$^{123}_{52}\mathrm{Te}^{\,m}_{71}$

1 Decay Scheme

Te-123m decays via two successive gamma transitions.
A gamma transition with a small probability and an energy of 247 keV has been observed.
Te-123m se désintègre via deux transitions gamma en cascade. Une transition de 247 keV et de faible probabilité a été observée.

2 Nuclear Data

$T_{1/2}(^{123}\mathrm{Te}^{m})$: 119,3 (1) d
$T_{1/2}(^{123}\mathrm{Te})$: 12 10^{12} a

2.1 Gamma Transitions and Internal Conversion Coefficients

	Energy keV	$P_{\gamma+ce}$ × 100	Multipolarity	α_K	α_L	α_M	α_T
$\gamma_{2,1}$(Te)	88,46 (7)	100,0 (1)	M4	463 (14)	493 (15)	118,0 (35)	1099 (33)
$\gamma_{1,0}$(Te)	158,99 (5)	100,0 (1)	M1+1,22%E2	0,1648 (16)	0,02160 (22)	0,00433 (13)	0,1918 (19)
$\gamma_{2,0}$(Te)	247,4 (2)	0,0030 (3)	E5	3,0 (1)	3,75 (21)	0,84 (3)	7,75 (30)

3 Atomic Data

3.1 Te

ω_K : 0,875 (4)
$\bar{\omega}_L$: 0,0862 (35)
n_{KL} : 0,917 (4)

3.1.1 X Radiations

		Energy keV		Relative probability
X_K				
	$K\alpha_2$	27,202		53,7
	$K\alpha_1$	27,4726		100
	$K\beta_3$	30,9446	}	
	$K\beta_1$	30,996	}	
	$K\beta_5''$	31,236	}	28,6
	$K\beta_5'$	31,241	}	
	$K\beta_2$	31,7008	}	
	$K\beta_4$	31,774	}	6,2
	$KO_{2,3}$	31,812	}	
X_L				
	$L\ell$	3,336		
	$L\alpha$	3,76 – 3,77		
	$L\eta$	3,606		
	$L\beta$	4,02 – 4,37		
	$L\gamma$	4,44 – 4,82		

3.1.2 Auger Electrons

	Energy keV	Relative probability
Auger K		
KLL	21,804 – 22,989	100
KLX	25,814 – 27,470	45,3
KXY	29,80 – 31,81	5,13
Auger L	2,3 – 4,8	

4 Electron Emissions

		Energy keV	Electrons per 100 disint.
e_{AL}	(Te)	2,3 - 4,8	89,7 (7)
e_{AK}	(Te)		7,0 (4)
	KLL	21,804 - 22,989	}
	KLX	25,814 - 27,470	}
	KXY	29,80 - 31,81	}
$ec_{2,1\ K}$	(Te)	56,65 (7)	42,1 (18)
$ec_{2,1\ L}$	(Te)	83,52 - 84,12	44,8 (19)
$ec_{2,1\ M}$	(Te)	87,45 - 87,89	10,73 (45)
$ec_{2,1\ N}$	(Te)	88,29 - 88,42	2,07 (9)
$ec_{1,0\ K}$	(Te)	127,18 (5)	13,84 (14)
$ec_{1,0\ L}$	(Te)	154,05 - 154,69	1,81 (2)
$ec_{1,0\ M}$	(Te)	157,98 - 158,42	0,364 (11)
$ec_{1,0\ N}$	(Te)	158,82 - 158,95	0,0769 (23)

5 Photon Emissions

5.1 X-Ray Emissions

		Energy keV		Photons per 100 disint.	
XL	(Te)	3,336 — 4,82		8,25 (21)	
$XK\alpha_2$	(Te)	27,202		13,9 (5)	} $K\alpha$
$XK\alpha_1$	(Te)	27,4726		26,0 (9)	}
$XK\beta_3$	(Te)	30,9446	}		
$XK\beta_1$	(Te)	30,996	}	7,43 (26)	$K'\beta_1$
$XK\beta_5''$	(Te)	31,236	}		
$XK\beta_5'$	(Te)	31,241	}		
$XK\beta_2$	(Te)	31,7008	}		
$XK\beta_4$	(Te)	31,774	}	1,61 (7)	$K'\beta_2$
$XKO_{2,3}$	(Te)	31,812	}		

5.2 Gamma Emissions

	Energy keV	Photons per 100 disint.
$\gamma_{2,1}$(Te)	88,46 (7)	0,0909 (27)
$\gamma_{1,0}$(Te)	158,97 (5)	83,99 (8)
$\gamma_{2,0}$(Te)	247,4 (2)	0,000344 (34)

6 Main Production Modes

$\left\{ \begin{array}{l} \mathrm{Te-122(n,\gamma)Te-123m} \qquad \sigma : 3{,}4\ (5)\ \text{barns} \\ \text{Possible impurities :}\ \ \mathrm{Te-121,Te-125m,Te-129m} \end{array} \right.$

$\left\{ \begin{array}{l} \mathrm{Sb-123(p,n)Te-123m} \\ \text{Possible impurities :}\ \ \mathrm{Te-121,Te-121m} \end{array} \right.$

$\left\{ \begin{array}{l} \mathrm{Sb-123(d,2n)Te-123m} \\ \text{Possible impurities :}\ \ \mathrm{Te-121,Te-121m} \end{array} \right.$

7 References

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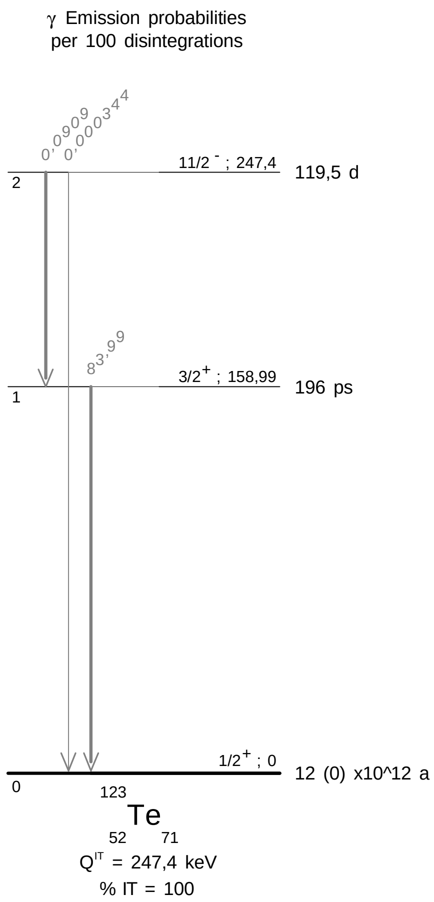
γ Emission probabilities
per 100 disintegrations
0,0909
0,000344
11/2 - ; 247,4
119,5 d
2
83,99
3/2+ ; 158,99
196 ps
1
1/2+ ; 0
12 (0) x10^12 a
0
123
Te
52 71
QIT = 247,4 keV
% IT = 100