

Nobelium revealed as the heaviest element with identified compounds

Original article by Kit Chapman. Adapted by Nina Notman.

Researchers use a particle accelerator to bring information on enigmatic element 102 to the table

Nobelium is now the heaviest element to have been directly detected in a larger molecule. These nobelium complexes were created as part of a series of investigations charting the chemistry on the edge of the actinide series.

Nobelium is element 102 and it is too unstable to exist naturally on Earth. Scientists first made nobelium in particle accelerators in the 1950s, with Swedish, US and Russian teams all claiming to be the first to create it. Due to the challenges with making it, nobelium has remained one of the most mysterious elements on the periodic table, with no known uses and very few of its chemical properties confirmed experimentally.

A complex situation

Scientists at Lawrence Berkeley National Laboratory in California, US, first created nobelium ions by firing a calcium beam into a lead target using a cyclotron particle accelerator, resulting in nuclear fusion. The team found that the nobelium ions then rapidly reacted with trace amounts of nitrogen and water present in the accelerator to produce a variety of nobelium complexes. These findings mean that nobelium is now the heaviest element with definitively identified compounds.

The scientists now plan to investigate the next elements in the actinide sequence, including lawrencium (element 103), rutherfordium (element 104) and dubnium (element 105).

Thomas Albrecht, an actinide chemist at the Colorado School of Mines, US, who was not involved in this work describes these findings as an 'important milestone in expanding our understanding of how chemistry evolves in the outer reaches of the periodic table'.

This is adapted from the article **Nobelium becomes heaviest element with identified compounds** in *Chemistry World*. Read the full article: bit.ly/4roq3lk

66 Dy Dysprosium	67 Ho Holmium	68 Er Erbium	69 Tm Thulium	70 Yb Ytterbium	71 Lu Lutetium
99 Es Einsteinium	100 Fm Fermium	101 Md Mendelevium	102 No Nobelium	103 Lr Lawrencium	

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Nobelium, element 102, is part of the actinides, a group of metallic, radioactive elements that sit at the bottom of the periodic table