$^{64}_{29}\mathrm{Cu}_{35}$

1 Decay Scheme

Le cuivre 64 se désintègre par émission bêta moins (38%) vers le niveau fondamental de zinc 64 et par capture électronique vers le niveau excité et le fondamental de nickel 64.
Cu-64 disintegrates by beta minus emission to the Zn-64 ground state (38%) and by electron capture to the excited level and the ground state of Ni-64.

2 Nuclear Data

$T_{1/2}(^{64}\mathrm{Cu})$	:	12,7004	(20)	h
$Q^{-}(^{64}\mathrm{Cu})$	:	579,4	(7)	keV
$Q^{+}(^{64}\mathrm{Cu})$	:	1675,03	(20)	keV

2.1 β^+ Transitions

	Energy keV	Probability × 100	Nature	lg ft
$\beta^{+}_{0,0}$	653,1 (2)	17,52 (15)	Allowed	4,97

2.2 Electron Capture Transitions

	Energy keV	Probability × 100	Nature	lg ft	P_K	P_L	P_M
$\epsilon_{0,1}$	329,28 (20)	0,4744 (33)	Allowed	5,51	0,884 (3)	0,099 (2)	0,0162 (5)
$\epsilon_{0,0}$	1675,03 (20)	43,53 (20)	Allowed	4,97	0,888 (3)	0,095 (2)	0,0155 (5)

2.3 β^- Transitions

	Energy keV	Probability × 100	Nature	lg ft
$\beta^-_{0,0}$	579,4 (7)	38,48 (26)	Allowed	5,29

2.4 Gamma Transitions and Internal Conversion Coefficients

	Energy keV	$P_{\gamma+ce}$ × 100	Multipolarity	α_K (10^{-4})	α_L (10^{-4})	α_T (10^{-4})	α_π (10^{-4})
$\gamma_{1,0}$(Ni)	1345,75 (5)	0,4749 (34)	E2	1,112 (2)	0,109 (2)	1,24 (2)	0,394 (6)

3 Atomic Data

3.1 Ni

ω_K : 0,421 (4)
$\bar{\omega}_L$: 0,0084 (4)
n_{KL} : 1,388 (4)

3.1.1 X Radiations

		Energy keV		Relative probability
X_K				
	Kα_2	7,46093		51,24
	Kα_1	7,47819		100
	Kβ_3	8,2647	}	
	Kβ''_5	8,3287	}	13,78
X_L				
	Lℓ	0,7445		
	Lα	0,8532 – 0,8539		
	Lη	0,7622		
	Lβ	0,86123 – 1,0083		
	Lγ	0,87898 – 0,87898		

3.1.2 Auger Electrons

	Energy keV	Relative probability
Auger K		
KLL	6,262 – 6,567	100
KLX	7,196 – 7,475	27,6
KXY	8,109 – 8,326	1,9
Auger L	0,6 – 0,9	

4 Electron Emissions

		Energy keV	Electrons per 100 disint.
e_{AL}	(Ni)	0,6 - 0,9	57,9 (4)
e_{AK}	(Ni)		22,62 (21)
	KLL	6,262 - 6,567 }	
	KLX	7,196 - 7,475 }	
	KXY	8,109 - 8,326 }	
$ec^{\pm}_{1,0}$	(Ni)	323,77 (6)	0,00001875 (37)
$\beta^{+}_{0,0}$	max:	653,1 (2)	17,52 (15)
$\beta^{+}_{0,0}$	avg:	278,21 (9)	
$\beta^{-}_{0,0}$	max:	579,4 (7)	38,48 (26)
$\beta^{-}_{0,0}$	avg:	190,7 (3)	

5 Photon Emissions

5.1 X-Ray Emissions

		Energy keV		Photons per 100 disint.	
XL	(Ni)	0,7445 — 1,0083		0,493 (10)	
XKα_2	(Ni)	7,46093		4,90 (6)	} Kα
XKα_1	(Ni)	7,47819		9,56 (11)	}
XKβ_3	(Ni)	8,2647	}		
XKβ_1	(Ni)		}	1,99 (3)	K$'\beta_1$
XKβ''_5	(Ni)	8,3287	}		

