$^{203}_{80}\mathrm{Hg}_{123}$

1 Decay Scheme

The simple and consistent decay scheme is dominated by beta decay to the first excited state of Tl-203, followed by a single gamma transition to the ground state.
Le mercure 203 se désintègre par émission bêta moins vers le niveau excités de 279 keV du thallium 203.

2 Nuclear Data

$T_{1/2}(^{203}\mathrm{Hg}\ )$: 46,594 (12) d
$Q^{-}(^{203}\mathrm{Hg}\ )$: 491,8 (12) keV

2.1 β^{-} Transitions

	Energy keV	Probability × 100	Nature	lg ft
$\beta^{-}_{0,1}$	212,6 (12)	99,99 (1)	Allowed	6,455
$\beta^{-}_{0,0}$	491,8 (12)	0,01 (1)	1st Forbidden Unique	11,6

2.2 Gamma Transitions and Internal Conversion Coefficients

	Energy keV	$P_{\gamma+ce}$ × 100	Multipolarity	α_K	α_L	α_M	α_T
$\gamma_{1,0}$(Tl)	279,1969 (12)	99,99 (1)	M1+75%E2	0,1640 (10)	0,0476 (2)	0,0155 (2)	0,2271 (12)

3 Atomic Data

3.1 Tl

ω_K : 0,963 (4)
$\bar{\omega}_L$: 0,367 (15)
n_{KL} : 0,812 (5)

3.1.1 X Radiations

		Energy keV		Relative probability
X_K				
	$K\alpha_2$	70,8325		59,24
	$K\alpha_1$	72,8725		100
	$K\beta_3$	82,118	}	
	$K\beta_1$	82,577	}	
	$K\beta_5''$	83,115	}	34
	$K\beta_2$	84,838	}	
	$K\beta_4$	85,134	}	10,1
	$KO_{2,3}$	85,444	}	
X_L				
	$L\ell$	8,953		
	$L\alpha$	10,172 – 10,268		
	$L\eta$	10,994		
	$L\beta$	11,812 – 12,643		
	$L\gamma$	14,291 – 14,738		

3.1.2 Auger Electrons

	Energy keV	Relative probability
Auger K		
KLL	54,587 – 59,954	100
KLX	66,37 – 72,86	56
KXY	78,12 – 85,50	7,7
Auger L	5,18 – 10,13	3370

4 Electron Emissions

		Energy keV	Electrons per 100 disint.
e_{AL}	(Tl)	5,18 - 10,13	10,1 (1)
e_{AK}	(Tl)		0,49 (6)
	KLL	54,587 - 59,954	
	KLX	66,37 - 72,86	
	KXY	78,12 - 85,50	
$ec_{1,0\ T}$	(Tl)	193,66 - 279,18	18,5 (1)
$ec_{1,0\ K}$	(Tl)	193,66 (1)	13,37 (6)
$ec_{1,0\ L}$	(Tl)	263,85 - 266,54	3,88 (2)
$ec_{1,0\ M}$	(Tl)	275,49 - 279,18	1,26 (1)
$\beta^-_{0,1}$	max:	212,6 (12)	99,99 (1)
$\beta^-_{0,1}$	avg:	57,8 (4)	
$\beta^-_{0,0}$	max:	491,8 (12)	0,01 (1)
$\beta^-_{0,0}$	avg:	154,4 (4)	

5 Photon Emissions

5.1 X-Ray Emissions

		Energy keV	Photons per 100 disint.	
XL	(Tl)	8,953 — 14,738	5,43 (9)	
$XK\alpha_2$	(Tl)	70,8325	3,75 (4)	} Kα
$XK\alpha_1$	(Tl)	72,8725	6,33 (6)	}
$XK\beta_3$	(Tl)	82,118	}	
$XK\beta_1$	(Tl)	82,577	} 2,15 (4)	$K'\beta_1$
$XK\beta''_5$	(Tl)	83,115	}	
$XK\beta_2$	(Tl)	84,838	}	
$XK\beta_4$	(Tl)	85,134	} 0,639 (16)	$K'\beta_2$
$XKO_{2,3}$	(Tl)	85,444	}	

5.2 Gamma Emissions

	Energy keV	Photons per 100 disint.
$\gamma_{1,0}$(Tl)	279,1952 (10)	81,48 (8)

6 Main Production Modes

Au – 203(β^-)Hg – 203

Tl – 204(γ,p)Hg – 203

Hg – 202(n,γ)Hg – 203

Hg – 202(d,p)Hg – 203

Hg – 204(d,t)Hg – 203

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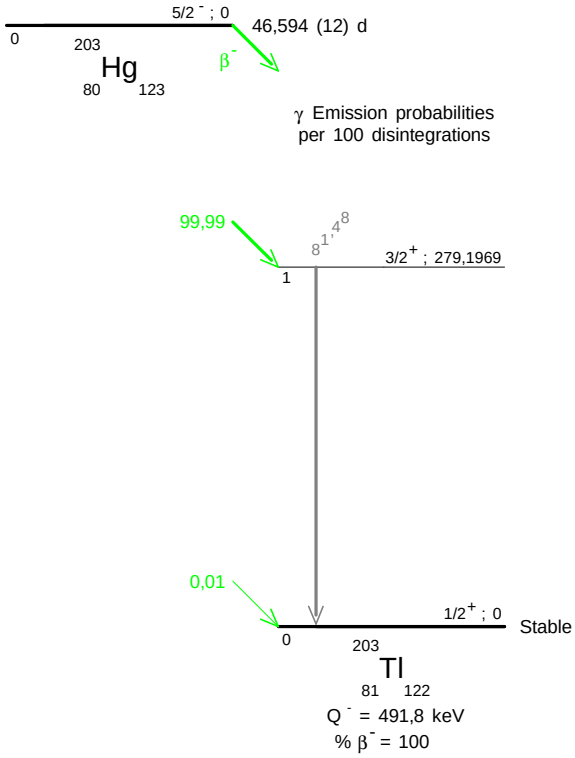
5/2⁻ ; 0
46,594 (12) d
0
203
Hg
80
123
β⁻
γ Emission probabilities
per 100 disintegrations
99,99
3/2⁺ ; 279,1969
1
0,01
1/2⁺ ; 0
Stable
0
203
Tl
81
122
Q⁻ = 491,8 keV
% β⁻ = 100