

Isotope Z El A	J π	Δ (MeV)	T $_{1/2}$ or Abundance	Decay Mode	Isotope Z El A	J π	Δ (MeV)	T $_{1/2}$ or Abundance	Decay Mode
92 U 234	0+	38.142	2.45 $\cdot 10^5$ y 2	SF	97 Bk 249	7/2+	69.844	320 d 6	β^- , α 0.015%, SF
235	7/2-	40.916	703.8 $\cdot 10^6$ y 5	α , SF	250	2-	72.948	3.22 h 1	β^-
235m	1/2+	40.917	≈ 25 s	IT	251 (3/2-)	75.230s	56 m 2	β^- , α 0.0001%	
236	0+	42.442	2.3415 $\cdot 10^7$ y 14	α , SF	252	0+	78.530s	39 s + 37-1	α
237	1/2+	45.387	6.75 d 1	β^-	239	0+	58.240s	1.06 m 15	α
238	0+	47.306	4.468 $\cdot 10^9$ y 3	α , SF	240	0+	58.020s	3.8 m 7	α , β^-
239	5/2+	50.571	23.50 m 5	β^-	241	0+	59.170s	3.49 m 12	α , β^-
240	0+	52.711	14.1 h 1	β^-	242 (1/2+)	60.910s	10.7 m 5	α , β^-	
242	0+		16.8 m 5	β^-	243	0+	61.459	19.4 m 6	α , β^-
93 Np 227?			60 s 5	SP	245	0+	63.377	43.6 m 8	α 70%, α 30%
229		33.740	4.0 m 2	α 50%, α 50%	246	0+	64.087	35.7 h 5	α , SF 0.0002%, α 0.0001%
230		35.220	4.8 m 3	α 97%, α 3%	247 (7/2+)	66.150s	3.11 h 3	α 99.96%, α 0.03%	
231 (5/2)		35.620	48.8 m 2	α 98%, α 2%	248	0+	67.239	313.5 d 28	α , SF
232 (4+)		37.280s	14.7 m 3	α , α 0.003%	249	9/2-	69.718	350.6 y 21	α , SF
233 (5/2+)		38.000s	36.2 m 1	α , α 0.001%	250	0+	71.167	13.08 y 9	α 99.92%, SF 0.08%
234 (0+)		39.950	4.4 d 1	α , α 0.0014%	251	1/2+	74.128	898 y 44	α 96.91%, SF 3.09%
235 5/2+		41.039	396.2 d 12	α 91%, β^- 8.9%, α	252	0+	75.030	2.638 y 10	α 99.59%, α 0.31%
236 (6-)		43.370	115 $\cdot 10^3$ y 12	α 52%, β^- 48%	253 (7/2+)	79.296	17.81 d 8	α 99.69%, α 0.31%	
236m	1(-)	43.420	23.5 h 4	β^-	254	0+	81.337	60.5 d 2	α 0.31%, β^-
237 5/2+		44.868	2.14 $\cdot 10^6$ y 1	α	255			1.4 h 3	β^-
238 2+		47.452	2.117 d 2	β^-	256	0+		12.3 m 12	SF
239 5/2+		49.307	2.355 d 4	β^-	99 Es 241		63.820s		
240 (5+)		52.210	61.9 m 2	β^-	242		64.690s		
240m	1(-)	52.210	7.22 m 2	β^- 99.88%, IT 0.12%	243		64.720s	21 s 2	α 70%, α 30%
241 (5/2+)		54.260	13.9 m 2	β^-	244		65.960s	37 s 4	α 96%, α 4%
242 1(+)		57.410	2.2 m 2	β^-	245		66.390s	1.33 m 15	α 60%, α 40%
242 (6+)		57.410	5.5 m 1	β^-	246		67.930s	7.7 m 5	α 90.1%, α 9.9%
94 Pu 231		38.390s			247		68.550	4.7 m 3	α 93%, α 7%
232	0+	38.349	34.1 m 7	α 80%, α 20%	248 (2-, 0+)	70.270	27 m 3	α 99.43%, α 0.57%	
