EXFOR News (August 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 #
	d,el	^{1}H	CS	1USALAS	1.0+07	1.0+07	Jour	PR,82,777	51	L.Rosen+	A1200
	d,el	^{1}H	DA	1USALAS	1.0+07	1.0+07	Jour	PR,82,777	51	L.Rosen+	A1200
*	^{10}Be,p+α	^{6}He	D3A	2JPNIPC	1.5+09	1.5+09	Jour	PRL,131,212501	23	P.J.Li+	E2779
*	^{10}Be,p+α	^{6}He	?	2JPNIPC	1.5+09	1.5+09	Jour	PRL,131,212501	23	P.J.Li+	E2779
*	^{30}Ne,2n+p	^{28}Ne	?	2JPNIPC	7.2+09	7.2+09	Jour	PR/C,105,034301	22	M.Holl+	E2732
*	^{30}Na,n+2p	^{28}Ne	?	2JPNIPC	6.9+09	6.9+09	Jour	PR/C,105,034301	22	M.Holl+	E2732

1 Hydrogen 2

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	d,γ	^{4}He	DA	1USAPEN	1.4+06	1.4+06	Jour	PR,132,751	63	R.W.Zurmuhle+	A1086
	d,n	^{3}He	DA	1USAABD	3.0+05	7.0+05	Jour	NP/A,206,481	73	N.Ying+	A1076
	d,p	^{3}H	CS	1USAABD	3.0+05	7.0+05	Jour	NP/A,206,481	73	N.Ying+	A1076
	d,p	^{3}H	DA	1USAABD	3.0+05	7.0+05	Jour	NP/A,206,481	73	N.Ying+	A1076
	α,t	^{3}He	DA	1USAORL	5.0+07	8.2+07	Jour	PR/C,5,602	72	E.E.Gross+	C2914
	α,t	^{3}He	DA	1USAORL	8.2+07	8.2+07	Jour	PRL,24,473	70	E.E.Gross+	C2912
*	^{8}He,^{3}He	^{7}H	DAP	4ZZZDUB	2.1+08	2.1+08	Jour	PRL,124,022502	20	A.A.Bezbakh+	F1510
*	^{8}He,^{3}He	^{7}H	DAP	4ZZZDUB	2.1+08	2.1+08	Jour	PR/C,103,044313	21	I.A.Muzalevskii+	F1511

1 Hydrogen 3

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	^{3}He,n	^{5}Li	POD	1USANOT	2.7+06	3.5+06	Jour	PR/C,3,2171	71	J.T.Klopcic+	A1040

2 Helium 3

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	d,p	^{4}He	POD	2GERUEN	2.2+06	1.3+07	Jour	NP/A,166,253	71	W.Klinger+	A1078
	α,0		RP	1USAORL			Jour	PRL,26,1124	71	M.L.Halbert+	C2911
	α,el	^{3}He	DA	1USAMRY	1.2+08	1.2+08	Jour	NP/A,191,658	72	P.E.Frisbee+	C2873
	α,inel	^{3}He	DA	1USAORL	6.4+07	6.4+07	Jour	PRL,26,1124	71	M.L.Halbert+	C2911
	α,inel	^{3}He	DAP	1USAMRY	1.2+08	1.2+08	Jour	NP/A,191,658	72	P.E.Frisbee+	C2873
	α,p	^{6}Li	DA	1USAORL	7.2+07	8.1+07	Jour	PR/C,8,1621	73	M.L.Halbert+	C2935
	α,p	^{6}Li	DAP	1USAORL	7.2+07	8.1+07	Jour	PR/C,8,1621	73	M.L.Halbert+	C2935

2 Helium 4

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,d	^{3}He	DAP	1USAMRY	6.5+07	6.5+07	Jour	NP/A,191,658	72	P.E.Frisbee+	C2873
	α,el	^{4}He	DA	1USAMRY	1.6+08	1.6+08	Jour	PR/C,18,2792	78	A.Nadasen+	C2895

3 Lithium 6

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,d+α	^{4}He	D3A	1USAORL	7.0+07	7.0+07	Jour	PRL,22,408	69	H.G.Pugh+	C2907

