EXFOR News (June 2024)

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/dΩ	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/dΩ	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/dΩ
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 #
	^{14}N,tcc		CS	2JPNIRS	2.9+08	4.0+08	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
	^{14}N,x	Many	CS	2JPNIRS	4.1+09	5.6+09	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
	^{16}O,tcc		CS	2JPNIRS	2.9+08	1.0+09	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
	^{16}O,x	Many	CS	2JPNIRS	4.6+09	1.6+10	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
	^{20}Ne,tcc		CS	2JPNIRS	1.1+10	1.1+10	Jour	PR/C,64,024902	01	C.Zeitlin+	E2763
	^{20}Ne,tcc		CS	2JPNIRS	2.9+08	6.0+08	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
	^{20}Ne,x	Many	CS	2JPNIRS	5.7+05	5.7+05	Jour	PR/C,64,024902	01	C.Zeitlin+	E2763
	^{20}Ne,x	Many	CS	2JPNIRS	5.8+09	1.2+10	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
	^{24}Mg,tcc		CS	2JPNIRS	4.0+08	4.0+08	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
	^{24}Mg,x	Many	CS	2JPNIRS	9.6+09	9.6+09	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764

1 Hydrogen 2

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,el	^{2}H	DA	1USAWIS	2.0+06	4.0+06	Jour	NP/A,132,455	69	D.C.Kocher+	A1030
*	^{93}Zr,x	Many	?	2JPNIPC	2.6+09	2.6+09	Jour	PTEP,2023,121D01	23	T.Chillery+	E2774

1 Hydrogen 3

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,n	^{3}He	POD	1USAVIR	1.5+06	5.0+06	Jour	NP/A,186,161	72	J.R.Smith+	A1050

1 Hydrogen

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	^{12}C,tcc		CS	2JPNIRS	4.8+09	4.8+09	Jour	NP/A,853,124	11	G.Delellis+	E2761
	^{12}C,x	Many	CS	2JPNIRS	4.8+09	4.8+09	Jour	NP/A,853,124	11	G.Delellis+	E2761
	^{12}C,x	^{8}Be	CS	2JPNIRS	4.8+09	4.8+09	Jour	NP/A,853,124	11	G.Delellis+	E2761
	^{12}C,tcc		CS	2JPNIRS	3.8+08	1.2+09	Jour	RM,34,297	01	A.N.Golovchenko+	E2762
	^{12}C,x	Many	CS	2JPNIRS	3.8+08	1.2+09	Jour	RM,34,297	01	A.N.Golovchenko+	E2762
	^{28}Si,tcc		CS	2JPNIRS	1.7+10	1.7+10	Jour	EPJ/A,49,98	13	R.Gupta+	E2766
	^{28}Si,x	Many	CS	2JPNIRS	1.7+10	1.7+10	Jour	EPJ/A,49,98	13	R.Gupta+	E2766

2 Helium 3

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	^{3}He,2p	^{4}He	CS	1USACAL	3.0+04	1.1+05	Jour	PR/C,9,805	74	M.R.Dwarakanath	A1067

^{3}He,x+α	inclusive	DAE	1CANLUQ	6.9+06	9.1+06	Jour	NP/A,194,577	72	M.L.V.L.Deslobodrian+	A1063
^{3}He,x+p	inclusive	DAE	1CANLUQ	9.1+06	9.1+06	Jour	NP/A,194,577	72	M.L.V.L.Deslobodrian+	A1063

2 Helium 4

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max		Ref Vol Page			
p,el	^{4}He	POD	2FR SAC	1.2+07	1.7+07	Jour	NP/A,132,204	69	D.Garreta+	A1031