233		40.020	20.9 m 4	α 99.88%, α 0.12%	249 (6+)	71.110	1.70 h 1	α 99.7%, α 0.3%	
234	0+	40.333	8.8 h 1	α 94%, α 6%	250m	1(-)	73.270s	2.22 h 5	α 99.5%, α 0.5%
235 (5/2+)		42.160	25.3 m 10	α 100%, α 0.0027%	251 (3/2-)	74.507	33 h 1	α 76%, α 24%	
236 0+		42.879	2.851 y 8	α , SF	252 (5-, 4+)	77.263	471.7 d 19	β^- 0.01%, α , SF	
237 7/2-		45.086	45.3 d 2	α , α 0.005%	253	7/2+	79.008	20.47 d 3	α
237m	1/2+	45.231	0.18 s 2	IT	254 (7+)	81.990	275.5 d 5	α	
238 0+		46.160	87.7 y 4	α , SF	254m	2+	82.068	39.3 h 2	α 99.59%, α 0.33%, α 0.08%
239 1/2+		48.585	24119 y 26	α , SF	255 (7/2+)	84.090s	39.8 d 12	β^- 92%, α 8%, SF	
240 0+		50.122	6570 y 6	α , SF	256 (1+)	87.160s	25 m	β^-	
241 5/2+		52.952	14.35 y 10	β^- , α 0.0025%	256m	(8-)	87.160s	≈ 7 h	β^-
242 0+		54.714	3.763 $\cdot 10^5$ y 12	α , SF	100 Pm 242	0+		0.8 ms 2	SF, α ?
243 7/2+		57.751	4.956 h 3	β^-	243	0+	69.360s	0.18 s + 8-4	α
244 0+		59.801	8.08 $\cdot 10^7$ y 10	α 99.88%, SF 0.12%	244	0+	69.040s	3.7 ms 4	SF $\approx$ 99%, α 1%
245 (9/2-)		63.174	10.5 h 1	β^-	100 Fm 245		70.100s	4.2 s 13	α
95 Am 242	0+	65.365	10.85 d 2	β^-	246	0+	70.130	1.1 s 2	α 92%, SF 8%
243			55 s 7	α 98%, α 2%, α SP	247		71.540s	35 s 4	α 50%, α 50%
244		43.170s		α , α ?	247		71.540s	9.2 s 23	α
244m		44.340s	2.8 m 2	α , α ?	248	0+	71.885	36 s 3	α 99%, α 1%, SF $\approx$ 0.05%
244m		44.640s	?	α , α ?	249 (7/2+)	73.500s	2.6 m 7	α 85%, α 15%	
95 As 236		46.000s			250	0+	74.063	30 m 3	α 90%, SF $\approx$ 0.006%, α 10%
237 (5/2-)		46.630s	73.0 m 10	α 99.97%, α 0.03%	250m	0+	74.063	1.8 s 3	α
238 1+		48.420	98 a 2	α , α 0.0001%	251 (9/2-)	76.000s	5.30 h 8	α 98.2%, α 1.8%	
239 (5/2-)		49.385	11.9 h 1	α 99.99%, α 0.01%	252	0+	76.817	25.39 h 5	α , SF
240 (3-)		51.491	50.9 h 2	α , α	253 1/2+	79.339	3.00 d 12	α 88%, α 12%	
241 5/2-		52.931	432.2 y 5	α , SF	254	0+	80.897	3.240 h 2	α 99.94%, SF 0.06%
242 1-		55.463	16.02 h 2	β^- 82.7%, α 17.3%	255	7/2+	83.787	20.07 h 7	α , SF
242m	5-	55.512	141 y 2	IT 99.5%, α 0.5%	256	0+	85.482	2.63 h 2	SF 91.9%, α 8.1%
243 5/2-		57.171	7380 y 40	α , SF	257 (9/2+)	88.585	100.5 d 2	SF 0.21%, SF	
244 (6-)		59.876	10.1 h 1	β^-	258	0+		380 ms 60	SP
244m	1(-)	59.945	≈ 26 m	β^- , α	259			1.5 s 3	SP
