



1 Decay Scheme

Cr-51 disintegrates by electron capture either to the ground state of V-51 (90.11%) or via the 320 keV level of V-51 (9.89%).

Le Cr-51 se désintègre par capture électronique vers l'état fondamental (90,11%) ou vers le niveau à 320 keV (9,89%) du V-51.

2 Nuclear Data

$$T_{1/2}({}^{51}\text{Cr}) : 27,703 \quad (3) \quad \text{d}$$

$$Q^+({}^{51}\text{Cr}) : 752,73 \quad (24) \quad \text{keV}$$

2.1 Electron Capture Transitions

	Energy keV	Probability × 100	Nature	lg <i>ft</i>	P_K	P_L	P_{M+}
$\epsilon_{0,1}$	432,65 (24)	9,89 (5)	Allowed	5,86	0,8910 (17)	0,0941 (14)	0,0145 (6)
$\epsilon_{0,0}$	752,73 (24)	90,11 (5)	Allowed	5,39	0,8919 (17)	0,0934 (14)	0,0144 (6)

2.2 Gamma Transitions and Internal Conversion Coefficients

	Energy keV	$P_{\gamma+ce}$ × 100	Multipolarity	α_K (10 ⁻³)	α_L (10 ⁻⁴)	α_M (10 ⁻⁵)	α_T (10 ⁻³)
$\gamma_{1,0}(V)$	320,0835 (4)	9,89 (5)	M1+12,6%E2	1,54 (3)	1,36 (8)	2,7 (4)	1,69 (5)

3 Atomic Data

3.1 V

ω_K	:	0,256	(5)
$\bar{\omega}_L$:	0,0038	(8)
n_{KL}	:	1,539	(5)

3.1.1 X Radiations

	Energy keV	Relative probability	
X _K	K α_2	4,9447	50,83
	K α_1	4,95224	100
	K β_3	5,42735	}
	K β_1	5,42735	
	K β_5''	5,46296	
	X _L	L ℓ	0,446
L γ		- 0,585	

3.1.2 Auger Electrons

	Energy keV	Relative probability
Auger K		
KLL	4,16 – 4,38	100
KLX	4,76 – 4,90	26,7
KXY	5,32 – 5,46	1,78
Auger L	0,45 – 0,59	282,4

4 Electron Emissions

		Energy keV	Electrons per 100 disint.
e _{AL}	(V)	0,45 - 0,59	147,6 (1)
e _{AK}	(V)		66,4 (6)
	KLL	4,16 - 4,38	}
	KLX	4,76 - 4,90	}
	KXY	5,32 - 5,46	}
ec _{1,0} K	(V)	314,618 (4)	0,0152 (3)
ec _{1,0} L	(V)	319,45 - 319,57	0,00134 (8)
ec _{1,0} M	(V)	320,02 - 320,08	0,00027 (4)

5 Photon Emissions

5.1 X-Ray Emissions

		Energy keV	Photons per 100 disint.
XL	(V)	0,446 — 0,585	0,56 (11)
XK α_2	(V)	4,9447	6,79 (14) } K α
XK α_1	(V)	4,95224	13,36 (27) }
XK β_3	(V)	5,42735 }	
XK β_1	(V)	5,42735 }	2,69 (7) K' β_1
XK β_5''	(V)	5,46296 }	

5.2 Gamma Emissions

	Energy keV	Photons per 100 disint.
$\gamma_{1,0}(V)$	320,0835 (4)	9,87 (5)

6 Main Production Modes

- Cr – 50(n,γ)Cr – 51 σ : 15,9 (2) barns
- Possible impurities : K – 42
- V – 51(p,n)Cr – 51 σ : 0,52 barns
- Ti – 48(α,n)Cr – 51
- Cr – 50(d,p)Cr – 51
- Fe – 54(n,α)Cr – 51
- Cr – 52(n,2n)Cr – 51
- Cr – 50(d,n)Mn – 51

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