

Nuclear Reaction Data Center (JCPRG)

EXFOR : Recent Compilation (Added in May 2007)

EXFOR is a world-wide database for experimental neutron induced, charged-particle induced and photonuclear reaction compiled by Nuclear Reaction Data Centres Network coordinated by IAEA Nuclear Data Section. This list gives newly compiled data to EXFOR. *This list consists of tables titled by target nuclide.*

Retrieval service is available at:

<http://www.jcprg.org/exfor/>

Quantity code

ALF	Alpha	FY	Fission product yield
AMP	Length or amplitude	INT	Cross section integral over incident energy
CHG	Fragment charge	KE	Kinetic energy
CS	Cross section	KER	Kerma factor
CSN	Differential with respect to number of particles	MLT	Multiplicity
CSP	Partial cross section	NQ	Nuclear quantity
CST	Temperature dependent cross section	NU	Nu
D3A	Triple differential $d\Omega_1/d\Omega_2/dE'$	NUD	Nu delayed
D3E	Triple differential $d\Omega/dE'_1/dE'_2$	NUF	Fragment neutrons
D4A	Quadruple diff. $d\Omega_1/d\Omega_2/dE'_1/dE'_2$	POL	Polarization
DA	Differential $d/d\Omega$	POD	Differential polarization
DAA	Double differential $d\Omega_1/d\Omega_2$	PY	Product yield (other than fission)
DAE	Double differential $d\Omega/dE'$	RI	Resonance integral
DAP	Partial differential $d/d\Omega$	RP	Resonance parameter
DAT	Temperature-dependent Legendre coefficient	RR	Reaction rate
DE	Differential d/dE'	SIF	Self indication
DEP	Energy spectrum for specific group	SPC	Gamma spectrum
DP	Diff. by linear momentum of outgoing part.	TSL	Thermal scattering
DT	Diff. by 4-momentum transfer squared	TT	Thick target yield
ETA	Eta	TTD	Differential thick target yield, $d/d\Omega$
EVL	Evaluation	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)

				0		Neutron		1			
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation		Date	Author	Data #
				Min	Max		Ref	Vol Page			
n,el	^1Nn	AMP	2GERBON	1.7+07	1.7+07	Jour	PR/C,74,014001		06	W.Vonwitsch+	22951

				1		Hydrogen		1			
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation		Date	Author	Data #
				Min	Max		Ref	Vol Page			
n,el	^1H	DAP	2JPNJAE	1.4+07	1.4+07	Jour	NIM/A,568,723		06	K.Kondo+	22949
$^8\text{He},t$	^6He	DAP	2FR GAN	1.3+08	1.3+08	Jour	PL/B,619,82		05	F.Skaza+	D0359
$^{46}\text{Ar},inel$	^1H	DAP	1USAMSU	3.1+09	3.1+09	Jour	PR/C,72,024311		05	L.A.Riley+	C1494

				1		Hydrogen		2			
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation		Date	Author	Data #
				Min	Max		Ref	Vol Page			
$n,x+p$	inclusive	DE	2GERBON	1.7+07	1.7+07	Jour	PR/C,74,014001		06	W.Vonwitsch+	22951
d,γ	^4He	POD	1USATNL	1.2+05	1.2+05	Jour	PR/C,70,064601		04	K.Sabourov+	C1493
d,n	^3He	CS	1USATNL	1.1+05	6.5+05	Jour	PR/C,73,045801		06	D.S.Leonard+	C1499
d,n	^3He	DA	1USATNL	1.1+05	6.5+05	Jour	PR/C,73,045801		06	D.S.Leonard+	C1499
d,p	^3H	CS	1USATNL	1.1+05	6.5+05	Jour	PR/C,73,045801		06	D.S.Leonard+	C1499
d,p	^3H	DA	1USATNL	1.1+05	6.5+05	Jour	PR/C,73,045801		06	D.S.Leonard+	C1499

				1		Hydrogen		3			
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation		Date	Author	Data #
				Min	Max		Ref	Vol Page			
p,γ	^4He	CS	1USATNL	1.0+04	1.0+05	Jour	PR/C,65,044008		02	R.S.Canon+	C1483
p,γ	^4He	DA	1USATNL	1.0+04	1.0+05	Jour	PR/C,65,044008		02	R.S.Canon+	C1483
p,γ	^4He	POD	1USATNL	4.0+07	8.0+07	Jour	PR/C,65,044008		02	R.S.Canon+	C1483

