



1 Decay Scheme

Fe-52 disintegrates 100% by electron capture and positron decay to excited levels in Mn-52.

Le fer 52 se désintègre par capture électronique et émissions bêta plus sur des niveaux excités de manganèse 52.

2 Nuclear Data

$T_{1/2}({}^{52}\text{Fe})$:	8,273	(8)	h
$T_{1/2}({}^{52}\text{Mn})$:	5,591	(3)	d
$T_{1/2}({}^{52\text{m}}\text{Mn})$:	21,1	(2)	min
$Q^+({}^{52}\text{Fe})$:	2375	(6)	keV

2.1 Electron Capture Transitions

	Energy (keV)	Probability (%)	Nature	lg ft	P_K	P_L	P_M
$\epsilon_{0,3}$	957 (6)	0,095 (4)		5,8	0,8892 (16)	0,0950 (13)	0,0151 (5)
$\epsilon_{0,2}$	1829 (6)	43,8 (13)	Allowed	4,7	0,8898 (16)	0,0946 (13)	0,0150 (5)

2.2 β^+ Transitions

	Energy (keV)	Probability (%)	Nature	lg ft
$\beta_{0,2}^+$	807 (6)	56,1 (7)	Allowed	4,7

2.3 Gamma Transitions and Internal Conversion Coefficients

	Energy (keV)	P _{γ+ce} (%)	Multipolarity	α _K	α _L	α _M	α _T
γ _{2,1} (Mn)	168,689 (8)	99,9 (15)	M1	0,00705 (10)	0,000679 (10)	0,0000922 (13)	0,00783 (11)
γ _{1,0} (Mn)	377,749 (5)	1,705 (42)	E4	0,0356 (5)	0,00382 (6)	0,000515 (8)	0,0399 (6)
γ _{3,1} (Mn)	1039,939 (19)	0,095 (4)	M1+E2	0,000130 (15)	0,0000122 (14)	0,00000165 (19)	0,000143 (16)

3 Atomic Data

3.1 Mn

ω _K	:	0,321	(5)
ω _L	:	0,0047	(7)
n _{KL}	:	1,478	(4)

3.1.1 X Radiations

	Energy (keV)	Relative probability
X _K		
Kα ₂	5,88772	50,99
Kα ₁	5,89881	100
Kβ ₁	6,49051	} 20,52
Kβ' ₅	6,5354	
X _L		
Lℓ	0,5576	
Lα	0,6394 - 0,6404	
Lη	0,5695	
Lβ	0,64636 - 0,7694	
Lγ	0,65826 - 0,65826	

3.1.2 Auger Electrons

	Energy (keV)	Relative probability
Auger K		
KLL	4,953 - 5,210	100
KLX	5,671 - 5,895	27,2
KXY	6,370 - 6,532	1,85
Auger L		
	0,4725 - 0,7653	

4 Electron and Positron Emissions

		Energy (keV)	Electrons (per 100 disint.)
e _{AL}	(Mn)	0,4725 - 0,7653	57,1 (15)
e _{AK}	(Mn)		
	KLL	4,953 - 5,210	} 26,3 (11)
	KLX	5,671 - 5,895	
	KXY	6,370 - 6,532	
ec _{2,1} T	(Mn)	162,150 - 168,689	0,777 (24)
ec _{2,1} K	(Mn)	162,150 (8)	0,699 (21)
ec _{2,1} L	(Mn)	167,920 - 168,049	0,0674 (21)
ec _{1,0} K	(Mn)	371,210 (5)	0,0585 (15)
β _{0,2} ⁺	max:	807 (6)	} 56,1 (7)
	avg:		

5 Photon Emissions

5.1 X-Ray Emissions

		Energy (keV)	Photons (per 100 disint.)	
XL	(Mn)	0,5576 - 0,7694	0,213 (10)	
XKα ₂	(Mn)	5,88772	3,70 (17)	} Kα
XKα ₁	(Mn)	5,89881	7,3 (4)	
XKβ ₁	(Mn)	6,49051	} 1,49 (7)	K'β ₁
XKβ ₅ ^{''}	(Mn)	6,5354		

5.2 Gamma Emissions

		Energy (keV)	Photons (per 100 disint.)
γ _{2,1} (Mn)		168,689 (8)	99,1 (15)
γ _{1,0} (Mn)		377,749 (5)	1,64 (4)
γ [±]		511	112,2 (14)
γ _{3,1} (Mn)		1039,939 (19)	0,095 (4)

6 Main Production Modes

Cr – 50($\alpha,2n$)Fe – 52

Mn – 55(p,4n)Fe – 52

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