

The Discoverers of the Isotopes of the Platinum Group of Elements: Update 2020

New isotopes found for Pt

John W. Arblaster

Droitwich, Worcestershire, UK

Email: jwarblaster@yahoo.co.uk

Since the 2018 review (1) one new light isotope of mass 165 (2) and four new heavy isotopes of masses 209 to 212 (3) have been identified for platinum (**Table I**). The heavy isotopes are only identified as being ‘particle stable’ – that is resistant to proton or neutron decay but all are expected to decay by beta decay in which an electron and anti-electron neutrino are emitted when a neutron in the nucleus decays to a proton, so that the mass number of the daughter isotope remains the same but the atomic number is increased by one. The light isotope decays by alpha decay in which the emittance of a helium four ion means that the daughter isotope mass is four lower than the original parent isotope whilst the atomic number is reduced by two. The half-life is 0.4 ± 0.2 ms normalised from the reported value of 0.26 (-0.09 $+0.26$) ms.

Table II Total Number of Isotopes and Mass Ranges for Each Platinum Group Element to 2020

Element	Number of known isotopes	Mass number range
Ru	41	85–125
Rh	40	89–128
Pd	42	90–131
Os	43	161–203
Ir	42	164–205
Pt	48	165–212

References

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Table I New Isotopes of Platinum Reported from 2018 to 2020

Element	Mass number	Year of discovery	Discoverers	Reference
Pt	165	2019	Hilton <i>et al.</i>	(2)
Pt	209	2018	Zhang <i>et al.</i>	(3)
Pt	210	2018	Zhang <i>et al.</i>	(3)
Pt	211	2018	Zhang <i>et al.</i>	(3)
Pt	212	2018	Zhang <i>et al.</i>	(3)

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The Author



John W. Arblaster is interested in the history of science and the evaluation of the thermodynamic and crystallographic properties of the elements. Now retired, he previously worked as a metallurgical chemist in a number of commercial laboratories and was involved in the analysis of a wide range of ferrous and non-ferrous alloys.