

GLOBAL ATOMIC ENERGY LABRATORY

Gewerbering , Koenigstein , Germany.

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ARTICLE ANALYSIS PRELIMINARY RESULT

Material Conclusion

Date - 15/04/2024

This specific material consist more accelerated form of iridium , with copper compound offering a high intensity radiation with maximum spread of 2.33 yards . Based on the combinatorial login ray assessment the same emission throws a maximum spread of 1.75 yards , this data observed above enough to conclude this as a source of gamma iridium.

Declaration

Sumptuous iridium core,transcendent substance with integrity more than 96% percentage



This Gamma emission rated with 96% integrity with iridium core

Location



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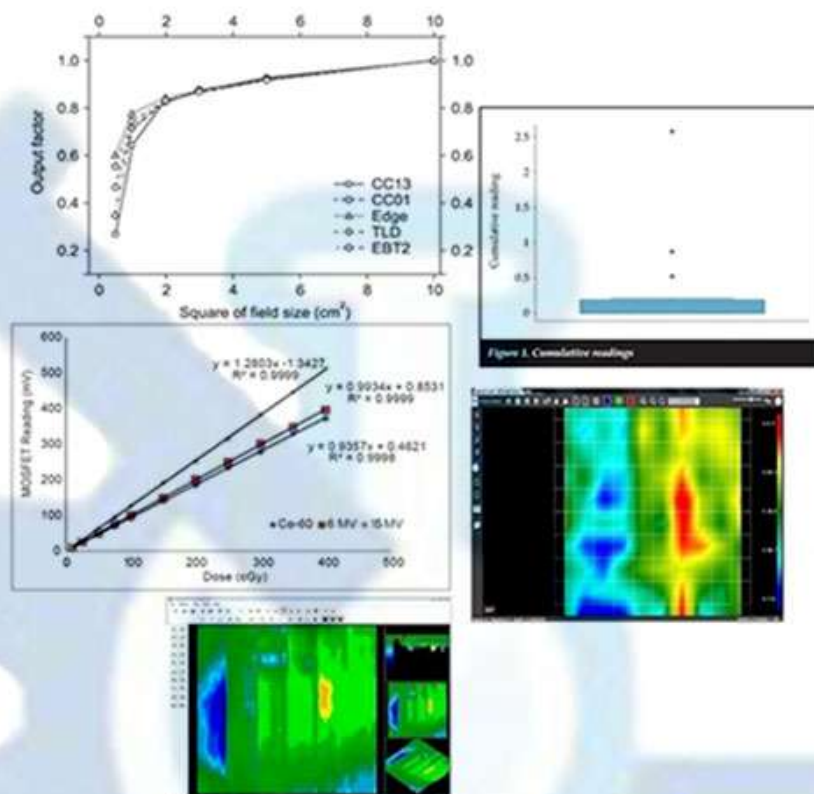
Date- 15/04/2024

Material Description

Contents	Results
Age of the material	207 years
Material	pot
Elements	Isotope 192
Type of Package	Normal with teflon scientifically and HDP packed
Temperature	Increasing Heat
MR	54 " (Approx)
RR	18 " (Approx)
Height Circumfrence	1.50 Feet
Weight	6 kg (Approx)



Material Spectrum Output



296 KeV (29%) , 308 KeV (30%) , Others (<5% each)

Gamma Constant : 5.6 mrem/hr at 19 cm from 1 uci [1.5E-3 mSv/h
Physical half life 1 [$T_{1/2}$] 3874.2 days.

Specific Activity : 9.22E3 Ci/g { 3.41 E14 Bq/g }

(**Eu-154 b-723.3 , 1274 0.202 , 0.350 gammas per decay IAE**)

* Beta particle source with 230 KeV maximum energy , short 2.6 years of life.

RADIOLOGICAL DATA



Date - 15/04/2024

Subject Observation

Subject is having a broad neck tapering followed by neck formation. Followed by repetition design and scroll scratched at a length of 2cm. The subject is composed of three major assemblies containment , emitter head and transport container and protection ring . The emitter head contains a depleted iridium radiation shield . The source is located inside a source holder within the depleted iridium shield

The radioactive content consists of a G1(B/014/S-96) , G6(B/012/S-96) or IR004(ZA/004/S-96) special form source with a maximum activity of 2.2TBq IR - 192 . While removing the embedded structure no visible periodic marling seen carbon test need to determine the age.