4 Berylium 9

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	p,el	^{9}Be	DA	4RUSEPA	7.0+06	1.0+07	Jour	BAS,87,1907	23	L.N.Generalov+	F1496
*	p,x+p	inclusive	DAE	4RUSLIN	1.0+09	1.0+09	Jour	PAN,83,431	20	O.V.Miklukho+	F1494
*	p,x+p	inclusive	POD	4RUSLIN	1.0+09	1.0+09	Jour	PAN,83,431	20	O.V.Miklukho+	F1494
*	α,el	^{9}Be	DA	2JPNTSU	3.0+07	3.0+07	Jour	EPJ/CS,66,02026	14	A.S.Demyanova+	F1509
*	α,inel	^{9}Be	DAP	2JPNTSU	3.0+07	3.0+07	Jour	EPJ/CS,66,02026	14	A.S.Demyanova+	F1509
*	^{12}C,x	^{6}He	DAE	4RUSITE	1.1+10	1.1+10	Jour	PAN,81,330	18	B.M.Abramov+	F1504
*	^{12}C,x	^{6}Li	DAE	4RUSITE	1.1+10	1.1+10	Jour	PAN,81,330	18	B.M.Abramov+	F1504
*	^{12}C,x	^{7}Li	DAE	4RUSITE	1.1+10	1.1+10	Jour	PAN,81,330	18	B.M.Abramov+	F1504
*	^{12}C,x	^{8}Li	DAE	4RUSITE	1.1+10	1.1+10	Jour	PAN,81,330	18	B.M.Abramov+	F1504
*	^{12}C,x	^{7}Be	DAE	4RUSITE	1.1+10	1.1+10	Jour	PAN,81,330	18	B.M.Abramov+	F1504
*	^{12}C,x	^{7}Be	DAE	4RUSITE	3.6+09	3.6+09	Jour	PAN,85,466	22	A.A.Kulikovskaya+	F1499
*	^{12}C,x	^{9}Be	DAE	4RUSITE	1.1+10	1.1+10	Jour	PAN,81,330	18	B.M.Abramov+	F1504
*	^{12}C,x	^{9}Be	DAE	4RUSITE	3.6+09	3.6+09	Jour	PAN,85,466	22	A.A.Kulikovskaya+	F1499
*	^{12}C,x	^{10}Be	DAE	4RUSITE	1.1+10	1.1+10	Jour	PAN,81,330	18	B.M.Abramov+	F1504
*	^{12}C,x	^{10}Be	DAE	4RUSITE	3.6+09	3.6+09	Jour	PAN,85,466	22	A.A.Kulikovskaya+	F1499
*	^{12}C,x	^{11}Be	DAE	4RUSITE	3.6+09	3.6+09	Jour	PAN,85,466	22	A.A.Kulikovskaya+	F1499
*	^{12}C,x	^{12}Be	DAE	4RUSITE	3.6+09	3.6+09	Jour	BAS,87,1147	23	A.A.Kulikovskaya+	F1500
*	^{12}C,x	^{8}B	DAE	4RUSITE	1.1+10	1.1+10	Jour	PAN,81,330	18	B.M.Abramov+	F1504
*	^{12}C,x	^{8}B	DAE	4RUSITE	3.6+09	3.6+09	Jour	PAN,85,466	22	A.A.Kulikovskaya+	F1499
*	^{12}C,x	^{10}B	DAE	4RUSITE	1.1+10	1.1+10	Jour	PAN,81,330	18	B.M.Abramov+	F1504
*	^{12}C,x	^{10}B	DAE	4RUSITE	3.6+09	3.6+09	Jour	PAN,85,466	22	A.A.Kulikovskaya+	F1499
*	^{12}C,x	^{11}B	DAE	4RUSITE	1.1+10	1.1+10	Jour	PAN,81,330	18	B.M.Abramov+	F1504
*	^{12}C,x	^{11}B	DAE	4RUSITE	3.6+09	3.6+09	Jour	PAN,85,466	22	A.A.Kulikovskaya+	F1499
*	^{12}C,x	^{12}B	DAE	4RUSITE	3.6+09	3.6+09	Jour	PAN,85,466	22	A.A.Kulikovskaya+	F1499
*	^{12}C,x	^{11}C	DAE	4RUSITE	1.1+10	1.1+10	Jour	PAN,81,330	18	B.M.Abramov+	F1504
*	^{12}C,x	^{12}C	DAE	4RUSITE	1.1+10	1.1+10	Jour	PAN,81,330	18	B.M.Abramov+	F1504
*	^{12}C,x+α	inclusive	DAE	4RUSITE	1.1+10	1.1+10	Jour	PAN,81,330	18	B.M.Abramov+	F1504
*	^{12}C,x+d	inclusive	DAE	4RUSITE	1.1+10	1.1+10	Jour	PAN,81,330	18	B.M.Abramov+	F1504
*	^{12}C,x+^{3}He	inclusive	DAE	4RUSITE	1.1+10	1.1+10	Jour	PAN,81,330	18	B.M.Abramov+	F1504
*	^{12}C,x+p	inclusive	DAE	4RUSITE	1.1+10	1.1+10	Jour	PAN,81,330	18	B.M.Abramov+	F1504
*	^{12}C,x+t	inclusive	DAE	4RUSITE	1.1+10	1.1+10	Jour	PAN,81,330	18	B.M.Abramov+	F1504

