

Nihonium (Nh) - Student Datasheet

Element 113 · Superheavy synthetic element · source-reviewed learning reference

Nihonium is element 113, the first element discovered in Asia and named for Japan. Its atomic number and decay chains are measured; most bulk properties and much chemistry remain predicted or unknown because only a few atoms have been created.

Quick reference

Atomic number	113
Relative atomic mass	[286]
Electron configuration	[Rn] 5f ¹⁴ 6d ¹⁰ 7s ² 7p ¹
Period / group / block	7 / 13 / p
Ordinary state	Macroscopic bulk state not experimentally established
Density	Unknown
Melting point	Unknown
Boiling point	Unknown
Oxidation states	Unknown experimentally; +1/+3 discussed theoretically
Electronegativity	Unknown

Structure & orbitals

Only atom-at-a-time quantities have been produced. No bulk crystal lattice is rendered because a macroscopic structure has not been measured.

The 7s/7p probability clouds are atomic teaching models based on the reference configuration. They do not claim a measured bulk electron distribution or chemical bond.

Phase behavior

No measured macroscopic phase boundaries exist for nihonium. The temperature explorer therefore stays in an explicitly unknown/prediction-aware state rather than inventing solid, liquid or gas transition temperatures.

Five things to remember

- Atomic number 113 means 113 protons.
- Nihonium is synthetic and has only been produced atom-at-a-time.
- Its discovery was credited to the RIKEN team in Japan and the name was approved in 2016.
- Macroscopic density, melting point, boiling point and crystal structure are not experimentally established.
- Predicted +1/+3 chemistry must be labeled as theory, not measured bulk behavior.

Nihonium: Real World & Signature Science

Big idea

A search result asking “what does nihonium look like?” should not trigger an invented metal surface. ElementLookup separates measured identity/decay, theoretical chemistry and genuinely unknown macroscopic properties.

Why this element is scientifically distinctive

Inspect the ^{286}Nh teaching nucleus and 7s/7p probability models, then use the Evidence Lens to distinguish measured decay evidence from predicted Group 13 chemistry and unknown bulk state, density, melting point and crystal structure.

Discovery at RIKEN	RIKEN researchers produced element 113 and established a decay-chain case that IUPAC credited in 2015.
Naming Japan	“Nihonium” derives from Nihon, one Japanese name for Japan; IUPAC approved the name in 2016.
Atom-at-a-time science	Production yields extremely few atoms, so experiments focus on nuclear decay and selected atomic/chemical behavior.
Relativistic predictions	Theory explores how very heavy nuclei alter electron energies and Group 13 chemical trends.
Unknown bulk world	No legitimate everyday “uses,” appearance, density, melting point or crystal lattice can be asserted from macroscopic samples.

How nihonium knowledge is built: atom-at-a-time evidence

1. Superheavy-element experiments create extremely small numbers of atoms in accelerator-based research.
2. Researchers identify nuclei through measured decay chains and cross-checks; this page does not give operational synthesis settings.
3. Atomic/chemical experiments are constrained by very short lifetimes and tiny atom counts.
4. Theory then predicts properties that cannot yet be measured, and those predictions remain visibly separate from established evidence.

History checkpoints

2004	RIKEN reported the first candidate atom of element 113 from experiments in Wako, Japan.
2005 & 2012	Further decay events strengthened the identification.
2015	IUPAC credited the RIKEN collaboration with discovery of element 113.
2016	IUPAC approved the name nihonium (Nh), honoring Japan.

Nihonium: Isotopes, Questions & Evidence

Isotope context

^{286}Nh	Radioactive superheavy isotope	Reference teaching nucleus with 113 protons and 173 neutrons; isotope data derive from decay experiments.
^{284}Nh	Radioactive isotope	Observed in superheavy decay chains; short-lived.
Nihonium isotope context	No stable isotopes	All known nihonium isotopes are radioactive and produced in research.

Common questions

What is nihonium's atomic number?

113.

Is nihonium a metal?

It is placed in Group 13 and is often predicted to be metallic, but macroscopic metallic properties have not been measured.

What does nihonium look like?

No experimentally established macroscopic appearance exists because only atom-scale quantities have been produced.

What is nihonium used for?

Fundamental research only. There is no practical bulk use.

Quick self-check

Q: What is nihonium's atomic number? | Answer: 113. Atomic number equals proton count.

Q: Where was nihonium discovered? | Answer: RIKEN in Japan. RIKEN's Wako team received discovery credit.

Q: What is nihonium's measured melting point? | Answer: Unknown. No macroscopic melting point has been measured.

Evidence & safety

Element identity and decay evidence are measured; the reference configuration is evaluated/theoretical; bulk density, melting point, boiling point, appearance and crystal structure are unknown. Predictions are never promoted to measurements.

Nihonium exists only in specialized accelerator research in atom-scale quantities. This page gives no synthesis parameters or operational guidance.

Core sources

Royal Society of Chemistry - Nihonium

<https://periodic-table.rsc.org/element/113/nihonium>

IUPAC - Naming of element 113

<https://iupac.org/what-we-do/periodic-table-of-elements/>

RIKEN - Element 113 discovery history

https://www.riken.jp/en/news_pubs/research_news/rr/2016/20160401_1/