



1 Decay Scheme

Pm-147 disintegrates by beta minus emission to the Sm-147 ground state mainly.

Le prométhéum 147 se désintègre par émission bêta moins principalement vers le niveau fondamental du samarium 147.

2 Nuclear Data

$T_{1/2}(^{147}\text{Pm})$:	2,6234	(4)	a
$T_{1/2}(^{147}\text{Sm})$:	107,9	(12)	10^9 a
$Q^-(^{147}\text{Pm})$:	224,1	(3)	keV

2.1 β^- Transitions

	Energy keV	Probability $\times 100$	Nature	lg ft
$\beta_{0,2}^-$	27,3 (4)	0,00000040 (7)	Unique 1st Forbidden	12,1
$\beta_{0,1}^-$	103,4 (4)	0,00542 (13)	1st Forbidden	10,6
$\beta_{0,0}^-$	224,5 (4)	99,99458 (13)	1st Forbidden	7,4

2.2 Gamma Transitions and Internal Conversion Coefficients

	Energy keV	$P_{\gamma+ce}$ $\times 100$	Multipolarity	α_K	α_L	α_M	α_T
$\gamma_{2,1}(\text{Sm})$	(76,073) (10)	0,000000061 (11)	M1 + 30,0 % E2	2,91 (5)	1,26 (7)	0,288 (15)	4,53 (9)
$\gamma_{1,0}(\text{Sm})$	121,220 (17)	0,00542 (13)	M1 + 9,13 % E2	0,815 (12)	0,141 (4)	0,0308 (8)	0,994 (14)
$\gamma_{2,0}(\text{Sm})$	197,299 (12)	0,00000040 (7)	E2	0,1565 (22)	0,0482 (7)	0,01092 (16)	0,218 (3)

3 Atomic Data

3.1 Sm

ω_K	:	0,926	(4)
$\bar{\omega}_L$:	0,158	(6)
n_{KL}	:	0,857	(4)

3.1.1 X Radiations

	Energy keV	Relative probability		
X_K	$K\alpha_2$	39,5229	55,25	
	$K\alpha_1$	40,1186	100	
	$K\beta_3$	45,289	}	
	$K\beta_1$	45,413	}	
	$K\beta_5''$	45,731	}	31,26
	$K\beta_2$	46,575	}	
	$K\beta_4$	46,705	}	8,07
	$KO_{2,3}$	46,813	}	
	X_L	$L\ell$	4,991	
		$L\alpha$	5,609 – 5,638	
$L\eta$		5,586		
$L\beta$		6,193 – 6,656		
$L\gamma$		6,964 – 7,487		

4 Electron Emissions

	Energy keV	Electrons per 100 disint.
$\beta_{0,2}^-$	max: 27,3 (4)	0,00000040 (7)
$\beta_{0,2}^-$	avg: 6,93 (9)	
$\beta_{0,1}^-$	max: 103,4 (4)	0,00542 (13)
$\beta_{0,1}^-$	avg: 26,94 (8)	
$\beta_{0,0}^-$	max: 224,5 (4)	99,99458 (13)
$\beta_{0,0}^-$	avg: 61,78 (9)	

5 Photon Emissions

5.1 X-Ray Emissions

		Energy keV	Photons per 100 disint.	
XL	(Sm)	4,991 — 7,487	0,000369 (8)	
XK α_2	(Sm)	39,5229	0,000583 (16)	} K α
XK α_1	(Sm)	40,1186	0,001055 (29)	
XK β_3	(Sm)	45,289	}	} K' β_1
XK β_1	(Sm)	45,413	}	
XK β_5''	(Sm)	45,731	}	
XK β_2	(Sm)	46,575	}	} K' β_2
XK β_4	(Sm)	46,705	}	
XKO $_{2,3}$	(Sm)	46,813	}	

5.2 Gamma Emissions

		Energy keV	Photons per 100 disint.
$\gamma_{2,1}$ (Sm)	(76,073) (10)		0,000000011 (2)
$\gamma_{1,0}$ (Sm)	121,220 (17)		0,00272 (6)
$\gamma_{2,0}$ (Sm)	197,299 (12)		0,000000033 (5)

6 Main Production Modes

- { Fission product
 { Possible impurities : Pm – 149, Pm – 151, Pm – 152

7 References

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