Subject Exploration

Dull dirty brown look consistent with age . Oxidation found , due to long time burried submerged or exposed to wet conditions. The material packaging is done scientifically with isolation of iridium.



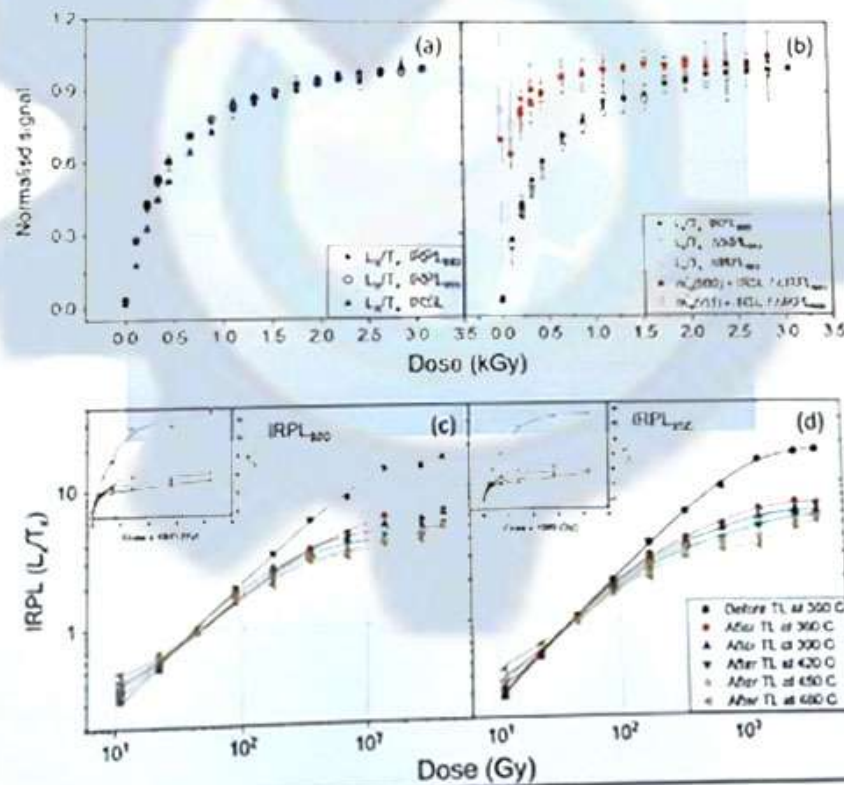


Date - 15/04/2024

Radio Toxicity

Ingested : 5.74 mrem/uCi [1.55E-9
mSv/Bq] CDCE₃ Inhald : 28 mrem/uCi
[7.6 E-9 mSv/Bq] CEDE_{31.94} mrem/uCi
[5.24 E-8 mSv/Bq] Lung₃

Dosimetry Sensitivity



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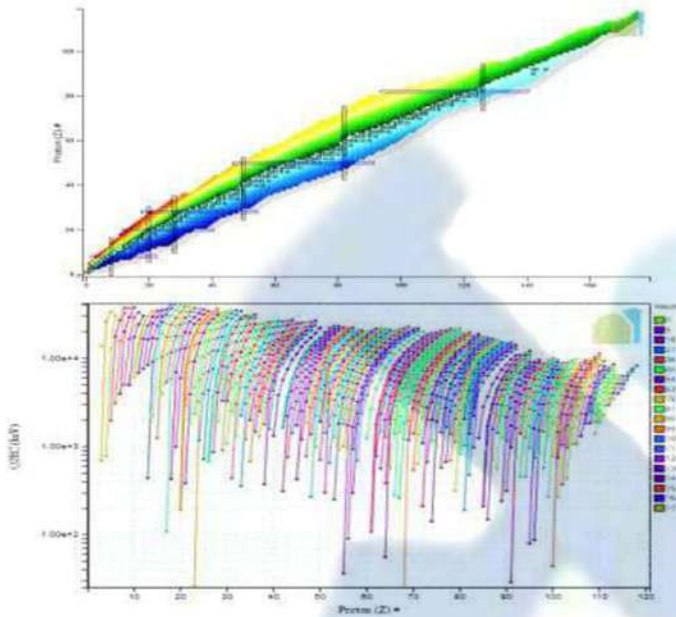
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SPECTROMETER READINGS