				2		Helium		3			
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation		Date	Author	Data #
				Min	Max		Ref	Vol Page			
p,el	^3He	POD	1USAWIS	1.2+06	1.7+06	Jour	PRL,86,3739		01	M.Viviani+	C1510
d,p	^4He	CS	2FR CNO	3.6+05	1.0+06	Jour	PCN,23,67		05	H.Erramli+	D0437
d,p	^4He	DA	2FR CNO	3.6+05	1.0+06	Jour	PCN,23,67		05	H.Erramli+	D0437

				2		Helium		4			
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation		Date	Author	Data #
				Min	Max	Ref Vol Page					
p,el	^4He	POD	2JPNOSA	3.0+08	3.0+08	Jour	PR/C,63,(3),034618		Mar 01	M. Yoshimura+	E1745

				2		Helium		6			
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation		Date	Author	Data #
				Min	Max	Ref Vol Page					
α,tot		RP	1USAFSU	8.8+07	8.8+07	Jour	PR/C,73,057301		06	N.Curtis+	C1502

				3		Lithium		6			
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation		Date	Author	Data #
				Min	Max	Ref Vol Page					
d,p	^7Li	DAP	3HUNDEB	8.0+05	2.0+06	Jour	NIM/B,251,343		06	G.A.Sziki+	D4155

				4		Beryllium		7			
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation		Date	Author	Data #
				Min	Max	Ref Vol Page					
p,γ	^8B	CS	1USAWAU			Jour	NP/A,718,113		03	S.H.Parkb+	C1479

				4		Beryllium		9			
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation		Date	Author	Data #
				Min	Max	Ref Vol Page					
d,n	^{10}B	DAP	3HUNDEB	6.0+05	2.0+06	Jour	NIM/B,251,343		06	G.A.Sziki+	D4155
$^7\text{Li},el$	^9Be	CS	1USATAM	6.3+07	1.3+08	Jour	PR/C,70,054610		04	F.Carstoiu+	C1492
$^7\text{Li},el$	^9Be	DA	1USATAM	6.3+07	1.3+08	Jour	PR/C,70,054610		04	F.Carstoiu+	C1492
$^{15}\text{C},x$	^{14}C	CS	1USAMSU	1.5+09	1.5+09	Jour	PR/C,69,054306		04	J.R.Terry+	C1489
$^{15}\text{C},x$	^{14}C	CSP	1USAMSU	1.5+09	1.5+09	Jour	PR/C,69,054306		04	J.R.Terry+	C1489
$^{26}\text{Ne},x+n$	inclusive	CSP	1USAMSU	2.2+09	2.2+09	Jour	NP/A,734,469		04	J.R.Terry+	C1480
$^{28}\text{Mg},x+n$	inclusive	CSP	1USAMSU	2.3+09	2.3+09	Jour	NP/A,734,469		04	J.R.Terry+	C1480
$^{30}\text{Si},x+n$	inclusive	CSP	1USAMSU	2.0+09	2.0+09	Jour	NP/A,734,469		04	J.R.Terry+	C1480
$^{57}\text{Ni},x$	^{56}Ni	CS	1USAMSU	4.2+09	4.2+09	Jour	PR/C,74,024304		06	K.L.Yurkewicz+	C1505
$^{57}\text{Ni},x$	^{56}Ni	CSP	1USAMSU	4.2+09	4.2+09	Jour	PR/C,74,024304		06	K.L.Yurkewicz+	C1505

				5		Boron		9			
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation		Date	Author	Data #
				Min	Max	Ref Vol Page					
$^{26}\text{Si},x$	^{24}Si	CS	1USAMSU	2.8+09	2.8+09	Jour	PR/C,74,021303		06	K.Yoneda+	C1504
$^{26}\text{Si},x$	^{24}Si	CSP	1USAMSU	2.8+09	2.8+09	Jour	PR/C,74,021303		06	K.Yoneda+	C1504
$^{30}\text{S},x$	^{28}S	CS	1USAMSU	3.3+09	3.3+09	Jour	PR/C,74,021303		06	K.Yoneda+	C1504