245 (5/2-)		61.893	2.05 h 1	β^-	101 Md 247		76.040s	3 s	α
246 7-		64.991	39 m 3	β^-	248		77.080s	7 s 3	α 80%, α 20%
246m	2(-)	64.991	25.0 m 2	β^-	249		77.260s	24 s 4	α 70%, α 30%
247 (5/2)		67.230s	22 m 3	β^-	250		78.600s	52 s 6	α 94%, α 6%
96 Gd 235		48.020s			251		79.020s	4.0 m 5	α 94%, α 6%
236	0+	47.870s			252		80.540s	2.3 m 8	α 50%, α 50%
237		49.150s			253		81.240s	10 m 3	α
238 0+		49.390	2.4 h 1	α 90%, α 10%	254		83.490s	28 m 8	α
239 (7/2-)		51.090s	≈ 2.9 h	α 99.5%, α 0.5%	255 (7/2-)	84.842	27 m 2	α 92%, α 8%	
240 0+		51.701	27 d	SF	256		87.522	76 m 4	α 90.7%, α 9.3%
241 1/2+		53.696	32.8 d 2	α 99%, α 1%	257 (7/2-)	89.030s	5.2 h 5	α 90%, α 10%	
242 0+		54.801	16.8 d 2	α , SF	258 (8-)	91.820s	55 d 4	α	
243 5/2+		57.177	28.5 y 2	α 99.76%, α 0.24%	258m	(1-)	91.820s	43 m 4	α
244 0+		58.449	16.10 y 2	α , SF	259 (7/2-)		103 m	α 95%, α 5%, α ?	
245 7/2+		60.998	8500 y 100	α	102 No 250	0+		0.25 ms 5	SF, α 0.1%
246 0+		62.613	4730 y 100	α 99.97%, SF 0.03%	251		82.780s	0.8 s 3	α , α 1%
247 9/2-		65.528	1.56 $\cdot 10^7$ y 5	α	252	0+	82.856	2.30 s 22	α 73.1%, SF 28.8%
248 0+		67.388	3.40 $\cdot 10^7$ y 3	α 91.74%, SF 8.26%	253 (9/2-)	84.330s	1.7 m 3	α 90%, α 20%, SF $\approx$ 0.001%	
249 1/2(+)		70.746	64.15 m 3	SF $\approx$ 65%, α 28%	254	0+	84.723	55 s 5	SF $\approx$ 99%, α 1%, SF $\approx$ 0.06%
250 0+		72.985	≈ 7400 y	β^- $\approx$ 7%, β^-	254m		85.223	0.28 s 4	IT
251 (1/2+)		76.650s	18.8 m 2	β^-	255 (1/2+)	86.870s	3.1 m 2	α 61.4%, α 38.6%	
252	0+		< 2 d	β^-	256	0+	87.796	3.3 s 2	α 99.7%, SF $\approx$ 0.25%
97 Bk 237		53.190s			257 (7/2+)	90.220	25 s 2	α	
238		54.170s			258	0+	91.420s	1.2 ms	SF
239		54.270s			259 (9/2+)	94.018	60 m 5	α 76%, α 22%, SF $< 2\%$	
240		55.600s	5 m 2	α , α SP	260	0+		?	SF
241		56.100s							
242		57.700s	7.0 m 13	α , α 1%, SF $< 0.03\%$					
243 (3/2-)		58.682	4.5 h 2	α 99.85%, α 0.15%					
244 (4-)		60.690	4.35 h 15	α , α 0.006%					
245 3/2-		61.812	4.94 d 3	α 99.88%, α 0.12%					
246 2(-)		64.010s	1.80 d 2	α , α $< 0.2\%$					
247 (3/2-)		65.485	1380 y 250	α					
248 (8+, 8-)		68.099	> 9 y	α $> 70\%$, β^- $< 30\%$, α ?					
248m	1(-)	68.099	23.7 h 2	β^- 70%, α 30%					

