



1 Decay Scheme

Rn-220 decays mainly by alpha emission directly to the ground state of Po-216.
Le radon 220 se désintègre par émission alpha principalement vers le niveau fondamental du polonium 216.

2 Nuclear Data

$T_{1/2}({}^{220}\text{Rn})$: 55,8 (3) s
 $T_{1/2}({}^{216}\text{Po})$: 0,148 (4) s
 $Q^\alpha({}^{220}\text{Rn})$: 6404,67 (10) keV

2.1 α Transitions

| | Energy keV | Probability × 100 | F |
|----------------|---------------|----------------------|-----|
| $\alpha_{0,1}$ | 5854,91 (11) | 0,118 (15) | 3,1 |
| $\alpha_{0,0}$ | 6404,67 (10) | 99,882 (15) | 1 |

2.2 Gamma Transitions and Internal Conversion Coefficients

| | Energy keV | $P_{\gamma+ce}$ × 100 | Multipolarity | α_K | α_L | α_M | α_T |
|---------------------------|---------------|--------------------------|---------------|------------|-------------|---------------|------------|
| $\gamma_{1,0}(\text{Po})$ | 549,76 (4) | 0,118 (15) | E2 | 0,0183 (3) | 0,00561 (8) | 0,001399 (20) | 0,0257 (4) |

3 Atomic Data

3.1 Po

ω_K : 0,965 (4)
 $\bar{\omega}_L$: 0,403 (16)
 n_{KL} : 0,807 (5)

3.1.1 X Radiations

| | | Energy keV | Relative probability | |
|----------------|--------------------|-----------------|-------------------------|-------|
| X _K | Kα ₂ | 76,864 | | 59,6 |
| | Kα ₁ | 79,293 | | 100 |
| | Kβ ₃ | 89,256 | } | 34,34 |
| | Kβ ₁ | 89,807 | } | |
| | Kβ ₅ '' | 90,363 | } | |
| | Kβ ₂ | 92,263 | } | 10,71 |
| | Kβ ₄ | 92,618 | } | |
| | KO _{2,3} | 92,983 | } | |
| | | | | |
| | X _L | Lℓ | 9,658 | |
| Lα | | 11,016 – 11,13 | | |
| Lη | | 12,085 | | |
| Lβ | | 12,823 – 13,778 | | |
| Lγ | | 15,742 – 16,213 | | |
| | | | | |

3.1.2 Auger Electrons

| | | Energy keV | Relative probability |
|---------|-----|-----------------|-------------------------|
| Auger K | | | |
| | KLL | 58,978 – 65,205 | 100 |
| | KLX | 71,902 – 79,289 | 55,6 |
| | KXY | 84,8 – 93,1 | 8 |
| Auger L | | 5,434 – 10,934 | 3110 |

4 α Emissions

| | Energy keV | Probability × 100 |
|----------------|---------------|----------------------|
| $\alpha_{0,1}$ | 5748,46 (11) | 0,118 (15) |
| $\alpha_{0,0}$ | 6288,22 (10) | 99,882 (15) |

5 Electron Emissions

| | | Energy keV | Electrons per 100 disint. |
|-----------------|------|-----------------|------------------------------|
| e _{AL} | (Po) | 5,434 - 10,934 | 0,00140 (11) |
| e _{AK} | (Po) | | 0,000074 (13) |
| | KLL | 58,978 - 65,205 | } |
| | KLX | 71,902 - 79,289 | } |
| | KXY | 84,8 - 93,1 | } |

6 Photon Emissions

6.1 X-Ray Emissions

| | | Energy keV | Photons per 100 disint. | |
|---------------------|------|----------------|----------------------------|--------------|
| XL | (Po) | 9,658 — 16,213 | 0,00094 (8) | |
| XK α_2 | (Po) | 76,864 | 0,00059 (8) | } K α |
| XK α_1 | (Po) | 79,293 | 0,00099 (13) | |
| XK β_3 | (Po) | 89,256 | } | |
| XK β_1 | (Po) | 89,807 | } | K' β_1 |
| XK β_5'' | (Po) | 90,363 | } | |
| XK β_2 | (Po) | 92,263 | } | |
| XK β_4 | (Po) | 92,618 | } | K' β_2 |
| XK $\text{O}_{2,3}$ | (Po) | 92,983 | } | |

6.2 Gamma Emissions

| | Energy keV | Photons per 100 disint. |
|---------------------------|---------------|----------------------------|
| $\gamma_{1,0}(\text{Po})$ | 549,76 (4) | 0,115 (15) |

7 Main Production Modes

Th – 228 decay chain

8 References

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