

^{216}Fr α decay (850 ns) 2007Ku30

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	K. Auranen and E. A. Mccutchan		NDS 168, 117 (2020)	1-Aug-2020

Parent: ^{216}Fr : $E=219.8$; $J^\pi=(9^-)$; $T_{1/2}=850$ ns 30; $Q(\alpha)=9174.3$; $\% \alpha$ decay ≈ 100.0

^{216}Fr -E, $T_{1/2}$: From 2007Ku30.

^{216}Fr - J^π : As proposed by 2007Ku30 based on allowed (HF=1.9) decay to $J^\pi=(9^-)$ isomer in ^{212}At .

^{216}Fr - $\% \alpha$ decay: α -decay branch $\approx 100\%$ assumed by the evaluators in order to estimate hindrance factor. α decay is the only decay mode observed.

2007Ku30: ^{216}Fr produced as daughter to ^{220}Ac produced in a $^{209}\text{Bi}(^{14}\text{N}, p2n)^{220}\text{Ac}$ fusion evaporation reaction using a 1.1 mg/cm² thick target. The 5.6 MeV/u beam was provided by the cyclotron of Heavy Ion Laboratory of Warsaw University at the intensity of 30 pA. Nuclei of interest were selected with the IGISOL system, and those were implanted into a 30 $\mu\text{g}/\text{cm}^2$ thick carbon foil. Silicon detector setup was used to measure $E\alpha$, $\alpha(t)$, and $\alpha\alpha$ correlations.

 ^{212}At Levels

E(level) [†]	J^π [†]	$T_{1/2}$ [†]
222.9 4	(9 ⁻)	0.121 s 2

[†] From the Adopted Levels.

 α radiations

$E\alpha$	E(level)	$I\alpha$ [‡]	HF [†]
9000 5	222.9	100	≈ 1.9

[†] Using $r_0(^{212}\text{At})=1.5522$ 36, average of $r_0(^{214}\text{Rn})=1.5655$ 13, $r_0(^{212}\text{Rn})=1.543$ 4, $r_0(^{212}\text{Po})=1.566$ 6, and $r_0(^{210}\text{Po})=1.534$ 3 (2020Si16).

[‡] For absolute intensity per 100 decays, multiply by ≈ 1.0 .