简讯

医用肠线辐射改性新工艺在杭通过鉴定

由杭州畜产品厂和浙江省农科院原子能利用研究所联合的试验课题——“医用肠线辐射改性新工艺”通过了技术鉴定，于1985年10月浙江省卫生厅正式批准，投入临床应用。

我国的医用手术羊肠线历来采用油浴灭菌，此法劳动强度大、能耗费、周期长。1984年底，由浙江省农科院原子能所提出，与杭州畜产品厂协作，采用辐射灭菌并改进羊肠线性能的新技术，通过半年多的试验，获得了成功。经浙江省和杭州市药检所和其他医疗部验收，质量完全符合标准，拉力强度优于传统方法，并且质地柔软。新工艺简单、处理速度快、成本低，大大减轻了工人的劳动强度，改善了劳动条件。改性后的肠线更富有竞争能力，使杭州畜产品厂获得了大的经济效益，也为核技术成果的推广应用在国内开辟了新的门路。

医用肠线辐射改性新工艺，不但要控制吸收剂量，而且要解决在辐射过程中出现的新的技术问题，这一经验无疑对采用辐射加工法改良产品的质量，有着一定的参考价值。

(浙江省农科院原子能所 章秋岳)

(完)

Isotope Z El A	J π	Δ (MeV)	T _{1/2} or Abundance	Decay Mode
103 Lr 252			≈ 1 s	$\alpha \approx 90\%$, $\epsilon \approx 10\%$, SF < 1%
253		88.640s	1.4 s	α , SF < 2%, $\epsilon \approx 1\%$
254		89.730s	≈ 20 s	α , ϵ , SF < 0.1%
255		90.050s	22 s 5	$\alpha > 70\%$, $\epsilon < 30\%$, SF < 1%
256		91.740s	28 s 3	$\alpha > 80\%$, $\epsilon < 20\%$, SF < 0.03%
257		92.670s	0.646 s 25	$\alpha > 85\%$, $\epsilon < 15\%$
258		94.750s	4.3 s 5	$\alpha > 95\%$, $\epsilon < 5\%$
259		95.850s	5.4 s 8	$\alpha > 90\%$, SF < 10%, $\epsilon < 0.5\%$
260		98.100	180 s 30	α , ϵ ?
104 Rf 253?			≈ 1.8 s	SF $\approx 50\%$, $\alpha \approx 50\%$
254?	0+		0.5 ms 2	SF, $\alpha \approx 0.3\%$
255?		94.310s	≈ 2 s	$\alpha \approx 50\%$, SF $\approx 50\%$
256?	0+	94.280s	≈ 5 ms	SF
257		95.890s	4.8 s 3	$\alpha \approx 82\%$, $\epsilon \approx 18\%$
258	0+	96.350s	11 ms 2	SF $\approx 90\%$, $\alpha \approx 10\%$
259		98.300s	3.1 s 7	$\alpha \approx 93\%$, SF $\approx 6\%$, $\epsilon \approx 0.3\%$
260?	0+	99.020s	20 ms	SF, $\alpha < 10\%$
261		101.240s	65 s 10	$\alpha > 80\%$, SF < 10%, $\epsilon < 10\%$
262?	0+		63 ms	SF
105 Ha 255?			1.5 s	SF
257		100.390s	1 s	$\alpha \approx 80\%$, SF $\approx 20\%$, ϵ ?
258		101.550s	4 s	α , ϵ
259?		102.070s	1.2 s	SF
260		103.440s	1.52 s 13	$\alpha > 90\%$, SF $\approx 9.6\%$, $\epsilon < 2.5\%$
261		104.180s	1.8 s 4	$\alpha > 50\%$, SF < 50%
262		105.970s	34 s 4	SF 71%, α 27%, $\epsilon < 5\%$
106 259?	0+		7 ms 3	SF $\approx 70\%$, $\alpha \approx 30\%$
260		106.910s		
261		108.220s		
262	0+	108.470s		
263		110.120s	0.8 s 2	SF $\approx 70\%$, $\alpha \approx 30\%$
107 261?			1.5 ms 5	$\alpha \approx 80\%$, SF $\approx 20\%$
262		114.510s	115 ms	α
263		114.510s	4.7 ms	α
264		114.800s		
264		115.960s		
108 264	0+		120.130s	
265		121.240s		
109 266?		128.210s	5 ms	α

下期要目

⁵⁷ Fe 注入铜的穆斯堡尔效应研究 (I)——注入离子铁的热动力学过程	张桂林等
关于我国古代铜镜的面范形制的初步信息	李道伦等
秦山核电厂反应堆燃料组件的流量平衡试验研究	姚同生等
能量色散 X 射线分析中对中厚靶的吸收校正	张元勋等
手表零件镀层测厚仪	乐安全等
用调整磁极间的距离方法提高磁场的均匀度	史维东
核素心血管造影电子计算机多门电路接口	黄抗初等
利用微土芯装置研究久效磷在水-水稻-土壤系统中的运转与分配	王寿祥等
中医虚证与长寿老人发中微量元素相关关系探索	秦俊法等