6 Carbon

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max		Ref Vol Page			
^{14}N,tcc		CS	2JPNIRS	2.9+08	4.0+08	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
^{14}N,x	Many	CS	2JPNIRS	4.1+09	5.6+09	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
^{16}O,tcc		CS	2JPNIRS	2.9+08	1.0+09	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
^{16}O,x	Many	CS	2JPNIRS	4.6+09	1.6+10	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
^{20}Ne,tcc		CS	2JPNIRS	1.1+10	1.1+10	Jour	PR/C,64,024902	01	C.Zeitlin+	E2763
^{20}Ne,tcc		CS	2JPNIRS	2.9+08	6.0+08	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
^{20}Ne,x	Many	CS	2JPNIRS	5.6+05	5.6+05	Jour	PR/C,64,024902	01	C.Zeitlin+	E2763
^{20}Ne,x	Many	CS	2JPNIRS	5.8+09	1.2+10	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
^{24}Mg,tcc		CS	2JPNIRS	4.0+08	4.0+08	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
^{24}Mg,x	Many	CS	2JPNIRS	9.6+09	9.6+09	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764

13 Aluminium 27

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max		Ref Vol Page			
p,4p	^{24}Ne	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{19}O	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{23}Ne	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{22}Na	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
^{14}N,tcc		CS	2JPNIRS	2.9+08	4.0+08	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
^{14}N,x	Many	CS	2JPNIRS	4.1+09	5.6+09	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
^{16}O,tcc		CS	2JPNIRS	2.9+08	1.0+09	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
^{16}O,x	Many	CS	2JPNIRS	4.6+09	1.6+10	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
^{20}Ne,tcc		CS	2JPNIRS	1.1+10	1.1+10	Jour	PR/C,64,024902	01	C.Zeitlin+	E2763
^{20}Ne,tcc		CS	2JPNIRS	2.9+08	6.0+08	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
^{20}Ne,x	Many	CS	2JPNIRS	5.7+05	5.7+05	Jour	PR/C,64,024902	01	C.Zeitlin+	E2763
^{20}Ne,x	Many	CS	2JPNIRS	5.8+09	1.2+10	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
^{24}Mg,tcc		CS	2JPNIRS	4.0+08	4.0+08	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
^{24}Mg,x	Many	CS	2JPNIRS	9.6+09	9.6+09	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764

26 Iron

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max		Ref Vol Page			
p,x	^{24}Na	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085

p,x	^{28}Al	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{34}Cl	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{38}Cl	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{41}Ar	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{38}K	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{42}K	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{43}Sc	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{48}Sc	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{48}V	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{52}V	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{48}Cr	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{49}Cr	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{50}Mn	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{56}Mn	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{52}Fe	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{53}Fe	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085

28 Nickel

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x	^{42}K	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{44}Sc	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{46}Sc	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{47}Sc	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{48}V	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{48}Cr	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{49}Cr	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{51}Cr	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{54}Mn	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{56}Mn	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{55}Co	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{56}Co	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{60}Co	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
p,x	^{56}Ni	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085

28 Nickel 58

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
α,x	^{55}Fe	CS	1USALRL	4.9+07	6.7+07	Jour	PR,137,B367	65	M.Blann+	C0384
α,x	^{55}Co	CS	1USALRL	4.6+07	6.8+07	Jour	PR,137,B367	65	M.Blann+	C0384
α,x	^{56}Co	CS	1USALRL	4.6+07	6.8+07	Jour	PR,137,B367	65	M.Blann+	C0384
α,x	^{58}Co	CS	1USALRL	4.6+07	6.8+07	Jour	PR,137,B367	65	M.Blann+	C0384
α,x	^{57}Ni	CS	1USALRL	4.6+07	6.8+07	Jour	PR,137,B367	65	M.Blann+	C0384