$^{30}\text{S,x}$	^{28}S	CSP	1USAMSU	3.3+09	3.3+09	Jour	PR/C,74,021303	06	K.Yoneda+	C1504
$^{34}\text{Ar,x}$	^{32}Ar	CS	1USAMSU	3.7+09	3.7+09	Jour	PR/C,74,021303	06	K.Yoneda+	C1504
$^{34}\text{Ar,x}$	^{32}Ar	CSP	1USAMSU	3.7+09	3.7+09	Jour	PR/C,74,021303	06	K.Yoneda+	C1504

5 Boron 11

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
d,n	^{12}C	CSP	1USANOT	9.4+04	1.3+05	Jour	PR/C,74,015804	06	Y.Parpottas+	C1503
d,p	^{12}B	DAP	3HUNDEB	8.5+05	2.0+06	Jour	NIM/B,251,343	06	G.A.Sziki+	D4155

6 Carbon

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$^8\text{B,el}$	^{nat}C	DA	1USATAM	9.5+07	9.5+07	Jour	PR/C,73,025808	06	G.Tabacaru+	C1495
$^7\text{Be,el}$	6-C-CMP	DA	1USATAM	8.7+07	8.7+07	Jour	PR/C,73,025808	06	G.Tabacaru+	C1495

6 Carbon 12

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p,el	^{12}C	DA	1USABNW	1.6+06	1.8+06	Jour	NIM/B,222,538	04	W.Jiang+	C1471
$p,inel$	^{12}C	DAP	2JPNOSA	3.9+08	3.9+08	Jour	PL/B,459,(1-3),61	Jul 99	A.Tamii+	E1807
d,p	^{13}C	DA	1USABNW	8.0+05	1.1+06	Jour	NIM/B,222,538	04	W.Jiang+	C1471
α,el	^{12}C	DA	1USABNW	4.1+06	4.4+06	Jour	NIM/B,222,538	04	W.Jiang+	C1471
α,γ	^{16}O	CS	1CANTMF	3.0+05	5.4+06	Jour	PRL,97,242503	06	C.Matei+	C1497
$^6\text{Li,el}$	^{12}C	CS	1USATAM	5.4+07	5.4+07	Jour	PR/C,70,054610	04	F.Carstoiu+	C1492
$^6\text{Li,el}$	^{12}C	DA	1USATAM	5.4+07	5.4+07	Jour	PR/C,70,054610	04	F.Carstoiu+	C1492
$^8\text{B,x}$	^7Be	CS	1USAMSU	6.1+08	6.1+08	Jour	PR/C,67,064301	03	J.Enders+	C1486
$^9\text{C,x}$	^7Be	CS	1USAMSU	7.0+08	7.0+08	Jour	PR/C,67,064301	03	J.Enders+	C1486
$^9\text{C,x}$	^8B	CS	1USAMSU	7.0+08	7.0+08	Jour	PR/C,67,064301	03	J.Enders+	C1486
$^{12}\text{C,inel}$	^{12}C	CSP	3AULCBR	4.1+07	6.0+07	Jour	PR/C,66,034605	02	C.A.Bremner+	D0436
$^{13}\text{N,el}$	^{12}C	DA	1USATAM	1.5+08	1.5+08	Jour	PR/C,69,055807	04	X.Tang+	C1490

6 Carbon 13

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
d,α	^{11}B	DAP	2BLGNAM	4.9+05	1.6+06	Jour	NIM/B,254,25	07	Julienl.Colaux+	D0428
d,p	^{14}C	DAP	2BLGNAM	4.9+05	1.6+06	Jour	NIM/B,254,25	07	Julienl.Colaux+	D0428
d,t	^{12}C	DAP	2BLGNAM	4.9+05	1.6+06	Jour	NIM/B,254,25	07	Julienl.Colaux+	D0428
$^6\text{Li,d}$	^{17}O	DAP	1USAFSU	7.8+06	8.3+06	Jour	PRL,97,192701	06	E.D.Johnson+	C1470
$^6\text{Li,el}$	^{13}C	CS	1USATAM	5.4+07	5.4+07	Jour	PR/C,70,054610	04	F.Carstoiu+	C1492
$^6\text{Li,el}$	^{13}C	DA	1USATAM	5.4+07	5.4+07	Jour	PR/C,70,054610	04	F.Carstoiu+	C1492
$^7\text{Li,el}$	^{13}C	CS	1USATAM	6.3+07	1.3+08	Jour	PR/C,70,054610	04	F.Carstoiu+	C1492
$^7\text{Li,el}$	^{13}C	DA	1USATAM	6.3+07	1.3+08	Jour	PR/C,70,054610	04	F.Carstoiu+	C1492

