

Isotopes of Rutherfordium

Isotope	Atomic Mass	Half-life	Mode of Decay
Rf-255	255.1015	1.70 seconds	α to No-251; SF
Rf-256	256.1012	0.007 seconds	α to No-252; SF
Rf-257	257.1032	4.70 seconds	α to No-253; SF; EC to Lr-257
Rf-258	258.1035	0.012 seconds	α to No-254; SF
Rf-259	259.1056	3.40 seconds	α to No-255; SF; EC to Lr-259
Rf-260	260.1065	0.020 seconds	α to No-256; SF
Rf-261	261.10869	1.10 minutes	α to No-257; SF; EC to Lr-261
Rf-262	262.1101	1.20 seconds	SF
Rf-263	263.1125	15.00 minutes	α to No-259; SF



Rutherfordium is a synthetic element that is not present in the environment. It was reportedly first detected in 1964 at the Joint Institute of Nuclear Research, Dubna, former Soviet Union. It was synthesized in 1969 at the University of California - Berkeley, USA. It was initially proposed that the element be named after Igor Kurchatov (1903–1960), a Soviet nuclear physicist who is remembered as “the father of the Soviet atomic bomb.” After some controversy concerning competing claims of discovery, the element was eventually named after Ernest Rutherford (1871–1937), a British-New Zealand chemist and physicist who became known as “the father of nuclear physics.”

Researchers have concluded that rutherfordium's basic properties will resemble those of other group 4 elements below titanium, zirconium and hafnium. It is expected to be a solid under normal conditions and to assume a hexagonal close-packed crystal structure, similar to its lighter congener hafnium, and it should be a very heavy metal. Rutherfordium has no stable or naturally-occurring isotopes. Several radioactive isotopes have been synthesized in the laboratory, either by fusing two atoms or by observing the decay of heavier elements.

Properties of Rutherfordium

Name	Rutherfordium
Symbol	Rf
Atomic number	104
Atomic weight	[265]
Standard state	Presumably a solid at 298 °K
CAS Registry ID	53850-36-5
Group in periodic table	4
Group name	None
Period in periodic table	7
Block in periodic table	d-block
Color	Unknown, but probably metallic and silvery white or grey in appearance
Classification	Metallic
Melting point	No data available
Boiling point	No data available
Density of solid	17.00 g/cm ³ (predicted)
Electron configuration	[Rn]5f ¹⁴ 6d ² 7s ²