



1 Decay Scheme

Cr-51 decays by electron capture to the ground state of V-51 (90.1%) and to the 320 keV excited level (9.9%).

Le chrome-51 se désintègre par capture électronique vers le niveau fondamental du vanadium-51 (90,1 %) et le niveau excité d'énergie 320 keV (9,9 %).

2 Nuclear Data

$$T_{1/2}({}^{51}\text{Cr}) : 27,704 \quad (4) \quad \text{d}$$

$$Q^+({}^{51}\text{Cr}) : 752,62 \quad (24) \quad \text{keV}$$

2.1 Electron Capture Transitions

	Energy (keV)	Probability (%)	Nature	lg <i>ft</i>	P_K	P_L	P_M
$\epsilon_{0,1}$	432,54 (24)	9,91 (2)	Allowed	5,86	0,8910 (17)	0,0935 (14)	0,0156 (6)
$\epsilon_{0,0}$	752,62 (24)	90,09 (2)	Allowed	5,39	0,8919 (17)	0,0927 (14)	0,0154 (6)

2.2 Gamma Transitions and Internal Conversion Coefficients

	Energy (keV)	$P_{\gamma+ce}$ (%)	Multipolarity	α_K	α_L	α_M	α_T
$\gamma_{1,0}(V)$	320,0835 (4)	9,91 (2)	M1+E2	0,00164 (5)	0,000151 (4)	0,0000198 (6)	0,00181 (5)

3 Atomic Data

3.1 V

ω_K	:	0,256	(5)
$\bar{\omega}_L$:	0,00381	(75)
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_1	5,42735	} 20,12072
K β_5''	5,463	
X _L		
L ℓ	0,4475	
L α	0,5135	
L η	0,4557	
L β	0,51938 - 0,6268	
L γ	0,52758 - 0,52758	

3.1.2 Auger Electrons

	Energy (keV)	Relative probability
Auger K		
KLL	4,164 - 4,395	100
KLX	4,755 - 4,950	26,7
KXY	5,332 - 5,461	1,78
Auger L		
	0,3799 - 0,6257	

4 Electron Emissions

		Energy (keV)	Electrons (per 100 disint.)
e _{AL}	(V)	0,3799 - 0,6257	146,0 (6)
e _{AK}	(V)		
	KLL	4,164 - 4,395	} 66,4 (5)
	KLX	4,755 - 4,950	
	KXY	5,332 - 5,461	
ec _{1,0 K}	(V)	314,6184 (4)	0,0162 (5)

5 Photon Emissions

5.1 X-Ray Emissions

		Energy (keV)	Photons (per 100 disint.)	
XL	(V)	0,4475 - 0,6268	0,56 (12)	
XK α_2	(V)	4,9447	6,79 (14)	} K α
XK α_1	(V)	4,95224	13,36 (27)	
XK β_1	(V)	5,42735	} 2,69 (7)	K' β_1
XK β_5''	(V)	5,463		

5.2 Gamma Emissions

	Energy (keV)	Photons (per 100 disint.)
$\gamma_{1,0(V)}$	320,0835 (4)	9,89 (2)

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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