				7		Nitrogen		14		
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max	Ref Vol Page				
$^{13}\text{N}, ^{13}\text{C}$	^{14}O	DAP	1USATAM	1.5+08	1.5+08	Jour	PR/C,69,055807	04	X.Tang+	C1490

				8		Oxygen		15		
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max	Ref Vol Page				
$\alpha, 0$		RP	1USAANL			Jour	PR/C,67,065809	03	K.E.Rehm+	C1487

				8		Oxygen		16		
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max	Ref Vol Page				
d, p	^{17}O	DAP	3HUNDEB	6.0+05	2.0+06	Jour	NIM/B,251,343	06	G.A.Sziki+	D4155
α, el	^{16}O	DA	2BLGNAM	2.4+09	6.0+09	Jour	JAP,100,124909	06	J.Demarche+	D0429

				9		Fluorine		18		
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max	Ref Vol Page				
$p, 0$		RP	1USANOT			Conf	2005NOTRED,1,186	05	A.Couture+	C1475
d, p	^{19}F	DAP	1USAORL	1.1+08	1.1+08	Jour	PR/C,73,044307	06	R.L.Kozub+	C1498

				9		Fluorine		19		
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max	Ref Vol Page				
d, p	^{20}F	DAP	3HUNDEB	7.5+05	2.0+06	Jour	NIM/B,251,343	06	G.A.Sziki+	D4155

				10		Neon		18		
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max	Ref Vol Page				
p, el	^{18}Ne	DA	1USANOT	1.1+06	2.7+06	Jour	PAN,69,1979	06	B.B.Skorodumov+	C1500

				10		Neon		21		
Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max	Ref Vol Page				

p,α	^{18}F	CS	IUSANOT	2.5+06	3.6+06	Conf	2005NOTRED,1,581	05	H.Y.Lee+	C1477
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Sodium

20

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

p,el	^{20}Na	DA	1CANTMF	7.0+05	1.5+06	Jour	PR/C,73,034320	06	A.St.J.Murphy+	C1496
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12

Magnesium

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

p,x	^7Be	CS	1USAUSC	2.8+07	3.1+07	Jour	PR,127,1269	62	R.H.Lindsay+	C1508
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13

Aluminium

26

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

n,α	^{23}Na	CS	2ZZZGEL	4.2+02	1.2+05	Jour	NP/A,758,80	05	C.Wagemans+	22890
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13

Aluminium

27

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

$n,x+\alpha$	inclusive	CSP	2JPNJAE	1.4+07	1.4+07	Jour	NIM/A,568,723	06	K.Kondo+	22949
$n,x+\alpha$	inclusive	DAE	2JPNJAE	1.4+07	1.4+07	Jour	NIM/A,568,723	06	K.Kondo+	22949
$n,x+\alpha$	inclusive	DAP	2JPNJAE	1.4+07	1.4+07	Jour	NIM/A,568,723	06	K.Kondo+	22949
$p,^7\text{Be}$	^{21}Ne	CS	1USAUSC	2.7+07	3.1+07	Jour	PR,127,1269	62	R.H.Lindsay+	C1508
p,γ	^{28}Si	DA	4RUSFEI	9.8+05	1.8+06	Priv	Gurbich	07	A.Gurbich+	D0435
p,γ	^{28}Si	DAP	1USAANL	4.0+06	1.3+07	Jour	NP,65,577	65	P.P.Singh+	C1485
d,α	^{25}Mg	DAP	2FR SAC	1.0+06	2.0+06	Priv	Pellegrino	07	S.Pellegrino	D0430
d,α	^{25}Mg	DAP	4RUSFEI	1.5+06	2.4+06	Priv	Gurbich	07	A.Gurbich+	D0435
d,p	^{28}Al	DAP	2FR SAC	1.0+06	2.0+06	Priv	Pellegrino	07	S.Pellegrino	D0430
d,p	^{28}Al	DAP	4RUSFEI	1.3+06	2.3+06	Priv	Gurbich	07	A.Gurbich+	D0435
$^6\text{Li},\text{el}$	^{27}Al	DA	3ARGCNE	7.0+06	1.8+07	Jour	PR/C,75,017602	07	J.M.Figueira+	D0434

