



1 Decay Scheme

Sc-46 disintegrates by 100% beta minus emission to excited levels in Ti-46. The main path (99.99%) leads to 2009.8 keV level of Ti-46. The ground state of Ti-46 is reached via a gamma cascade of 1120.5 and 889.3 keV.

Le scandium 46 se désintègre à 100% par émission bêta moins vers les niveaux excités du titane 46, dont 99,99% vers le niveau de 2009,8 keV. Le niveau fondamental du titane 46 est atteint par une cascade gamma de 1120,5 et 889,3 keV.

2 Nuclear Data

$$T_{1/2}({}^{46}\text{Sc}) : 83,788 \quad (22) \quad \text{d}$$

$$Q^{-}({}^{46}\text{Sc}) : 2366,7 \quad (7) \quad \text{keV}$$

2.1 β^{-} Transitions

	Energy keV	Probability $\times 100$	Nature	lg ft
$\beta_{0,2}^{-}$	356,9 (7)	99,98 (2)	Allowed	6,2
$\beta_{0,1}^{-}$	1477,4 (7)	0,02 (2)	2nd forbidden	$\geq 11,9$

2.2 Gamma Transitions and Internal Conversion Coefficients

	Energy keV	$P_{\gamma+ce}$ $\times 100$	Multipolarity	α_K (10^{-6})	α_L (10^{-7})	α_T (10^{-6})	α_π (10^{-7})
$\gamma_{1,0}(\text{Ti})$	889,280 (2)	99,9999 (7)	E2	149 (4)	134 (4)	167 (5)	
$\gamma_{2,1}(\text{Ti})$	1120,552 (3)	99,986 (36)	E2	85 (3)	76,1 (19)	95 (3)	22 (4)
$\gamma_{2,0}(\text{Ti})$	2009,832 (4)	0,000013 (10)	[E4]	63,8 (2)	57,5 (17)	71,4 (21)	

3 Atomic Data

3.1 Ti

ω_K	:	0,226	(5)
$\bar{\omega}_L$:	0,0032	(7)
n_{KL}	:	1,566	(5)

3.1.1 X Radiations

		Energy keV	Relative probability
X _K	K α_2	4,505	50,8
	K α_1	4,511	100
X _L	L ℓ	0,40	
	L γ	- 0,46	

3.1.2 Auger Electrons

	Energy keV	Relative probability
Auger K		
KLL	3,796 – 4,014	100
KLX	4,328 – 4,507	26,5
KXY	4,846 – 4,959	1,76

4 Electron Emissions

		Energy keV	Electrons per 100 disint.
e _{AK}	(Ti)		0,0181 (4)
	KLL	3,796 - 4,014	}
	KLX	4,328 - 4,507	}
	KXY	4,846 - 4,959	}
ec _{1,0} K	(Ti)	884,314 (2)	0,0149 (4)
ec _{1,0} L	(Ti)	888,72 - 888,83	0,00134 (4)
ec _{2,1} K	(Ti)	1115,586 (3)	0,0085 (3)
ec _{2,1} L	(Ti)	1119,99 - 1120,10	0,00076 (2)
$\beta_{0,2}^-$	max:	356,9 (7)	99,98 (2)
$\beta_{0,2}^-$	avg:	111,8 (3)	
$\beta_{0,1}^-$	max:	1477,4 (7)	0,02 (2)
$\beta_{0,1}^-$	avg:	580,8 (4)	

5 Photon Emissions

5.1 X-Ray Emissions

		Energy keV	Photons per 100 disint.
XL	(Ti)	0,40 — 0,46	0,00013 (3)
XK α_2	(Ti)	4,505	0,00157 (5) } K α
XK α_1	(Ti)	4,511	0,0031 (1) }

5.2 Gamma Emissions

	Energy keV	Photons per 100 disint.
$\gamma_{1,0}$ (Ti)	889,271 (2)	99,9833 (5)
$\gamma_{2,1}$ (Ti)	1120,537 (3)	99,986 (36)
$\gamma_{2,0}$ (Ti)	2009,785 (4)	0,000013 (10)

6 Main Production Modes

Sc – 46(I.T.)
 Ca – 43(α ,p γ)Sc – 46
 Ca – 44(He – 3,p)Sc – 46
 Sc – 45(n, γ)Sc – 46
 Sc – 45(d,p)Sc – 46
 Sc – 45(d,p γ)Sc – 46
 Sc – 45(t,d)Sc – 46
 Ca – 46(He – 3,t)Sc – 46
 Ti – 46(t,He – 3)Sc – 46
 Ti – 47(d,He – 3)Sc – 46
 Ti – 48(p,He – 3)Sc – 46
 Ti – 48(d, α)Sc – 46

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