6 Carbon

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{6}He,2n+X	^{4}He	CSP	2JPNIPC	4.2+08	4.2+08	Jour	PL/B,814,136072	21	Y.L.Sun+	E2699
*	^{6}He,2n+X	^{4}He	?	2JPNIPC	4.2+08	4.2+08	Jour	PL/B,814,136072	21	Y.L.Sun+	E2699
*	^{6}He,x	^{6}He	DA	2JPNIPC	4.2+08	4.2+08	Jour	PL/B,814,136072	21	Y.L.Sun+	E2699
*	^{6}He,x+α	inclusive	CS	2JPNIPC	4.2+08	4.2+08	Jour	PL/B,814,136072	21	Y.L.Sun+	E2699

6 Carbon 12

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,^{6}Li	^{10}B	DAP	1USAMSU	4.6+07	4.6+07	Jour	PR/C,14,2037	76	R.G.Markham+	C2902
	α,^{7}Li	^{9}B	?	1USAMRY	4.9+07	8.0+07	Jour	PR/C,29,1595	84	A.Gokmen+	C2898
	α,γ	^{16}O	CS	1USAORL	1.9+06	4.1+06	Jour	PR/C,2,2452	70	R.J.Jaszczak+	C2910
	α,n	^{15}O	?	1USAMRY	8.0+07	8.0+07	Jour	PR/C,29,1595	84	A.Gokmen+	C2898
	α,x	Many	CS	1USAMRY	4.9+07	1.6+08	Jour	PR/C,29,1595	84	A.Gokmen+	C2898
	α,x	Many	DA	1USAMRY	4.9+07	1.6+08	Jour	PR/C,29,1595	84	A.Gokmen+	C2898

6 Carbon 13

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,0		RP	1USAOSU			Jour	PR/C,3,494	71	W.L.Baker+	C2941
*	α,inel	^{13}C	DAP	2SF JYV	6.5+07	6.5+07	Jour	EPJ/CS,66,02027	14	A.S.Demyanova+	F1502
*	α,inel	^{13}C	DAP	2SF JYV	6.5+07	9.0+07	Jour	PAN,85,785	22	S.A.Goncharov+	F1503
	α,n	^{16}O	POD	1USAOSU	2.1+06	2.4+06	Jour	PR/C,8,848	73	C.E.Busch+	C2942
	α,n	^{16}O	POD	1USAOSU	3.4+06	4.9+06	Jour	PR/C,3,494	71	W.L.Baker+	C2941
*	α,n	^{16}O	TTD	4RUSFEI	3.0+06	6.5+06	Jour	NSE,198,1062	24	P.S.Prusachenko+	F1508
*	α,n	^{16}O	TTP	4RUSFEI	3.0+06	6.5+06	Jour	NSE,198,1062	24	P.S.Prusachenko+	F1508

8 Oxygen 16

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	d,α	^{14}N	DA	1USAORL	3.9+06	5.3+06	Jour	PR/C,3,1065	71	S.T.Thornton+	C2915

8 Oxygen 17

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,d	^{19}F	DAP	1USAMSU	4.8+07	4.8+07	Jour	NP/A,301,441	78	H.T.Fortune+	C2901

12 Magnesium 24

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max		Ref Vol Page			
p,x	^{17}N	?	4RUSLIN	1.0+09	1.0+09	Jour	SNP,25,605	77	L.Kh.Batist+	A0013
α,^{6}Li	^{22}Na	DAP	1USAMSU	4.6+07	4.6+07	Jour	PR/C,14,2037	76	R.G.Markham+	C2902
α,el	^{24}Mg	DA	1USAORL	4.0+07	4.0+07	Jour	PRL,23,1124	69	P.P.Singh+	C2908
α,el	^{24}Mg	DA	1USAORL	4.0+07	8.0+07	Jour	NP/A,163,289	71	P.P.Singh+	C2913
α,el	^{24}Mg	DA	1USAORL	8.0+07	8.0+07	Jour	PRL,23,1124	69	P.P.Singh+	C2908
α,inel	^{24}Mg	DAP	1USAORL	4.0+07	8.0+07	Jour	NP/A,163,289	71	P.P.Singh+	C2913