29 Copper

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

	p,x	^{38}Cl	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
	p,x	^{39}Cl	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
	p,x	^{38}K	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
	p,x	^{42}K	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
	p,x	^{42}Sc	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
	p,x	^{43}Sc	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
	p,x	^{46}Sc	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
	p,x	^{48}V	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
	p,x	^{52}V	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
	p,x	^{48}Cr	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
	p,x	^{49}Cr	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
	p,x	^{51}Cr	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
	p,x	^{50}Mn	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
	p,x	^{54}Mn	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
	p,x	^{57}Mn	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
	p,x	^{52}Fe	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
	p,x	^{59}Fe	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
	p,x	^{56}Co	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
	p,x	^{57}Co	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
	p,x	^{60}Co	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
	p,x	^{61}Co	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
	p,x	^{60}Cu	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
	p,x	^{61}Cu	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
	p,x	^{62}Cu	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
	p,x	^{62}Zn	CS	1USASRE	5.9+08	5.9+08	Jour	NP/A,169,437	71	J.E.Cline+	B0085
	^{14}N,tcc		CS	2JPNIRS	2.9+08	4.0+08	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
	^{14}N,x	Many	CS	2JPNIRS	4.1+09	5.6+09	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
	^{16}O,tcc		CS	2JPNIRS	2.9+08	1.0+09	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
	^{16}O,x	Many	CS	2JPNIRS	4.6+09	1.6+10	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
	^{20}Ne,tcc		CS	2JPNIRS	1.1+10	1.1+10	Jour	PR/C,64,024902	01	C.Zeitlin+	E2763
	^{20}Ne,tcc		CS	2JPNIRS	2.9+08	6.0+08	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
	^{20}Ne,x	Many	CS	2JPNIRS	5.6+05	5.6+05	Jour	PR/C,64,024902	01	C.Zeitlin+	E2763
	^{20}Ne,x	Many	CS	2JPNIRS	5.8+09	1.2+10	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
	^{24}Mg,tcc		CS	2JPNIRS	4.0+08	4.0+08	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
	^{24}Mg,x	Many	CS	2JPNIRS	9.6+09	9.6+09	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764

47 Silver

	Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
					Min	Max		Ref Vol Page			
*	α,x	^{104}Ag	CS	2JPNIPC	4.6+07	4.9+07	Jour	ARI,206,111221	24	Z.Tsoodol+	E2772
*	α,x	^{105}Ag	CS	2JPNIPC	3.1+07	4.9+07	Jour	ARI,206,111221	24	Z.Tsoodol+	E2772
*	α,x	^{106}Ag	CS	2JPNIPC	2.3+07	4.9+07	Jour	ARI,206,111221	24	Z.Tsoodol+	E2772
*	α,x	^{110}Ag	CS	2JPNIPC	4.0+07	4.9+07	Jour	ARI,206,111221	24	Z.Tsoodol+	E2772
*	α,x	^{107}Cd	CS	2JPNIPC	4.1+07	4.9+07	Jour	ARI,206,111221	24	Z.Tsoodol+	E2772
*	α,x	^{109}Cd	CS	2JPNIPC	1.6+07	4.9+07	Jour	ARI,206,111221	24	Z.Tsoodol+	E2772
*	α,x	^{111}Cd	CS	2JPNIPC	2.3+07	4.9+07	Jour	ARI,206,111221	24	Z.Tsoodol+	E2772
*	α,x	^{107}In	CS	2JPNIPC	4.3+07	4.9+07	Jour	ARI,206,111221	24	Z.Tsoodol+	E2772
*	α,x	^{108}In	CS	2JPNIPC	3.0+07	4.9+07	Jour	ARI,206,111221	24	Z.Tsoodol+	E2772
*	α,x	^{109}In	CS	2JPNIPC	1.6+07	4.9+07	Jour	ARI,206,111221	24	Z.Tsoodol+	E2772
*	α,x	^{110}In	CS	2JPNIPC	1.0+07	4.9+07	Jour	ARI,206,111221	24	Z.Tsoodol+	E2772
*	α,x	^{111}In	CS	2JPNIPC	1.0+07	4.9+07	Jour	ARI,206,111221	24	Z.Tsoodol+	E2772