date : 15/04/2024



E(level) (keV)	XREF J ^π (level)	T _{1/2} (level)	E(γ) (keV)	I(γ)	M(γ)	Final Levels
0.0	AB	1-	2.28 m 2 % IT = 100			
76.80 20	B	4-	2.01 m 7 % IT = 36 10 % β ⁻ = 64 10	76.8 2	100	M3 0.0 1-
98.166 3	A	1-,2-,3-		98.166 3	100	E2 0.0 1-
98.967 20	A	0-,1-,2-		98.99 3	100	M1 0.0 1-
105.161 28	A	(0,1,2)-		105.20 3	100	M1,E2 0.0 1-
121.169 3	A	0-,1-,2-		121.169 3	100	M1,E2 0.0 1-
195.993 23	A	1		74.5 2 90.89 3	2.1 32	121.169 0-,1-,2- 105.161 (0,1,2)- 98.166 1-,2-,3- 0.0 1-
273.744 20	A	0+,1+,2+		148.52 4 273.77 5	4.1 100	105.161 (0,1,2)- 0.0 1-
289.656 28	A	+		188.5 3 287.17 20	63 100	98.967 0-,1-,2- 0.0 1-
352.70 8	A	-		184.53 4 181.4 2 289.64 6	28 28	105.161 (0,1,2)- 98.166 1-,2-,3- 0.0 1-
390.684 28	A	1+		352.7 2 231.6 2 247.58 8 352.4 2	100 19 53 100	0.0 1- 121.169 0-,1-,2- 105.161 (0,1,2)- 0.0 1-
467.77 8	A			101.029 4 103.2 1 116.92 3 124.89 5 269.52 5 295.5 1 291.724 17 390.78 16	21 1.5 22 24 100 4.7 98 7.9	289.656 + 287.20 1 273.744 0+,1+,2+ 195.993 1 121.169 0-,1-,2- 105.161 (0,1,2)- 98.967 0-,1-,2- 0.0 1-
520.83 4	A	1+		183.8 2 271.5 2 346.3 2 349.09 12	21 41 28 100	273.744 0+,1+,2+ 195.993 1 121.169 0-,1-,2- 98.967 0-,1-,2-
626.36 20	A			147.8 2 187.9 2 233.71 5 324.65 5 399.43 19 401.778 62	15 20 13 100 10 48	352.70 - 287.20 1 195.993 1 121.169 0-,1-,2- 98.967 0-,1-,2-
765.48 12	A	1+		521.2 2 375.0 2 478.17 22	100 51 100	105.161 (0,1,2)- 390.684 1+ 287.20 1