12 Magnesium 25

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max		Ref Vol Page			
p,x	^{17}N	CS	4RUSLIN	1.0+09	1.0+09	Jour	SNP,25,605	77	L.Kh.Batist+	A0013

12 Magnesium 26

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max		Ref Vol Page			
p,x	^{17}N	CS	4RUSLIN	1.0+09	1.0+09	Jour	SNP,25,605	77	L.Kh.Batist+	A0013

13 Aluminium 27

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max		Ref Vol Page			
α,d	^{29}Si	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,^{3}He	^{28}Al	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,inel	^{27}Al	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,t	^{28}Si	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{7}Li	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{8}Li	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{7}Be	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{11}Be	CS	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{10}B	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{11}B	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{12}B	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{13}B	CS	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{14}B	CS	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{10}C	CS	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{12}C	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{13}C	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{14}C	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{15}C	CS	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{14}N	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{15}N	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{16}N	CS	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{16}N	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{17}N	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896

α,x	^{14}O	CS	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{15}O	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{16}O	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{17}O	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{18}O	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{19}O	CS	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{19}O	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{20}O	CS	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{20}O	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{17}F	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{18}F	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{19}F	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{20}F	CS	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{20}F	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{21}F	CS	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{21}F	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{22}F	CS	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{22}F	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{18}Ne	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{19}Ne	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{20}Ne	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{21}Ne	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{22}Ne	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{23}Ne	CS	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{23}Ne	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{24}Ne	CS	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{25}Ne	CS	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{21}Na	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{22}Na	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{23}Na	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{24}Na	CS	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{24}Na	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{25}Na	CS	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{25}Na	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{26}Na	CS	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{26}Na	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{22}Mg	CS	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{22}Mg	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{23}Mg	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{24}Mg	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{25}Mg	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{26}Mg	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{27}Mg	CS	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{27}Mg	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{28}Mg	CS	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{24}Al	CS	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{25}Al	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{26}Al	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{27}Al	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{28}Al	CS	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{28}Al	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{29}Al	CS	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{29}Al	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{26}Si	CS	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{27}Si	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{28}Si	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896
α,x	^{29}Si	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896

α,x	^{29}P	CSP	1USAMRY	1.4+08	1.4+08	Jour	PR/C,19,1577	79	M.D.Glascock+	C2896

16 Sulphur 32

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max		Ref Vol Page			
p,x	^{17}N	CS	4RUSLIN	1.0+09	1.0+09	Jour	SNP,25,605	77	L.Kh.Batist+	A0013
p,x	^{17}N	?	4RUSLIN	1.0+09	1.0+09	Jour	SNP,25,605	77	L.Kh.Batist+	A0013

16 Sulphur 34

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max		Ref Vol Page			
p,x	^{17}N	CS	4RUSLIN	1.0+09	1.0+09	Jour	SNP,25,605	77	L.Kh.Batist+	A0013

19 Potassium 39

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max		Ref Vol Page			
α,d	^{41}Ca	DAP	1USAMSU	4.0+07	4.0+07	Jour	PR/C,12,1524	75	H.Nann+	C2900

19 Potassium 41

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max		Ref Vol Page			
α,d	^{43}Ca	DAP	1USAMSU	4.0+07	4.0+07	Jour	PL/B,60,32	75	H.Nann+	C2899

20 Calcium 40

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max		Ref Vol Page			
p,x	^{17}N	CS	4RUSLIN	1.0+09	1.0+09	Jour	SNP,25,605	77	L.Kh.Batist+	A0013
p,x	^{17}N	?	4RUSLIN	1.0+09	1.0+09	Jour	SNP,25,605	77	L.Kh.Batist+	A0013
α,^{6}Li	^{38}K	DAP	1USAMSU	4.6+07	4.6+07	Jour	PR/C,14,2037	76	R.G.Markham+	C2902
α,d	^{42}Sc	DAP	1USAMSU	4.0+07	4.0+07	Jour	PR/C,12,1524	75	H.Nann+	C2900

20 Calcium 44

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max		Ref Vol Page			
p,x	^{17}N	CS	4RUSLIN	1.0+09	1.0+09	Jour	SNP,25,605	77	L.Kh.Batist+	A0013

22 Titanium

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{3}He,x	^{44}Sc	CS	2JPNIRS	8.7+06	5.5+07	Jour	NIM/B,445,69	19	M.U.Khandaker+	E2627

