



>>Entry Name: Lutetium

CAS Registry Number: 7439-94-3

Related CAS Registry Numbers(s): 22541-24-8

Lu

Molecular Formula: Lu

Molecular Weight: 174.967

Accurate Mass: 174.94077

Percentage Composition: Lu 100.00%

22 isotopes of which two, ^{175}Lu (97.4%) and ^{176}Lu (2.6%) are natural. ^{176}Lu is a β emitter. Abundance: 0.8 ppm (earth's crust). Dimorphic: α -form hcp, and β -form bcc

Source/Synthesis: Obt. from monazite, euxemite and bastnaesite. Synth. from LuF_3 or LuCl_3 by reaction with Na, K or Ca

Use/Importance: Little used, currently most expensive lanthanide

Physical Description: Silvery-white metal, relatively air stable. Dissolves in dil. acid, slowly attacked by H_2O

Melting Point: Mp 1663° (1652°)

Boiling Point: Bp 3402° (3315°)

Hazard & Toxicity: Little known of toxicity

Aldrich: 26312-5

>>Variant: Lutetium 169

CAS Registry Number: 15715-05-6

Source/Synthesis: Prod. by proton bombardment of Yb, U, Th, or Ta, also from ^{169}Tm ($\alpha,4n$). Daughter of ^{169}Hf

Other Data: $I = +7/2$. Decays by orbital electron capture to ^{169}Yb

>>Variant: Lutetium 169m

Source/Synthesis: Prod. from Yb ($p,2n$)

Other Data: $I = -1/2$. Decays by isomeric transition to ^{169}Lu

>>Variant: Lutetium 170

CAS Registry Number: 15741-32-9

Source/Synthesis: Prod. from Tm ($\alpha,3n$), or by proton bombardment of Yb. Daughter of ^{170}Hf

Other Data: $I = +0$. Decays by orbital electron capture to ^{170}Yb

>>Variant: Lutetium 171

CAS Registry Number: 15752-27-9

Source/Synthesis: Prod. from Tm ($\alpha,2n$), or ^{171}Yb (p,n)

Other Data: $I = +7/2$; $\mu = 2.0 \mu_N$. Decays by orbital electron capture to ^{171}Yb

>>Variant: Lutetium 172

CAS Registry Number: 14093-12-0

Source/Synthesis: Prod. from Yb (p,n), or ^{169}Tm (α,n)

Other Data: $I = -4$; $\mu = 2.25 \mu_N$. Decays by orbital electron capture to ^{172}Yb

>>Variant: Lutetium 173

CAS Registry Number: 14391-24-3

Source/Synthesis: Prod. from Yb (p,n). Daughter of ^{173}Hf

Other Data: $I = +7/2$; $\mu = 2.3 \mu_N$. Decays by orbital electron capture to ^{173}Yb

>>Variant: Lutetium 174

CAS Registry Number: 14914-12-6