$^{109}_{48}\mathrm{Cd}_{61}$

1 Decay Scheme

Cd-109 decays by electron capture to the isomeric state (88 keV) of Ag-109.

Le cadmium 109 se désintègre uniquement par capture électronique vers l'état isomérique de l'argent 109 (88 keV).

2 Nuclear Data

$T_{1/2}(^{109}\mathrm{Cd}\ )$: 461,9 (4) d
$Q^{+}(^{109}\mathrm{Cd}\ )$: 215,5 (18) keV

2.1 Electron Capture Transitions

	Energy (keV)	Probability (%)	Nature	lg ft	P_K	P_L	P_M
$\epsilon_{0,1}$	127,5 (18)	100	Allowed	6	0,812 (3)	0,150 (3)	0,0321 (9)

2.2 Gamma Transitions and Internal Conversion Coefficients

	Energy (keV)	$P_{\gamma+ce}$ (%)	Multipolarity	α_K	α_L	α_M	α_T
$\gamma_{1,0}$(Ag)	88,0341 (10)	100	E3	11,41 (16)	12,06 (17)	2,47 (4)	26,3 (4)

3 Atomic Data

3.1 Ag

ω_K : 0,831 (4)
$\bar{\omega}_L$: 0,0583 (14)
n_{KL} : 0,964 (4)

3.1.1 X Radiations

		Energy (keV)	Relative probability
X_K			
	$K\alpha_2$	21,9906	53,05
	$K\alpha_1$	22,16317	100
	$K\beta_3$	24,9118	27,7
	$K\beta_1$	24,9427	
	$K\beta_5''$	25,146	
	$K\beta_2$	25,4567	4,82
	$K\beta_4$	25,512	
X_L			
	$L\ell$	2,634	
	$L\alpha$	2,977 - 2,985	
	$L\eta$	2,807	
	$L\beta$	3,151 - 3,438	
	$L\gamma$	3,431 - 3,748	

3.1.2 Auger Electrons

	Energy (keV)	Relative probability
Auger K		
KLL	17,79 - 18,69	100
KLX	20,945 - 22,160	42,5
KXY	24,079 - 25,507	4,51
Auger L	1,8 - 3,8	1194

4 Electron Emissions

			Energy (keV)	Electrons (per 100 disint.)
e_{AL}	(Ag)		1,8 - 3,8	167,3 (8)
e_{AK}	(Ag)			
		KLL	17,79 - 18,69	20,8 (6)
		KLX	20,945 - 22,160	
		KXY	24,079 - 25,507	
$ec_{1,0\ K}$	(Ag)		62,520 (1)	41,8 (8)
$ec_{1,0\ L}$	(Ag)		84,2279 - 84,6826	44,1 (9)
$ec_{1,0\ M}$	(Ag)		87,3162 - 87,6670	9,04 (19)
$ec_{1,0\ N}$	(Ag)		87,9385 - 88,0304	1,413 (29)

5 Photon Emissions

5.1 X-Ray Emissions

		Energy (keV)	Photons (per 100 disint.)	
XL	(Ag)	2,634 - 3,748	10,37 (27)	
XKα_2	(Ag)	21,9906	29,21 (30)	Kα
XKα_1	(Ag)	22,16317	55,1 (5)	Kα
XKβ_3	(Ag)	24,9118	15,25 (20)	K$'\beta_1$
XKβ_1	(Ag)	24,9427	15,25 (20)	K$'\beta_1$
XKβ_5''	(Ag)	25,146	15,25 (20)	K$'\beta_1$
XKβ_2	(Ag)	25,4567	2,65 (10)	K$'\beta_2$
XKβ_4	(Ag)	25,512	2,65 (10)	K$'\beta_2$

5.2 Gamma Emissions

	Energy (keV)	Photons (per 100 disint.)
$\gamma_{1,0}$(Ag)	88,0336 (10)	3,66 (5)

6 Main Production Modes

- Cd − 108(n,γ)Cd − 109 $\quad \sigma$: 1,1 (3) barns
  Possible impurities: Ag − 110m
- Ag − 109(p,n)Cd − 109
  Possible impurities: none

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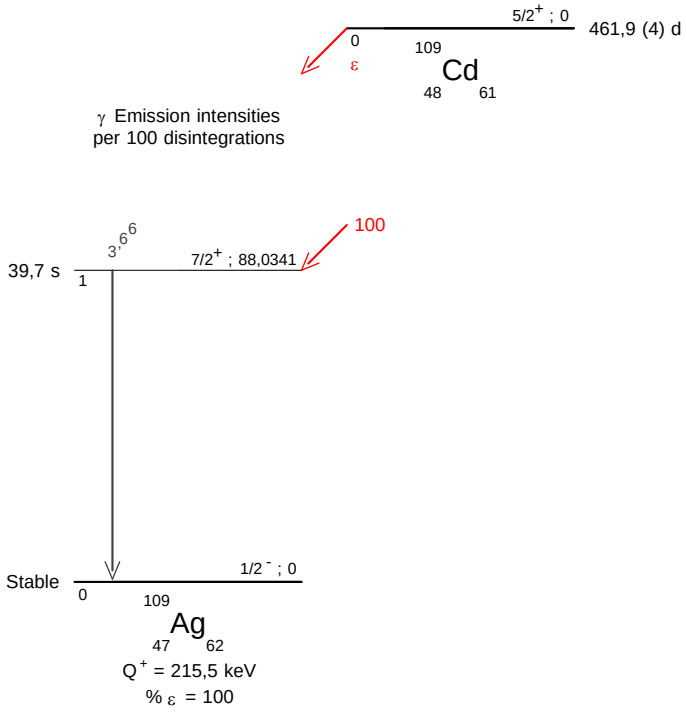
5/2+ ; 0
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γ Emission intensities
per 100 disintegrations
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Q+ = 215,5 keV
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