24 Chromium

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	α,x	^{48}V	CS	2JPNIPC	3.9+07	5.0+07	Jour	NIM/B,552,165348	24	N.Ukon+	E2782
*	α,x	^{48}Cr	CS	2JPNIPC	4.3+07	5.0+07	Jour	NIM/B,552,165348	24	N.Ukon+	E2782
*	α,x	^{51}Cr	CS	2JPNIPC	1.7+07	5.0+07	Jour	NIM/B,552,165348	24	N.Ukon+	E2782
*	α,x	^{52}Mn	CS	2JPNIPC	1.7+07	5.0+07	Jour	NIM/B,552,165348	24	N.Ukon+	E2782
*	α,x	^{54}Mn	CS	2JPNIPC	1.7+07	5.0+07	Jour	NIM/B,552,165348	24	N.Ukon+	E2782
*	α,x	^{52}Fe	CS	2JPNIPC	2.2+07	5.0+07	Jour	NIM/B,552,165348	24	N.Ukon+	E2782

28 Nickel 58

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,x	^{17}N	CS	4RUSLIN	1.0+09	1.0+09	Jour	SNP,25,605	77	L.Kh.Batist+	A0013
	α,el	^{58}Ni	DA	1USANRL	6.0+07	6.0+07	Jour	PR/C,9,1002	74	D.G.Madland+	C2905

28 Nickel 60

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,el	^{60}Ni	DA	1USAORL	4.0+07	4.0+07	Jour	PR/C,10,2441	74	M.B.Lewis+	C2938
	α,el	^{60}Ni	DA	1USANRL	5.8+07	7.5+07	Jour	PR/C,9,1002	74	D.G.Madland+	C2905
	α,inel	^{60}Ni	DAP	1USAORL	4.0+07	4.0+07	Jour	PR/C,10,2441	74	M.B.Lewis+	C2938

28 Nickel 62

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,x	^{17}N	CS	4RUSLIN	1.0+09	1.0+09	Jour	SNP,25,605	77	L.Kh.Batist+	A0013
	α,el	^{62}Ni	DA	1USANRL	5.8+07	5.8+07	Jour	PR/C,9,1002	74	D.G.Madland+	C2905

28 Nickel 64

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,x	^{17}N	CS	4RUSLIN	1.0+09	1.0+09	Jour	SNP,25,605	77	L.Kh.Batist+	A0013
	α,el	^{64}Ni	DA	1USANRL	5.8+07	5.8+07	Jour	PR/C,9,1002	74	D.G.Madland+	C2905

29 Copper

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{7}Li,x	^{65}Zn	CS	2JPNIPC	8.1+06	7.1+07	Jour	NIM/B,554,165441	24	M.Aikawa+	E2785
*	^{7}Li,x	^{65}Zn	TT	2JPNIPC	2.2+07	7.2+07	Jour	NIM/B,554,165441	24	M.Aikawa+	E2785
*	^{7}Li,x	^{69}Zn	CS	2JPNIPC	2.3+07	5.4+07	Jour	NIM/B,554,165441	24	M.Aikawa+	E2785
*	^{7}Li,x	^{69}Zn	TT	2JPNIPC	3.2+07	7.2+07	Jour	NIM/B,554,165441	24	M.Aikawa+	E2785
*	^{7}Li,x	^{66}Ga	CS	2JPNIPC	8.1+06	7.1+07	Jour	NIM/B,554,165441	24	M.Aikawa+	E2785
*	^{7}Li,x	^{66}Ga	TT	2JPNIPC	2.2+07	7.2+07	Jour	NIM/B,554,165441	24	M.Aikawa+	E2785
*	^{7}Li,x	^{67}Ga	CS	2JPNIPC	8.1+06	7.1+07	Jour	NIM/B,554,165441	24	M.Aikawa+	E2785
*	^{7}Li,x	^{67}Ga	TT	2JPNIPC	2.2+07	7.2+07	Jour	NIM/B,554,165441	24	M.Aikawa+	E2785
*	^{7}Li,x	^{68}Ge	CS	2JPNIPC	1.2+07	5.5+07	Jour	NIM/B,554,165441	24	M.Aikawa+	E2785
*	^{7}Li,x	^{68}Ge	TT	2JPNIPC	2.2+07	7.2+07	Jour	NIM/B,554,165441	24	M.Aikawa+	E2785
*	^{7}Li,x	^{69}Ge	CS	2JPNIPC	8.1+06	7.1+07	Jour	NIM/B,554,165441	24	M.Aikawa+	E2785
*	^{7}Li,x	^{69}Ge	TT	2JPNIPC	2.2+07	7.2+07	Jour	NIM/B,554,165441	24	M.Aikawa+	E2785

