



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<sup>9</sup> a  
 $Q^-(^{147}\text{Pm})$  : 224,1    (3)    keV

2.1     $\beta^-$  Transitions

	Energy keV	Probability × 100	Nature	lg <i>ft</i>
$\beta_{0,2}^-$	26,8 (3)	0,00000040 (7)	Unique 1st Forbidden	12,1
$\beta_{0,1}^-$	102,9 (3)	0,00542 (13)	1st Forbidden	10,6
$\beta_{0,0}^-$	224,1 (3)	99,99456 (13)	1st Forbidden	7,4

2.2    Gamma Transitions and Internal Conversion Coefficients

	Energy keV	P <sub><math>\gamma</math>+ce</sub> × 100	Multipolarity	$\alpha_K$	$\alpha_L$	$\alpha_M$	$\alpha_T$
$\gamma_{2,1}(\text{Sm})$	[76,073 (10)]	0,000000061 (11)	M1 + 30,0% E2	2,91 (5)	1,26 (7)	0,288 (15)	4,53 (9)
$\gamma_{1,0}(\text{Sm})$	121,223 (12)	0,00542 (13)	M1+9,13% E2	0,815 (12)	0,141 (4)	0,0308 (8)	0,994 (14)
$\gamma_{2,0}(\text{Sm})$	197,298 (11)	0,000000040 (7)	E2	0,1565 (22)	0,0482 (7)	0,01092 (16)	0,218 (3)

3 Atomic Data

3.1 Sm

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

3.1.1 X Radiations

		Energy keV	Relative probability	
X <sub>K</sub>	K $\alpha_2$	39,5229		55,25
	K $\alpha_1$	40,1186		100
	K $\beta_3$	45,289	}	31,26
	K $\beta_1$	45,413	}	
	K $\beta_5''$	45,731	}	
	K $\beta_2$	46,575	}	8,07
	K $\beta_4$	46,705	}	
	KO <sub>2,3</sub>	46,813	}	
X <sub>L</sub>	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:	26,8 (3)	0,00000040 (7)
$\beta_{0,2}^-$	avg:	6,9 (1)	
$\beta_{0,1}^-$	max:	102,9 (3)	0,00542 (13)
$\beta_{0,1}^-$	avg:	26,9 (1)	
$\beta_{0,0}^-$	max:	224,1 (3)	99,99456 (13)
$\beta_{0,0}^-$	avg:	61,8 (1)	

## 5 Photon Emissions

### 5.1 X-Ray Emissions

		Energy keV	Photons per 100 disint.	
XL	(Sm)	4,991 — 7,487	0,000369 (8)	
XK $\alpha_2$	(Sm)	39,5229	0,000583 (16)	} K $\alpha$
XK $\alpha_1$	(Sm)	40,1186	0,001055 (29)	
XK $\beta_3$	(Sm)	45,289	}	} K' $\beta_1$
XK $\beta_1$	(Sm)	45,413	}	
XK $\beta_5''$	(Sm)	45,731	}	
XK $\beta_2$	(Sm)	46,575	}	} K' $\beta_2$
XK $\beta_4$	(Sm)	46,705	}	
XKO $_{2,3}$	(Sm)	46,813	}	

### 5.2 Gamma Emissions

	Energy keV	Photons per 100 disint.
$\gamma_{2,1}(\text{Sm})$	[76,073 (10)]	0,000000011 (2)
$\gamma_{1,0}(\text{Sm})$	121,223 (12)	0,00272 (6)
$\gamma_{2,0}(\text{Sm})$	197,298 (11)	0,000000033 (5)

## 6 Main Production Modes

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

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