$^{55}_{26}\mathrm{Fe}_{29}$

1 Decay Scheme

Fe-55 disintegrates by electron capture. A gamma transition with a small probability ($1{,}3 \times 10^{-7}$ %) has been observed. A background radiation, due to an inner-bremsstrahlung, with an intensity relative to K capture of $3{,}24(6) \times 10^{-5}$ photons produces a continuous spectrum up to 231,38 keV.

Le Fe-55 se désintègre par capture électronique. Une transition gamma de faible probabilité a été observée. Un rayonnement de freinage interne produit une émission radiative, dont la probabilité relative à la capture électronique K est de $3{,}24(6) \times 10^{-5}$.

2 Nuclear Data

$T_{1/2}(^{55}\mathrm{Fe})$	:	2,741	(6)	a
$Q^{+}(^{55}\mathrm{Fe})$	:	231,38	(10)	keV

2.1 Electron Capture Transitions

	Energy keV	Probability × 100	Nature	lg ft	P_K	P_L	P_{M+}
$\epsilon_{0,1}$	105,43 (10)	0,00000013 (1)	2nd Forbidden	14,2			
$\epsilon_{0,0}$	231,38 (10)	100	Allowed	6	0,8853 (16)	0,0983 (13)	0,0163 (8)

2.2 Gamma Transitions and Internal Conversion Coefficients

	Energy keV	$P_{\gamma+ce}$ × 100	Multipolarity
$\gamma_{1,0}$(Mn)	125,949 (10)	0,00000013 (1)	M1+(E2)

3 Atomic Data

3.1 Mn

ω_K : 0,321 (7)
$\bar{\omega}_L$: 0,0053 (4)
n_{KL} : 1,479 (6)

3.1.1 X Radiations

		Energy keV		Relative probability
X_K				
	$K\alpha_2$	5,8877		51
	$K\alpha_1$	5,8988		100
	$K\beta_3$	6,4905	}	
	$K\beta_5''$		}	20,5
	$K\beta_5'$	6,5354	}	
X_L				
	$L\ell$	0,556		
	$L\alpha$	0,637 –		
	$L\eta$	0,567		
	$L\beta$	0,649 – 0,721		

3.1.2 Auger Electrons

	Energy keV	Relative probability
Auger K		
KLL	4,95 – 5,21	100
KLX	5,67 – 5,89	27,2
KXY	6,35 – 6,49	1,85
Auger L	0,46 – 0,67	

4 Photon Emissions

4.1 X-Ray Emissions

		Energy keV		Photons per 100 disint.	
XL	(Mn)	0,556 — 0,721		0,66 (10)	
XKα_2	(Mn)	5,8877		8,45 (14)	} Kα
XKα_1	(Mn)	5,8988		16,56 (27)	}
XKβ_3	(Mn)	6,4905	}		
XKβ_1	(Mn)		}	3,40 (7)	K$'\beta_1$
XKβ'_5	(Mn)	6,5354	}		

4.2 Gamma Emissions

	Energy keV	Photons per 100 disint.
$\gamma_{1,0}$(Mn)	125,949 (10)	0,00000013 (1)

5 Electron Emissions

				Electrons per 100 disint.
e_{AL}	(Mn)	0,46 - 0,67		139,9 (5)
e_{AK}	(Mn)			60,1 (5)
	KLL	4,95 - 5,21	}	
	KLX	5,67 - 5,89	}	
	KXY	6,35 - 6,49	}	

6 Main Production Modes

$\left\{\begin{array}{l}\mathrm{Fe-54(n,\gamma)Fe-55} \qquad \sigma : 2{,}25\ (18)\ \text{barns}\\ \text{Possible impurities :}\ \ \mathrm{Fe-59}\end{array}\right.$

$\mathrm{Mn-55(p,n)Fe-55}$

$\left\{\begin{array}{l}\mathrm{Fe-54(d,p)Fe-55}\\ \text{Possible impurities :}\ \ \mathrm{Co-55}\end{array}\right.$

7 References

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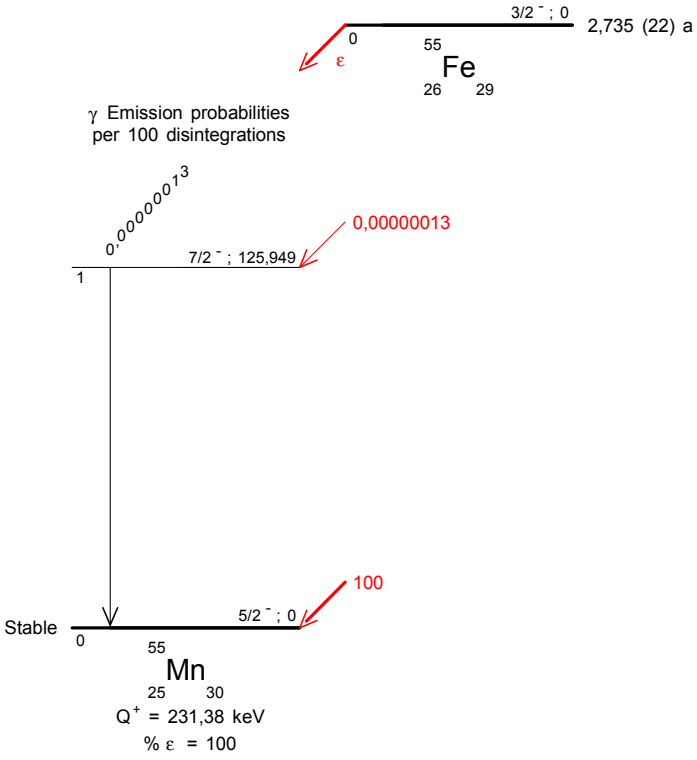
$^{55}_{26}Fe_{29}$


3/2 - ; 0
2,735 (22) a
0
ε
55
Fe
26 29
γ Emission probabilities
per 100 disintegrations
0,0000001 3
0,00000013
7/2 - ; 125,949
1
100
5/2 - ; 0
Stable
0
55
Mn
25 30
Q+ = 231,38 keV
% ε = 100