$^{47}_{21}\mathrm{Sc}_{26}$

1 Decay Scheme

Le scandium 47 se désintègre par émission bêta moins vers le niveau excité de 159 keV et le niveau fondamental du titane 47.

Sc-47 decays by beta minus emission to the 159 keV excited level and the ground state of Ti-47.

2 Nuclear Data

$T_{1/2}(^{47}\mathrm{Sc})$	:	3,3485	(9)	d
$Q^-(^{47}\mathrm{Sc})$	:	600,8	(19)	keV

2.1 β^- Transitions

	Energy (keV)	Probability (%)	Nature	lg ft
$\beta^-_{0,1}$	441,4 (19)	68,5 (5)	Allowed	5,3
$\beta^-_{0,0}$	600,8 (19)	31,5 (5)	Allowed	6,1

2.2 Gamma Transitions and Internal Conversion Coefficients

	Energy (keV)	$P_{\gamma+ce}$ (%)	Multipolarity	α_K (10^{-3})	α_L (10^{-4})	α_M (10^{-5})	α_T (10^{-3})
$\gamma_{1,0}$(Ti)	159,373 (12)	68,5 (5)	M1+0,97(17)%E2	5,60 (12)	5,12 (11)	6,54 (14)	6,18 (13)

3 Atomic Data

3.1 Ti

ω_K	:	0,226	(5)
$\bar{\omega}_L$	:	0,00321	(64)
n_{KL}	:	1,566	(5)

3.1.1 X Radiations

		Energy (keV)	Relative probability
X_K			
	$K\alpha_2$	4,50491	50,76
	$K\alpha_1$	4,5109	100
	$K\beta_1$	4,93186	19,98
	$K\beta_5''$	4,9623	

3.1.2 Auger Electrons

	Energy (keV)	Relative probability
Auger K		
KLL	3,79 - 4,01	100
KLX	4,33 - 4,48	18,9
KXY	4,83 - 4,90	1,35
Auger L	0,3 - 0,5	

4 Electron Emissions

		Energy (keV)		Electrons (per 100 disint.)
e_{AL}	(Ti)	0,3 - 0,5		0,0349 (8)
e_{AK}	(Ti)			
	KLL	3,79 - 4,01		0,295 (7)
	KLX	4,33 - 4,48		
	KXY	4,83 - 4,90		
$ec_{1,0\ K}$	(Ti)	154,407	(12)	0,381 (9)
$ec_{1,0\ L}$	(Ti)	158,809 - 158,918		0,0349 (8)
$\beta^-_{0,1}$	max:	441,4	(19)	68,5 (5)
	avg:	142,8	(7)	
$\beta^-_{0,0}$	max:	600,8	(19)	31,5 (5)
	avg:	204,2	(8)	

5 Photon Emissions

5.1 X-Ray Emissions

		Energy (keV)	Photons (per 100 disint.)	
$XK\alpha_2$	(Ti)	4,50491	0,0256 (9)	} $K\alpha$
$XK\alpha_1$	(Ti)	4,5109	0,0505 (16)	
$XK\beta_1$	(Ti)	4,93186 }	0,0101 (4)	$K'\beta_1$
$XK\beta_5''$	(Ti)	4,9623		

5.2 Gamma Emissions

	Energy (keV)	Photons (per 100 disint.)
$\gamma_{1,0}$(Ti)	159,373 (12)	68,1 (5)

6 Main Production Modes

Ti – 47(n,p)Sc – 47 σ : 0,23 (4) barns
Possible impurities: Sc – 46, Sc – 48, Ca – 45