30 Zinc 64

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
α,el	^{64}Zn	DA	1USAMIN	3.1+07	3.1+07	Jour	PR/C,2,974	70	N.Alpert+	C2871
α,inel	^{64}Zn	DAP	1USAMIN	3.1+07	3.1+07	Jour	PR/C,2,974	70	N.Alpert+	C2871

30 Zinc 66

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
α,inel	^{66}Zn	DA	1USAMIN	3.1+07	3.1+07	Jour	PR/C,2,974	70	N.Alpert+	C2871
α,inel	^{66}Zn	DAP	1USAMIN	3.1+07	3.1+07	Jour	PR/C,2,974	70	N.Alpert+	C2871

30 Zinc 68

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
α,el	^{68}Zn	DA	1USAMGH	3.1+07	3.1+07	Jour	NP/A,191,658	72	P.E.Frisbee+	C2872
α,inel	^{68}Zn	DAP	1USAMGH	3.1+07	3.1+07	Jour	NP/A,191,658	72	P.E.Frisbee+	C2872

30 Zinc 70

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
α,el	^{70}Zn	DA	1USAMGH	3.1+07	3.1+07	Jour	NP/A,191,658	72	P.E.Frisbee+	C2872
α,inel	^{70}Zn	DAP	1USAMGH	3.1+07	3.1+07	Jour	NP/A,191,658	72	P.E.Frisbee+	C2872

38 Strontium 84

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,p	^{87}Y	DAP	1USAPEN	1.8+07	1.8+07	Jour	NP/A,292,61	77	L.R.Medsker+	C2943

39 Yttrium 89

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	d,p	^{90}Y	DAP	1USAORL	3.3+07	3.3+07	Jour	PR/C,5,914	72	R.E.Goans+	C2934
	α,el	^{89}Y	DA	1USAORL	6.6+07	6.6+07	Jour	PR,180,1197	69	C.R.Bingham+	C2906
	α,inel	^{89}Y	DAP	1USAORL	6.6+07	6.6+07	Jour	PR,180,1197	69	C.R.Bingham+	C2906

40 Zirconium 90

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	p,x+p	inclusive	DAE	4RUSLIN	1.0+09	1.0+09	Jour	PAN,83,431	20	O.V.Miklukho+	F1494
*	p,x+p	inclusive	POD	4RUSLIN	1.0+09	1.0+09	Jour	PAN,83,431	20	O.V.Miklukho+	F1494

40 Zirconium 92

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,el	^{92}Zr	DA	1USAORL	6.6+07	6.6+07	Jour	PR,180,1197	69	C.R.Bingham+	C2906
	α,inel	^{92}Zr	DAP	1USAORL	6.6+07	6.6+07	Jour	PR,180,1197	69	C.R.Bingham+	C2906

40 Zirconium 94

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,el	^{94}Zr	DA	1USAORL	6.6+07	6.6+07	Jour	PR,180,1197	69	C.R.Bingham+	C2906
	α,inel	^{94}Zr	DAP	1USAORL	6.6+07	6.6+07	Jour	PR,180,1197	69	C.R.Bingham+	C2906

40 Zirconium 96

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,el	^{96}Zr	DA	1USAORL	6.6+07	6.6+07	Jour	PR,180,1197	69	C.R.Bingham+	C2906
	α,inel	^{96}Zr	DAP	1USAORL	6.6+07	6.6+07	Jour	PR,180,1197	69	C.R.Bingham+	C2906

45 Rhodium 103

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,n	^{103}Pd	CS	4UZ UZB	2.7+06	1.7+07	Jour	IZU,2,90	66	S.Mukhammedov+	F1495

50 Tin 112

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x	^{17}N	CS	4RUSLIN	1.0+09	1.0+09	Jour	SNP,25,605	77	L.Kh.Batist+	A0013

50 Tin 116

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x	^{17}N	CS	4RUSLIN	1.0+09	1.0+09	Jour	SNP,25,605	77	L.Kh.Batist+	A0013
α,el	^{116}Sn	DA	1USAORL	6.6+07	6.6+07	Jour	PR,180,1197	69	C.R.Bingham+	C2906
α,^{3}He	^{117}Sn	DAP	1USAORL	6.6+07	6.6+07	Jour	PR/C,1,244	70	C.R.Bingham+	C2909
α,inel	^{116}Sn	DAP	1USAORL	6.6+07	6.6+07	Jour	PR,180,1197	69	C.R.Bingham+	C2906

50 Tin 119

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x	^{17}N	CS	4RUSLIN	1.0+09	1.0+09	Jour	SNP,25,605	77	L.Kh.Batist+	A0013

