208}Pb	DAP	3POLIFJ	8.5+07	8.5+07	Jour	PR/C,105,014310	22	B.Wasilewska+	D1015
*	p,inel	^{208}Pb	DE	3POLIFJ	8.5+07	8.5+07	Jour	PR/C,105,014310	22	B.Wasilewska+	D1015

83 Bismuth 209

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,γ	^{210}Bi	CS	3ISLSOR	2.5-02	2.5-02	Jour	PR/C,105,025802	22	A.Shor+	31849
*	n,γ	^{210}Bi	RI	3ISLSOR	5.0-01	2.0+06	Jour	PR/C,105,025802	22	A.Shor+	31849
*	n,tot		CS	3KORPUE	1.2-01	9.3+01	Jour	CNPR,32,280	15	Wangtaofeng+	32848

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,213,436	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 #
*	γ,fis	Many	FY	1USAISU		2.0+07	Jour	NIM/A,1013,165621	21	A.Foley+	L0274
*	p,3n	^{230}Pa	CS	3SAFITH	1.4+07	6.7+07	Jour	ARI,168,109514	21	G.F.Steyn+	D1013
*	p,x	^{225}Ac	CS	3SAFITH	4.0+07	6.7+07	Jour	ARI,168,109514	21	G.F.Steyn+	D1013

92 Uranium 233

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,fis	Many	CHG	3INDTRM	2.5-02	2.5-02	Jour	ARI,182,110137	22	H.Naik+	33172
*	n,fis	Many	FY	3INDTRM	2.5-02	2.5-02	Jour	ARI,182,110137	22	H.Naik+	33172

92 Uranium 235

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,fis	Many	CHG	3INDTRM	2.5-02	2.5-02	Jour	ARI,182,110137	22	H.Naik+	33172
	n,fis	Many	FY	3ISLSOR	2.5-02	2.5-02	Jour	ZP/A,311,113	83	M.Shmid+	30915
*	n,fis	Many	FY	3INDTRM	2.5-02	2.5-02	Jour	ARI,182,110137	22	H.Naik+	33172

92 Uranium 238

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	γ,fis	Many	FY	1USAISU		2.0+07	Jour	NIM/A,1013,165621	21	A.Foley+	L0274
	n,γ	^{239}U	CS	1USAANL	2.0+04	1.2+06	Conf	75WASH,,901	75	W.P.Poenitz	12670

93 Neptunium 237

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,fis	Many	FY	3INDTRM	5.0-01	5.0-01	Jour	NSE,196,16	22	H.Naik+	33169
*	n,fis		MAS	3INDTRM	5.0-01	5.0-01	Jour	NSE,196,16	22	H.Naik+	33169

94 Plutonium 239

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	n,fis	Many	CHG	3INDTRM	2.5-02	2.5-02	Jour	ARI,182,110137	22	H.Naik+	33172
*	n,fis	Many	FY	3INDTRM	2.5-02	2.5-02	Jour	ARI,182,110137	22	H.Naik+	33172

98 Californium 252

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	0,fis	γ	FY	3INDVEC	Spont		Jour	PL/B,823,136760	21	D.Pandit+	33167

102 Nobelium 252

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	0,fis		NU	4ZZZDUB	Spont		Jour	APP/B,14,(S4),835	21	A.V.Isaev+	41746