5.2 Gamma Emissions

	Energy keV	Photons per 100 disint.
$\gamma^{\pm}$	511	35,04 (30)
$\gamma_{1,0}$(Ni)	1345,77 (6)	0,4748 (34)

6 Main Production Modes

- Cu − 63(n,γ)Cu − 64 σ : 4,50 (2) barns
  Possible impurities : Cu − 67
- Cu − 65(n,2n)Cu − 64
  Possible impurities : Ni − 65
- Zn − 64(n,p)Cu − 64
  Possible impurities : Cu − 67, Zn − 63, Ni − 65
- Zn − 64(d,2p)Cu − 64
  Possible impurities : Cu − 67

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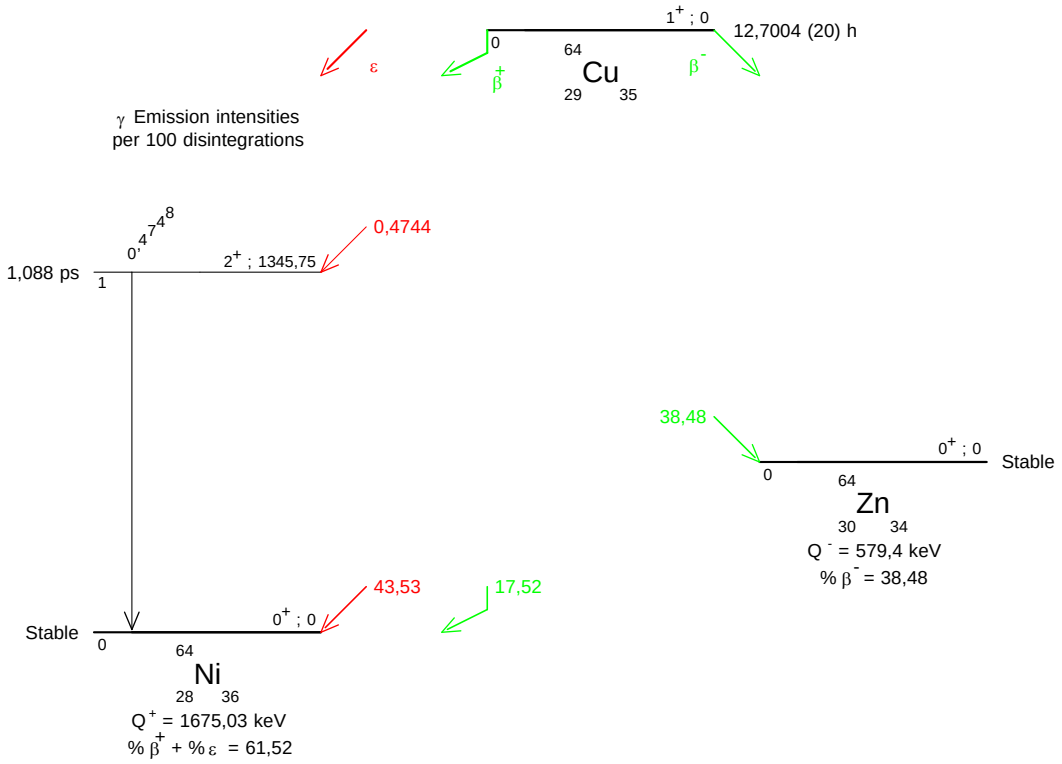
1+ ; 0
12,7004 (20) h
0
64
Cu
29 35
ε
β+
β-
γ Emission intensities
per 100 disintegrations
0,4744
1,088 ps
0+ ; 0
2+ ; 1345,75
1
38,48
0+ ; 0
Stable
0
64
Zn
30 34
Q- = 579,4 keV
% β- = 38,48
43,53
17,52
Stable
0+ ; 0
0
64
Ni
28 36
Q+ = 1675,03 keV
% β+ + % ε = 61,52