Ca – 48(p,2n)Sc – 47
Possible impurities: Sc – 46, Sc – 48

Ti – 49(d,α)Sc – 47
Possible impurities: Ca – 45

Ca – 44(α,p)Sc – 47

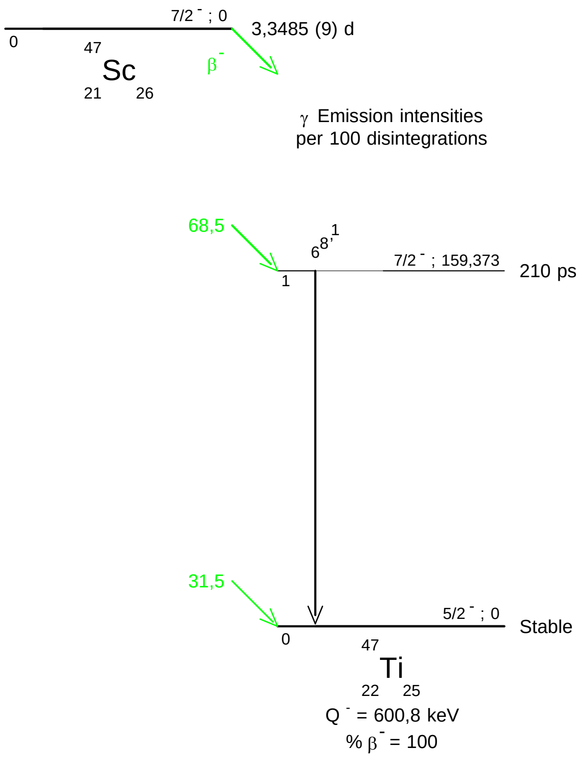
Ca – 46(d,n)Sc – 47

Ca – 46(p,γ)Sc – 47

7 References

- C.T. Hibdon, M.L. Pool. Phys. Rev. 67 (1945) 313
  (First correct identification)
- N.L. Krisberg, M.L. Pool. Phys. Rev. 75 (1949) 1693
  (Half-life)
- J.M. Cork, J.M. LeBlanc, M.K. Brice, W.H. Nester. Phys. Rev. 92 (1953) 367
  (Half-life, ICCs, Gamma energy)
- J.E. Duval, M.H. Kurbatov. J. Am. Chem. Soc. 75 (1953) 2246
  (Half-life)
- L. Marquez. Phys. Rev. 92 (1953) 1511
  (Half-life)
- L.S. Cheng, M.L. Pool. Phys. Rev. 90 (1953) 886
  (Half-life, Beta emission probability, ICCs, Gamma energy)
- W.S. Lyon, B. Kahn. Phys. Rev. 99 (1955) 728
  (Half-life, Beta emission probability, Gamma energy)

- R.T. Nichols, E.N. Jensen. Phys. Rev. 100 (1955) 1407
  (Beta emission probability, Gamma energy)
- L.J. Lidofsky, V.K. Fischer. Phys. Rev. 104 (1956) 759
  (Half-life, Beta emission probability)
- W.E. Graves, S.K. Suri. Phys. Rev. 101 (1956) 1368
  (Beta emission probability, Gamma energy)
- A. Poularikas, R.W. Fink. Phys. Rev. 115 (1959) 989
  (Half-life)
- S. Hontzeas, L. Yaffe. Can. J. Chem. 41 (1963) 2194
  (Half-life)
- S.C. Misra, U.C. Gupta, N.P.S. Sidhu. Nucl. Phys. 51 (1964) 174
  (Half-life, Beta emission probability, Gamma energy)
- J. Konijn, E.W.A. Lingeman, S.A. De Wit. Nucl. Phys. A 90 (1967) 558
  (Gamma energy)
- J.W.T. Meadows, V.A. Mode. J. Inorg. Nucl. Chem. 30 (1968) 361
  (Half-life)
- Z.T. Bak, P. Riehs. Int. J. Appl. Radiat. Isot. 19 (1968) 593
  (Half-life, Gamma emission probability)
- H. Ravn. J. Inorg. Nucl. Chem. 31 (1969) 1883
  (Half-life)
- R.E. Wood, J.M. Palms, P. Venugopala Rao. Nucl. Phys. A 126 (1969) 300
  (Gamma energy)
- R.J. Gehrke. ANCR 1088 (1972) 392
  (Gamma energy)
- H. Mommsen, I. Perlman, J. Yellin. Nucl. Instrum. Methods 177 (1980) 545
  (Half-life)
- D. Reher, H.H. Hansen, R. Vaninbroukx, M.J. Woods, C.E. Grant, S.E.M. Lucas, J. Bouchard, J. Morel, R. Vatin. Int. J. Appl. Radiat. Isot. 37 (1986) 973
  (Half-life, Beta emission probability, ICCs, Gamma emission probability)
- E. Schönfeld, H. Janssen. Nucl. Instrum. Meth. A 369 (1996) 527
  (Atomic data)
- T.W. Burrows. Nucl. Data Sheets 108 (2007) 923
  (ENSDF evaluation, Mixing ratio, Gamma energy, Spins and parities)
- T. Kibédi, T.W. Burrows, M.B. Trzhaskovskaya, P.M. Davidson, C.W. Nestor, Jr. Nucl. Instrum. Meth. A 589 (2008) 202
  (ICCs)
- M. Wang, G. Audi, A.H. Wapstra, F.G. Kondev, M. MacCormick, X. Xu, B. Pfeiffer. Chin. Phys. C 36 (2012) 1603
  (Q-value)


7/2 - ; 0
3,3485 (9) d
0
47
Sc
21 26
β-
γ Emission intensities
per 100 disintegrations
68,5
6,8 1
7/2 - ; 159,373
210 ps
1
31,5
5/2 - ; 0
Stable
0
47
Ti
22 25
Q - = 600,8 keV
% β- = 100