



## 1 Decay Scheme

Ra-226 disintegrates by alpha emission mainly to the 186 keV level and to the ground state level of Rn-222.

*Le radium 226 se désintègre par émission alpha principalement vers le niveau excité de 186 keV et le niveau fondamental de radon 222.*

## 2 Nuclear Data

$T_{1/2}(^{226}\text{Ra})$	:	1600	(7)	a
$T_{1/2}(^{222}\text{Rn})$	:	3,8232	(8)	d
$Q^\alpha(^{226}\text{Ra})$	:	4870,62	(25)	keV

### 2.1 $\alpha$ Transitions

	Energy keV	Probability $\times 100$	F
$\alpha_{0,4}$	4235,15 (29)	0,0002	8,65
$\alpha_{0,3}$	4269,96 (26)	0,0008	4,5
$\alpha_{0,2}$	4422,25 (28)	0,0066 (22)	10,4
$\alpha_{0,1}$	4684,41 (25)	5,95 (4)	0,96
$\alpha_{0,0}$	4870,62 (25)	94,038 (40)	1

### 2.2 Gamma Transitions and Internal Conversion Coefficients

	Energy keV	$P_{\gamma+ce}$ $\times 100$	Multipolarity	$\alpha_K$	$\alpha_L$	$\alpha_M$	$\alpha_T$
$\gamma_{1,0}(\text{Rn})$	186,211 (13)	5,962 (48)	E2	0,190 (3)	0,360 (5)	0,0963 (14)	0,677 (10)
$\gamma_{2,1}(\text{Rn})$	262,27 (5)	0,0066 (22)	[E2]	0,0923 (14)	0,0868 (14)	0,0230 (4)	0,209 (4)
$\gamma_{3,1}(\text{Rn})$	414,60 (5)	0,0003	[E1]	0,01329 (19)	0,00228 (4)	0,000537 (8)	0,01628 (23)
$\gamma_{4,1}(\text{Rn})$	449,37 (10)	0,0002	[E1]	0,01123 (16)	0,00191 (3)	0,000449 (7)	0,01373 (20)
$\gamma_{3,0}(\text{Rn})$	600,66 (5)	0,0005	[E1]	0,00627 (9)	0,001034 (15)	0,000243 (4)	0,00762 (11)

### 3 Atomic Data

#### 3.1 Rn

$\omega_K$	:	0,967	(4)
$\bar{\omega}_L$	:	0,428	(17)
$n_{KL}$	:	0,804	(5)

##### 3.1.1 X Radiations

	Energy keV	Relative probability
X <sub>K</sub>	K $\alpha_2$	81,07
	K $\alpha_1$	83,78
	K $\beta_3$	94,247
	K $\beta_1$	94,868
	K $\beta_5''$	95,449
		}
	K $\beta_2$	97,48
	K $\beta_4$	97,853
	KO <sub>2,3</sub>	98,357
X <sub>L</sub>		}
		}
		}
		}
		}
		}
X <sub>L</sub>	L $\ell$	10,14
	L $\alpha$	11,5981 – 11,7259
	L $\eta$	12,8551
	L $\beta$	13,5219 – 15,1631
	L $\gamma$	16,2398 – 17,26

### 4 $\alpha$ Emissions

	Energy keV	Probability $\times 100$
$\alpha_{0,4}$	4160 (2)	0,0002
$\alpha_{0,3}$	4191 (2)	0,0008
$\alpha_{0,2}$	4340 (1)	0,0066 (22)
$\alpha_{0,1}$	4601 (1)	5,95 (4)
$\alpha_{0,0}$	4784,34 (25)	94,038 (40)

## 5 Electron Emissions

		Energy keV	Electrons per 100 disint.
ec <sub>1,0</sub> T	(Rn)	87,814 - 186,168	2,407 (36)
ec <sub>1,0</sub> K	(Rn)	87,814 (13)	0,675 (11)
ec <sub>1,0</sub> L	(Rn)	168,163 - 171,600	1,280 (18)
ec <sub>1,0</sub> M	(Rn)	181,738 - 183,327	0,342 (5)
ec <sub>1,0</sub> N	(Rn)	185,120 - 185,989	0,0892 (14)

## 6 Photon Emissions

### 6.1 X-Ray Emissions

		Energy keV	Photons per 100 disint.	
XL	(Rn)	10,14 — 17,26	0,807 (14)	
XK $\alpha_2$	(Rn)	81,07	0,192 (4)	} K $\alpha$
XK $\alpha_1$	(Rn)	83,78	0,317 (6)	
XK $\beta_3$	(Rn)	94,247 }	0,1098 (25)	K' $\beta_1$
XK $\beta_1$	(Rn)	94,868 }		
XK $\beta_5''$	(Rn)	95,449 }		
XK $\beta_2$	(Rn)	97,48 }		
XK $\beta_4$	(Rn)	97,853 }		
XKO <sub>2,3</sub>	(Rn)	98,357 }	0,0351 (10)	K' $\beta_2$

### 6.2 Gamma Emissions

	Energy keV	Photons per 100 disint.
$\gamma_{1,0}$ (Rn)	186,211 (13)	3,555 (19)
$\gamma_{2,1}$ (Rn)	262,27 (5)	0,0055 (18)
$\gamma_{3,1}$ (Rn)	414,60 (5)	0,0003
$\gamma_{4,1}$ (Rn)	449,37 (10)	0,0002
$\gamma_{3,0}$ (Rn)	600,66 (5)	0,0005

## 7 Main Production Modes

U – 238 decay chain

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