14

Silicon

28

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

p,t	^{26}Si	DAP	1USAORL	4.0+07	4.0+07	Jour	PR/C,74,045804	06	D.W.Bardayan+	C1509
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17

Chlorine

36

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,0</i>		RP	2ZZZGEL			Jour	PR/C,75,034617	07	L.Desmet+	22965
<i>n,α</i>	³³ P	CS	2ZZZGEL	2.5-02	2.5-02	Jour	PR/C,75,034617	07	L.Desmet+	22965
<i>n,p</i>	³⁶ S	CS	2ZZZGEL	2.5-02	2.5-02	Jour	PR/C,75,034617	07	L.Desmet+	22965
<i>n,p</i>	³⁶ S	?	2ZZZGEL	5.0+02	2.5+05	Jour	PR/C,75,034617	07	L.Desmet+	22965

20

Calcium

40

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	⁴⁰ Ca	DA	1USALAS	8.0+08	8.0+08	Jour	PL/B,81,151	79	G.Igo+	C1488
<i>p,el</i>	⁴⁰ Ca	POD	1USALAS	8.0+08	8.0+08	Jour	PL/B,81,151	79	G.Igo+	C1488

20

Calcium

41

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,α</i>	³⁸ Ar	CS	2ZZZGEL	7.2+02	4.5+04	Jour	PR/C,75,034617	07	L.Desmet+	22965

20

Calcium

42

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	⁴² Ca	DA	1USALAS	8.0+08	8.0+08	Jour	PL/B,81,151	79	G.Igo+	C1488
<i>p,el</i>	⁴² Ca	POD	1USALAS	8.0+08	8.0+08	Jour	PL/B,81,151	79	G.Igo+	C1488

20

Calcium

44

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	⁴⁴ Ca	DA	1USALAS	8.0+08	8.0+08	Jour	PL/B,81,151	79	G.Igo+	C1488
<i>p,el</i>	⁴⁴ Ca	POD	1USALAS	8.0+08	8.0+08	Jour	PL/B,81,151	79	G.Igo+	C1488

20

Calcium

48

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,el</i>	⁴⁸ Ca	DA	1USALAS	8.0+08	8.0+08	Jour	PL/B,81,151	79	G.Igo+	C1488
<i>p,el</i>	⁴⁸ Ca	POD	1USALAS	8.0+08	8.0+08	Jour	PL/B,81,151	79	G.Igo+	C1488

22

Titanium

48

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
α,n	^{51}Cr	CS	1USALBL	6.6+06	1.1+07	Conf	2004SANTA,2,1370	04	C.M.Baglin+	C1474

23

Vanadium

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p,x	^{43}Sc	CS	3SARRIY	1.0+07	2.7+07	Jour	RCA,94,795	06	K.Zarie+	D0433
p,x	^{44}Sc	CS	3SARRIY	8.1+06	2.7+07	Jour	RCA,94,795	06	K.Zarie+	D0433
p,x	^{47}Sc	CS	3SARRIY	1.1+07	2.7+07	Jour	RCA,94,795	06	K.Zarie+	D0433
p,x	^{48}V	CS	3SARRIY	4.6+06	2.7+07	Jour	RCA,94,795	06	K.Zarie+	D0433

28

Nickel

58

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$^{16}\text{O,el}$	^{58}Ni	DA	1USAFSU	4.0+07	4.8+07	Jour	PR/C,11,859	75	L.Westjr.+	C1472

28

Nickel

60

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$^{16}\text{O,el}$	^{60}Ni	DA	1USAFSU	4.0+07	5.6+07	Jour	PR/C,11,859	75	L.Westjr.+	C1472

28

Nickel

62

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$^{16}\text{O,el}$	^{62}Ni	DA	1USAFSU	4.0+07	5.6+07	Jour	PR/C,11,859	75	L.Westjr.+	C1472