E(level) (keV)	J ^π (level)	T _{1/2} (level)	E(γ) (keV)	Multipolarity	Conversion Coefficient	Additional Data
76.80	4-	2.01 m 7 % IT = 36 10 % β ⁻ = 64 10	76.8 2	M3	354	B(M3)(W.u.)=0.045 13, α=354 7, α(K)=168 3, α(L)=142 3, α(M)=34.9 7, α(N)=7.81 16, α(O)=1.147 24, α(P)=0.0446 9, α(N+)=9.00 19
98.166	1-,2-,3-		98.166 3	E2	2.26	α=2.26, α(K)=1.279 18, α(L)=0.770 11, α(M)=0.1735 25, α(N)=0.0375 6, α(O)=0.00523 8, α(P)=6.65×10 ⁻⁵ 10, α(N+)=0.0428 6
98.967	0-,1-,2-		98.99 3	M1	1.333	α=1.333, α(K)=1.135 16, α(L)=0.1566 22, α(M)=0.0330 5, α(N)=0.00738 11, α(O)=0.001188 17, α(P)=8.72×10 ⁻⁵ 13, α(N+)=0.00866 13
105.161	(0,1,2)-		105.20 3	M1,E2	1.4	α=1.4 4, α(K)=1.00 5, α(L)=0.35 22, α(M)=0.08 5, α(N)=0.017 11, α(O)=0.0024 15, α(P)=6.4×10 ⁻⁵ 10, α(N+)=0.019 12
121.169	0-,1-,2-		121.169 3	M1,E2	0.91	α=0.91 16, α(K)=0.661 25, α(L)=0.20 11, α(M)=0.043 25, α(N)=0.009 6, α(O)=0.0014 7, α(P)=4.3×10 ⁻⁵ 6, α(N+)=0.011 6
195.993	1		90.89 3	M1,E2	2.3	α=2.3 7, α(K)=1.52 8, α(L)=0.6 5, α(M)=0.14 11, α(N)=0.031 22, α(O)=0.004 3, α(P)=9.7×10 ⁻⁵ 15, α(N+)=0.036 25
273.744	0+,1+,2+		273.77 5	E1	0.01645	α=0.01645, α(K)=0.01409 20, α(L)=0.00187 3, α(M)=0.000390 6, α(N)=8.67×10 ⁻⁵ 13, α(O)=1.374E-5 20, α(P)=9.38E-7 14, α(N+)=0.0001014 15
289.656	+		184.53 4	E1	0.0469	α=0.0469, α(K)=0.0401 6, α(L)=0.00541 8, α(M)=0.001132 16, α(N)=0.000251 4, α(O)=3.94×10 ⁻⁵ 6, α(P)=2.57E-6 4, α(N+)=0.000293 5
352.70	-		231.6 2	M1,E2	0.121	α=0.121 5, α(K)=0.098 9, α(L)=0.018 4, α(M)=0.0038 8, α(N)=0.00084 17, α(O)=0.000129 20, α(P)=6.9×10 ⁻⁶ 13, α(N+)=0.00098 19
390.684	1+		101.029 4	M1,E2	1.7	α=1.7 4, α(K)=1.12 6, α(L)=0.4 3, α(M)=0.09 6, α(N)=0.020 13, α(O)=0.0029 18, α(P)=7.2×10 ⁻⁵ 11, α(N+)=0.023 15
	1+		116.92 3	M1,E2	1.02	α=1.02 20, α(K)=0.73 3, α(L)=0.23 13, α(M)=0.05 3, α(N)=0.011 7, α(O)=0.0016 9, α(P)=4.8×10 ⁻⁵ 7, α(N+)=0.013 8
	1+		269.52 5	E1	0.01713	α=0.01713, α(K)=0.01468 21, α(L)=0.00194 3, α(M)=0.000407 6, α(N)=9.04×10 ⁻⁵ 13, α(O)=1.431E-5 20, α(P)=9.75E-7 14, α(N+)=0.0001057 15
	1+		291.724 17	E1	0.01396	α=0.01396, α(K)=0.01197 17, α(L)=0.001579 23, α(M)=0.000331 5, α(N)=7.35×10 ⁻⁵ 11, α(O)=1.165E-5 17, α(P)=8.00E-7 12, α(N+)=8.59E-5 12

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Date : 15/04/2024

Lab Report

Seller Name	Mr.Ashok	Date	15/04/2024			
Co Seller Name	Mr.Kasi viswanathan / Mr.Manickam	Reference No	TN/ARC/IN21S2			
Material Examined By	Mr.roy , Mr.Mathew	Inspected On	15/04/2024			
Evaluating Laboratory	GLOBAL ATOMIC ENERGY LABRATORY	Test Type	Non-Destructive			
Location Details	Chennai , TamilNadu.	Name of Test	Scanner Test			
Weather Condition		% of Penetration	98.00%			
Temp	Pressure	Humidity	UV Index	Precipitation	Declaration	Volatile Radio Active Isotope
29 C	1012 hPa	74%	8	0 mm	Test Standard	ASTM - C1128, C1156
Recommended Anti Radation Jacket		S16 Anti Radiation Jacket or Equivalent one				
Recommended Packing Type & Kit		Inner pack must be Type C/Group 3 packing along with UN2916 AntiRadiation Sheild, Outer kit should be XML Safe with Impact, Thermo & Electrical Ressistance or Equivalent				
Remarks		Beta Decay is happening				

For GLOBAL ATOMIC ENERGY LABRATORY

ANDREW M BECUMBER
GRADER