50 Tin 120

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x	^{17}N	CS	4RUSLIN	1.0+09	1.0+09	Jour	SNP,25,605	77	L.Kh.Batist+	A0013

50 Tin 122

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x	^{17}N	CS	4RUSLIN	1.0+09	1.0+09	Jour	SNP,25,605	77	L.Kh.Batist+	A0013

50 Tin 124

Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
p,x	^{17}N	CS	4RUSLIN	1.0+09	1.0+09	Jour	SNP,25,605	77	L.Kh.Batist+	A0013

d,p	^{125}Sn	DAP	1USAORL	3.3+07	3.3+07	Jour	PR/C,8,729	73	C.R.Bingham+	C2937

52 Tellurium 130

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max		Ref Vol Page			
^{40}Ar,3n	^{167}Yb	CS	1USAORL	1.5+08	1.5+08	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940
^{40}Ar,3n	^{167}Yb	CSP	1USAORL	1.5+08	1.5+08	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940
^{40}Ar,4n	^{166}Yb	CS	1USAORL	1.5+08	1.5+08	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940
^{40}Ar,4n	^{166}Yb	CSP	1USAORL	1.5+08	1.5+08	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940
^{40}Ar,5n	^{165}Yb	CS	1USAORL	1.5+08	1.5+08	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940
^{40}Ar,5n	^{165}Yb	CSP	1USAORL	1.5+08	1.5+08	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940

60 Neodymium 150

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max		Ref Vol Page			
^{20}Ne,4n	^{166}Yb	MLT	1USAORL	1.1+08	1.1+08	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940
^{20}Ne,5n	^{165}Yb	CSP	1USAORL	9.4+07	1.1+08	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940
^{20}Ne,6n	^{164}Yb	CSP	1USAORL	9.4+07	1.1+08	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940
^{20}Ne,7n	^{163}Yb	CSP	1USAORL	1.1+08	1.1+08	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940
^{20}Ne,8n	^{162}Yb	CSP	1USAORL	1.1+08	1.1+08	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940
^{20}Ne,x	^{160}Er	CSP	1USAORL	1.1+08	1.1+08	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940
^{20}Ne,x	^{161}Er	CSP	1USAORL	1.1+08	1.1+08	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940
^{20}Ne,x	^{162}Er	CSP	1USAORL	1.1+08	1.1+08	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940

68 Erbium 166

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max		Ref Vol Page			
α,2n	^{168}Yb	CS	1USAORL	6.8+07	9.5+07	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940
α,2n	^{168}Yb	CSP	1USAORL	6.8+07	9.5+07	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940
α,3n	^{167}Yb	CS	1USAORL	6.8+07	9.5+07	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940
α,3n	^{167}Yb	CSP	1USAORL	6.8+07	9.5+07	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940
α,4n	^{166}Yb	CS	1USAORL	6.8+07	9.5+07	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940
α,4n	^{166}Yb	CSP	1USAORL	6.8+07	9.5+07	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940
α,5n	^{165}Yb	CS	1USAORL	6.8+07	9.5+07	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940
α,5n	^{165}Yb	CSP	1USAORL	6.8+07	9.5+07	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940
α,6n	^{164}Yb	CS	1USAORL	6.8+07	9.5+07	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940
α,6n	^{164}Yb	CSP	1USAORL	6.8+07	9.5+07	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940
α,7n	^{163}Yb	CS	1USAORL	8.0+07	9.5+07	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940
α,7n	^{163}Yb	CSP	1USAORL	8.0+07	9.5+07	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940
α,8n	^{162}Yb	CS	1USAORL	9.5+07	9.5+07	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940
α,8n	^{162}Yb	CSP	1USAORL	9.5+07	9.5+07	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940
α,x	^{160}Er	CS	1USAORL	9.5+07	9.5+07	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940
α,x	^{160}Er	CSP	1USAORL	9.5+07	9.5+07	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940
α,x	^{161}Er	CS	1USAORL	8.0+07	8.0+07	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940
α,x	^{161}Er	CSP	1USAORL	8.0+07	8.0+07	Jour	PR/C,17,601	78	D.G.Sarantites+	C2940

70 Ytterbium 171

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	^{3}He,d	^{172}Lu	DAP	1USAROC	2.7+07	2.7+07	Jour	PR/C,14,583	76	D.Elmore+	C2939
	α,t	^{172}Lu	DAP	1USAROC	2.8+07	2.8+07	Jour	PR/C,14,583	76	D.Elmore+	C2939