50 Tin

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
^{14}N,tcc		CS	2JPNIRS	2.9+08	4.0+08	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
^{14}N,x	Many	CS	2JPNIRS	4.1+09	5.6+09	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
^{16}O,tcc		CS	2JPNIRS	2.9+08	1.0+09	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
^{16}O,x	Many	CS	2JPNIRS	4.6+09	1.6+10	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
^{20}Ne,tcc		CS	2JPNIRS	1.1+10	1.1+10	Jour	PR/C,64,024902	01	C.Zeitlin+	E2763
^{20}Ne,tcc		CS	2JPNIRS	2.9+08	6.0+08	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
^{20}Ne,x	Many	CS	2JPNIRS	5.6+05	5.6+05	Jour	PR/C,64,024902	01	C.Zeitlin+	E2763
^{20}Ne,x	Many	CS	2JPNIRS	5.8+09	1.2+10	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
^{24}Mg,tcc		CS	2JPNIRS	4.0+08	4.0+08	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
^{24}Mg,x	Many	CS	2JPNIRS	9.6+09	9.6+09	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764

65 Terbium 159

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
^{14}N,x+α	inclusive	CS	2JPNIPC	8.5+07	1.2+08	Jour	NP/A,334,127	80	H.Utsunomiya+	E2765
^{14}N,x+α	inclusive	DA	2JPNIPC	8.5+07	1.2+08	Jour	NP/A,334,127	80	H.Utsunomiya+	E2765

69 Thulium 169

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
^{14}N,x+α	inclusive	CS	2JPNIPC	8.5+07	8.5+07	Jour	NP/A,334,127	80	H.Utsunomiya+	E2765
^{14}N,x+α	inclusive	DA	2JPNIPC	8.5+07	8.5+07	Jour	NP/A,334,127	80	H.Utsunomiya+	E2765

73 Tantalum 181

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
^{14}N,x+α	inclusive	CS	2JPNIPC	8.5+07	1.2+08	Jour	NP/A,334,127	80	H.Utsunomiya+	E2765
^{14}N,x+α	inclusive	DA	2JPNIPC	8.5+07	1.2+08	Jour	NP/A,334,127	80	H.Utsunomiya+	E2765
^{14}N,x+α	inclusive	DAE	2JPNIPC	1.2+08	1.2+08	Jour	NP/A,334,127	80	H.Utsunomiya+	E2765
^{14}N,x+d	inclusive	DA	2JPNIPC	1.2+08	1.2+08	Jour	NP/A,334,127	80	H.Utsunomiya+	E2765
^{14}N,x+d	inclusive	DAE	2JPNIPC	1.2+08	1.2+08	Jour	NP/A,334,127	80	H.Utsunomiya+	E2765
^{14}N,x+p	inclusive	DA	2JPNIPC	1.2+08	1.2+08	Jour	NP/A,334,127	80	H.Utsunomiya+	E2765
^{14}N,x+p	inclusive	DAE	2JPNIPC	1.2+08	1.2+08	Jour	NP/A,334,127	80	H.Utsunomiya+	E2765
^{14}N,x+t	inclusive	DA	2JPNIPC	1.2+08	1.2+08	Jour	NP/A,334,127	80	H.Utsunomiya+	E2765
^{14}N,x+t	inclusive	DAE	2JPNIPC	1.2+08	1.2+08	Jour	NP/A,334,127	80	H.Utsunomiya+	E2765
^{20}Ne,tcc		CS	2JPNIRS	1.1+10	1.1+10	Jour	PR/C,64,024902	01	C.Zeitlin+	E2763
^{20}Ne,x	Many	CS	2JPNIRS	5.5+05	5.5+05	Jour	PR/C,64,024902	01	C.Zeitlin+	E2763

79 Gold 197

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	^{14}N,x+α	inclusive	DA	2JPNIPC	8.5+07	8.5+07	Jour	NP/A,334,127	80	H.Utsunomiya+	E2765