28

Nickel

64

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$^{16}\text{O,el}$	^{64}Ni	DA	1USAFSU	4.0+07	5.4+07	Jour	PR/C,11,859	75	L.Westjr.+	C1472
$^{132}\text{Sn,fus}$		CS	1USAORL	1.4+08	1.8+08	Jour	NP/A,746,103	04	J.F.Liang+	C1481

29

Copper

63

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

<i>p,γ</i>	⁶⁴ Zn	CSP	4UKRKFT	1.4+06	3.2+06	Jour	IZV,67,(11),1556	03	B.A.Nemashkalo+	D5021
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29

Copper

65

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

<i>p,γ</i>	⁶⁶ Zn	CSP	4UKRKFT	1.3+06	3.0+06	Jour	IZV,67,(11),1561	03	B.A.Nemashkalo+	D5022
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30

Zinc

66

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

<i>p,γ</i>	⁶⁷ Ga	CSP	4UKRKFT	1.5+06	2.9+06	Jour	IZV,69,(11),1619	05	B.A.Nemashkalo+	D5018
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32

Germanium

82

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

<i>d,p</i>	⁸³ Ge	DAP	1USAORL	2.5+07	2.5+07	Conf	2005NOTRED,1,209	05	J.A.Cizewski+	C1476
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34

Selenium

84

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

<i>d,p</i>	⁸⁵ Se	DAP	1USAORL	2.5+07	2.5+07	Conf	2005NOTRED,1,209	05	J.A.Cizewski+	C1476
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39

Yttrium

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

<i>p,x</i>	⁸⁸ Zr	CS	2BLGVUB	1.6+07	8.0+07	Conf	2004SANTA,2,1658	04	F.Tarkanyi+	D4167
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<i>d,x</i>	⁸⁸ Zr	CS	2BLGVUB	1.7+07	4.0+07	Conf	2004SANTA,2,1658	04	F.Tarkanyi+	D4167
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41

Niobium

93

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

<i>d,x</i>	⁹⁰ Y	CS	2JPNTOH	2.0+04	3.8+07	Jour	NIM/B,255,297	07	F.Tarkanyi+	D4156
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<i>d,x</i>	⁸⁸ Zr	CS	2JPNTOH	3.4+07	3.8+07	Jour	NIM/B,255,297	07	F.Tarkanyi+	D4156
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<i>d,x</i>	⁸⁹ Zr	CS	2JPNTOH	2.0+04	3.8+07	Jour	NIM/B,255,297	07	F.Tarkanyi+	D4156
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<i>d,x</i>	⁹⁰ Nb	CS	2JPNTOH	3.0+07	3.8+07	Jour	NIM/B,255,297	07	F.Tarkanyi+	D4156
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<i>d,x</i>	⁹¹ Nb	CS	2JPNTOH	2.8+07	3.8+07	Jour	NIM/B,255,297	07	F.Tarkanyi+	D4156
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<i>d,x</i>	⁹² Nb	CS	2JPNTOH	2.0+04	3.8+07	Jour	NIM/B,255,297	07	F.Tarkanyi+	D4156
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<i>d,x</i>	⁹³ Mo	CS	2JPNTOH	2.0+04	3.8+07	Jour	NIM/B,255,297	07	F.Tarkanyi+	D4156
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42 Molybdenum

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>p,x</i>	⁸⁸ Zr	CS	2BLGVUB	2.8+07	8.0+07	Conf	2004SANTA,2,1658	04	F.Tarkanyi+	D4167
<i>d,x</i>	⁸⁸ Zr	CS	2BLGVUB	3.2+07	4.9+07	Conf	2004SANTA,2,1658	04	F.Tarkanyi+	D4167

47 Silver 107

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
α,γ	¹¹¹ In	CS	1USALBL	7.8+06	1.2+07	Conf	2004SANTA,2,1370	04	C.M.Baglin+	C1474

50 Tin 124

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>d,p</i>	¹²⁵ Sn	DAP	1USAORL	9.0+06	9.0+06	Jour	EPJ/AS,25,283	05	K.L.Jones+	C1478

62 Samarium 149

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>t,p</i>	¹⁵¹ Sm	DAP	1CANMCM	1.5+07	1.5+07	Jour	NP/A,756,308	05	D.G.Burke+	C1482