70 Ytterbium 176

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{48}Ca,fus		CS	4ZZZDUB			Jour	PR/C,105,024604	22	R.N.Sagaidak+	F1507

74 Tungsten

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	d,x	^{186}Re	CS	4RUSSUL	5.8+06	1.3+07	Jour	RDC,48,497	06	I.E.Alekseev+	F1497
	d,x	^{186}Re	TT	4RUSSUL	5.8+06	1.3+07	Jour	RDC,48,497	06	I.E.Alekseev+	F1497

74 Tungsten 186

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	d,2n	^{186}Re	TT	4RUSSUL	1.1+07	1.3+07	Jour	RDC,48,497	06	I.E.Alekseev+	F1497

82 Lead

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	d,non		CS	4ZZZDUB	1.6+09	2.5+09	Jour	PR/C,82,044605	10	M.Zamani+	F1505
*	^{6}He,2n+X	^{4}He	CSP	2JPNIPC	4.2+08	4.2+08	Jour	PL/B,814,136072	21	Y.L.Sun+	E2699
*	^{6}He,2n+X	^{4}He	?	2JPNIPC	4.2+08	4.2+08	Jour	PL/B,814,136072	21	Y.L.Sun+	E2699
*	^{6}He,x	^{6}He	DA	2JPNIPC	4.2+08	4.2+08	Jour	PL/B,814,136072	21	Y.L.Sun+	E2699
*	^{6}He,x+α	inclusive	CS	2JPNIPC	4.2+08	4.2+08	Jour	PL/B,814,136072	21	Y.L.Sun+	E2699

82 Lead 204

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,d	^{206}Bi	DAP	1USAPTN	4.8+07	4.8+07	Jour	PR/C,15,594	77	W.W.Daehnick+	C2944

82 Lead 206

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,d	^{208}Bi	DAP	1USAPTN	4.8+07	4.8+07	Jour	PR/C,15,594	77	W.W.Daehnick+	C2944

82 Lead 207

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	α,d	^{209}Bi	DAP	1USAORL	4.2+07	4.2+07	Jour	PR/C,3,2027	71	M.B.Lewis+	C2903

82 Lead 208

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
	p,x+n	inclusive	DE	4RUSFEI	8.1+06	1.1+07	Rept	ISINN-17,308	10	B.V.Zhuravlev+	F1506
	α,d	^{210}Bi	DAP	2GERMPH	3.3+07	4.8+07	Jour	PR/C,23,1906	81	W.W.Daehnick+	C2945
	α,d	^{210}Bi	DAP	1USAPTN	4.8+07	4.8+07	Jour	PR/C,15,594	77	W.W.Daehnick+	C2944
	α,el	^{208}Pb	DA	1USAMRY	4.0+07	8.0+07	Jour	PR/C,24,1471	81	R.Perry+	C2897
	α,^{3}He	^{209}Pb	DAP	1USAMRY	6.2+07	8.1+07	Jour	PR/C,24,1471	81	R.Perry+	C2897
	α,inel	^{208}Pb	DAP	1USAMSU	4.8+07	4.8+07	Jour	PL/B,101,147	81	P.Decowski+	C2904
	α,t	^{209}Bi	DAP	1USAMRY	4.0+07	8.1+07	Jour	PR/C,24,1471	81	R.Perry+	C2897
*	^{16}O,fus		CS	4ZZZDUB			Jour	PR/C,105,024604	22	R.N.Sagaidak+	F1507

83 Bismuth 209

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{50}Ti,2n	^{257}Db	CS	4ZZZDUB	2.4+08	2.6+08	Jour	PL/B,795,271	19	A.Lopez-Martens+	F1501
*	^{50}Ti,3n	^{256}Db	CS	4ZZZDUB	2.4+08	2.6+08	Jour	PL/B,795,271	19	A.Lopez-Martens+	F1501
*	^{50}Ti,n	^{258}Db	CS	4ZZZDUB	2.4+08	2.5+08	Jour	PL/B,795,271	19	A.Lopez-Martens+	F1501
*	^{50}Ti,p	^{258}Rf	CS	4ZZZDUB	2.4+08	2.6+08	Jour	PL/B,795,271	19	A.Lopez-Martens+	F1501
*	^{50}Ti,x	^{256}Rf	CS	4ZZZDUB	2.4+08	2.6+08	Jour	PL/B,795,271	19	A.Lopez-Martens+	F1501

98 Californium 249

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{48}Ca,3n	^{294}Og	CS	4ZZZDUB			Jour	JP/CS,966,012057	18	A.A.Voinov+	F1498