82 Lead

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	p,x	^{196}Au	CS	2JPNJAE	4.0+08	3.0+09	Rept	JAEA-C-2023-001,80	23	K.Sugihara+	E2773
*	p,x	^{192}Hg	CS	2JPNJAE	4.0+08	3.0+09	Rept	JAEA-C-2023-001,80	23	K.Sugihara+	E2773
*	p,x	^{203}Hg	CS	2JPNJAE	4.0+08	3.0+09	Rept	JAEA-C-2023-001,80	23	K.Sugihara+	E2773
*	p,x	^{201}Tl	CS	2JPNJAE	4.0+08	1.5+09	Rept	JAEA-C-2023-001,80	23	K.Sugihara+	E2773
*	p,x	^{202}Tl	CS	2JPNJAE	4.0+08	3.0+09	Rept	JAEA-C-2023-001,80	23	K.Sugihara+	E2773
*	p,x	^{200}Pb	CS	2JPNJAE	4.0+08	1.3+09	Rept	JAEA-C-2023-001,80	23	K.Sugihara+	E2773
*	p,x	^{201}Pb	CS	2JPNJAE	4.0+08	3.0+09	Rept	JAEA-C-2023-001,80	23	K.Sugihara+	E2773
*	p,x	^{202}Pb	CS	2JPNJAE	4.0+08	3.0+09	Rept	JAEA-C-2023-001,80	23	K.Sugihara+	E2773
*	p,x	^{203}Pb	CS	2JPNJAE	4.0+08	3.0+09	Rept	JAEA-C-2023-001,80	23	K.Sugihara+	E2773
*	p,x	^{203}Bi	CS	2JPNJAE	4.0+08	3.0+09	Rept	JAEA-C-2023-001,80	23	K.Sugihara+	E2773
*	p,x	^{205}Bi	CS	2JPNJAE	4.0+08	3.0+09	Rept	JAEA-C-2023-001,80	23	K.Sugihara+	E2773
*	p,x	^{206}Bi	CS	2JPNJAE	4.0+08	3.0+09	Rept	JAEA-C-2023-001,80	23	K.Sugihara+	E2773
	^{14}N,tcc		CS	2JPNIRS	2.9+08	4.0+08	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
	^{14}N,x	Many	CS	2JPNIRS	4.1+09	5.6+09	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
	^{16}O,tcc		CS	2JPNIRS	2.9+08	1.0+09	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
	^{16}O,x	Many	CS	2JPNIRS	4.6+09	1.6+10	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
	^{20}Ne,tcc		CS	2JPNIRS	1.1+10	1.1+10	Jour	PR/C,64,024902	01	C.Zeitlin+	E2763
	^{20}Ne,tcc		CS	2JPNIRS	2.9+08	6.0+08	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
	^{20}Ne,x	Many	CS	2JPNIRS	5.5+05	5.5+05	Jour	PR/C,64,024902	01	C.Zeitlin+	E2763
	^{20}Ne,x	Many	CS	2JPNIRS	5.8+09	1.2+10	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
	^{24}Mg,tcc		CS	2JPNIRS	4.0+08	4.0+08	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764
	^{24}Mg,x	Many	CS	2JPNIRS	9.6+09	9.6+09	Jour	PR/C,83,034909	11	C.Zeitlin+	E2764

83 Bismuth 209

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	^{14}N,fis		DA	2JPNIPC	8.5+07	9.5+07	Jour	NP/A,334,127	80	H.Utsunomiya+	E2765
	^{14}N,x	^{7}Be	DA	2JPNIPC	8.5+07	1.2+08	Jour	NP/A,334,127	80	H.Utsunomiya+	E2765
	^{14}N,x	^{12}B	DA	2JPNIPC	8.5+07	1.2+08	Jour	NP/A,334,127	80	H.Utsunomiya+	E2765
	^{14}N,x+α	inclusive	CS	2JPNIPC	8.5+07	1.2+08	Jour	NP/A,334,127	80	H.Utsunomiya+	E2765
	^{14}N,x+α	inclusive	DA	2JPNIPC	8.5+07	1.2+08	Jour	NP/A,334,127	80	H.Utsunomiya+	E2765
	^{14}N,x+α	inclusive	DAE	2JPNIPC	1.2+08	1.2+08	Jour	NP/A,334,127	80	H.Utsunomiya+	E2765

92 Uranium 238

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	γ,fis		DA	4RUSIFP		9.2+06	Conf	65SALZBURG,1,135	65	N.S.Rabotnov+	M0176

93 Neptunium 237

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max		Ref Vol Page			
n,fis		?	1USALRL	1.8+06	4.0+06	Jour	NSE,80,393	82	J.W.Behrens+	10647