62 Samarium 151

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>t,p</i>	¹⁵³ Sm	DAP	1CANMCM	1.5+07	1.5+07	Jour	NP/A,756,308	05	D.G.Burke+	C1482

71 Lutetium 177

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n,γ</i>	¹⁷⁸ Lu	CST	2FR SAC	Maxwl		Jour	PR/C,74,054604	06	O.Roig+	22950
<i>n,inel</i>	¹⁷⁷ Lu	CST	2FR ILL	Maxwl		Jour	PR/C,74,054604	06	O.Roig+	22950
<i>n,non</i>		CS	2FR ILL	2.5-02	2.5-02	Jour	PR/C,74,054604	06	O.Roig+	22950
<i>n,non</i>		CST	2FR ILL	Maxwl		Jour	PR/C,74,054604	06	O.Roig+	22950
<i>n,non</i>		CST	2FR BRC	Maxwl		Jour	PR/C,74,054604	06	O.Roig+	22950

72

Hafnium

174

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation			Date	Author	Data #
				Min	Max		Ref	Vol	Page			
n,γ	^{175}Hf	CS	2GERKFK			Jour	PR/C,75,015804			07	C.Vockenhuber+	22963

72

Hafnium

176

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation			Date	Author	Data #
				Min	Max		Ref	Vol	Page			
$^3\text{He},d$	^{177}Ta	DAP	1USAROC	3.2+07	3.2+07	Jour	NP/A,778,125			06	D.G.Burke+	C1469
α,t	^{177}Ta	DAP	1USAROC	3.0+07	3.0+07	Jour	NP/A,778,125			06	D.G.Burke+	C1469

72

Hafnium

177

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation			Date	Author	Data #
				Min	Max		Ref	Vol	Page			
$^3\text{He},d$	^{178}Ta	DAP	1USAROC	3.2+07	3.2+07	Jour	NP/A,778,125			06	D.G.Burke+	C1469
α,t	^{178}Ta	DAP	1USAROC	3.0+07	3.0+07	Jour	NP/A,778,125			06	D.G.Burke+	C1469

72

Hafnium

178

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation			Date	Author	Data #
				Min	Max		Ref	Vol	Page			
$^3\text{He},d$	^{179}Ta	DAP	1USAROC	3.2+07	3.2+07	Jour	NP/A,778,125			06	D.G.Burke+	C1469
α,t	^{179}Ta	DAP	1USAROC	3.0+07	3.0+07	Jour	NP/A,778,125			06	D.G.Burke+	C1469

72

Hafnium

180

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation			Date	Author	Data #
				Min	Max		Ref	Vol	Page			
n,γ	^{181}Hf	CS	2GERKFK	Maxwl		Jour	PR/C,75,015804			07	C.Vockenhuber+	22963
$^3\text{He},d$	^{181}Ta	DAP	1USAROC	3.2+07	3.2+07	Jour	NP/A,778,125			06	D.G.Burke+	C1469
α,t	^{181}Ta	DAP	1USAROC	3.0+07	3.0+07	Jour	NP/A,778,125			06	D.G.Burke+	C1469

72

Hafnium

182

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation			Date	Author	Data #
				Min	Max		Ref	Vol	Page			
n,γ	^{183}Hf	CS	2GERKFK	Maxwl		Jour	PR/C,75,015804			07	C.Vockenhuber+	22963

74

Tungsten

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
p,x	^{181}Re	CS	1CANTMF	1.1+07	1.7+07	Jour	ARI,65,345	07	S.Lapia+	C1501
p,x	^{182}Re	CS	1CANTMF	6.5+06	1.8+07	Jour	ARI,65,345	07	S.Lapia+	C1501
p,x	^{183}Re	CS	1CANTMF	8.7+06	1.8+07	Jour	ARI,65,345	07	S.Lapia+	C1501
p,x	^{184}Re	CS	1CANTMF	6.5+06	1.8+07	Jour	ARI,65,345	07	S.Lapia+	C1501
p,x	^{186}Re	CS	1CANTMF	6.5+06	1.8+07	Jour	ARI,65,345	07	S.Lapia+	C1501

82

Lead

206

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
α,fis		MLT	1USATAM	4.3+07	4.3+07	Jour	NP/A,487,370	88	R.P.Schmitt+	C1460

82

Lead

208

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
$^{17}\text{F},\text{el}$	^{208}Pb	DA	1USAORL	1.2+08	1.2+08	Jour	PR/C,67,044603	03	J.F.Liang+	C1484
$^{17}\text{F},\text{el}$	^{208}Pb	DA	1USAANL	9.0+07	9.8+07	Jour	PR/C,69,064614	04	M.Romoli+	C1491
$^{17}\text{F},x$	Many	CS	1USAORL	9.1+07	1.6+08	Jour	PR/C,67,044603	03	J.F.Liang+	C1484
$^{17}\text{F},x$	Many	DA	1USAORL	9.8+07	1.2+08	Jour	PR/C,67,044603	03	J.F.Liang+	C1484
$^{19}\text{F},\text{el}$	^{208}Pb	DA	1USAANL	9.1+07	9.8+07	Jour	PR/C,69,064614	04	M.Romoli+	C1491
$^{38}\text{S},\text{fis}$		CS	1USAMSU	1.9+08	3.1+08	Jour	PR/C,74,044607	06	W.Loveland+	C1473

83

Bismuth

209

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
α,fis		MLT	1USATAM	4.3+07	4.3+07	Jour	NP/A,487,370	88	R.P.Schmitt+	C1460

90

Thorium

232

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
n,γ	^{233}Th	CS	2FR ILL	2.5-02	2.5-02	Conf	2006VANCOU,,(C034)	06	O.Bringer+	22941
α,fis		MLT	1USATAM	4.3+07	4.3+07	Jour	NP/A,487,370	88	R.P.Schmitt+	C1460

91

Protactinium

233

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
n,γ	^{234}Pa	CS	2FR ILL	2.5-02	2.5-02	Conf	2006VANCOU,,(C034)	06	O.Bringer+	22941

92

Uranium

234

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n</i> ,fis		CS	2FR ILL	2.5-02	2.5-02	Conf	2006VANCOU,,(C034)	06	O.Bringer+	22941

92

Uranium

235

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n</i> ,fis		CS	2FR ILL	2.5-02	2.5-02	Conf	2006VANCOU,,(C034)	06	O.Bringer+	22941

92

Uranium

238

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
α ,fis		MLT	1USATAM	4.3+07	4.3+07	Jour	NP/A,487,370	88	R.P.Schmitt+	C1460

95

Americium

241

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n</i> , γ	²⁴² Am	CS	2FR ILL	2.5-02	2.5-02	Conf	2006VANCOU,,(C034)	06	O.Bringer+	22941

95

Americium

242

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n</i> ,fis		CS	2FR ILL	Maxwl		Conf	2006VANCOU,,(C034)	06	O.Bringer+	22941
<i>n</i> ,fis		CS	2FR ILL	Maxwl		Conf	2006VANCOU,,(C034)	06	O.Bringer+	22941
<i>n</i> , γ	²⁴³ Am	CS	2FR ILL	2.5-02	2.5-02	Conf	2006VANCOU,,(C034)	06	O.Bringer+	22941

96

Curium

242

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
<i>n</i> , γ	²⁴³ Cm	CS	2FR ILL	2.5-02	2.5-02	Conf	2006VANCOU,,(C034)	06	O.Bringer+	22941

98

Californium

252

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

0, fis		NU	2FR GRE	Spont	Jour	JRC,26,107	75	J.Blachot+	21592
0, fis	Many	SPC	2FR GRE	Spont	Jour	JRC,26,107	75	J.Blachot+	21592
0, fis	Many	?	2FR GRE	Spont	Jour	JRC,26,107	75	J.Blachot+	21592
0, fis	¹¹³ Ag	?	2FR GRE	Spont	Jour	JRC,26,107	75	J.Blachot+	21592
0, fis	¹²⁹ Sb	?	2FR GRE	Spont	Jour	JRC,26,107	75	J.Blachot+	21592
0, fis	¹³⁶ Cs	?	2FR GRE	Spont	Jour	JRC,26,107	75	J.Blachot+	21592
0, fis	¹⁴⁰ Ba	FY	2FR GRE	Spont	Jour	JRC,26,107	75	J.Blachot+	21592