IUPAC NOMENCLATURE OF ELEMENTS

Naming The Elements

Every element is assigned a specific name and, for convenience, a nickname known in chemical terminology as a symbol. When a new element is identified, the discoverer typically proposes a name for the element, which is then approved by the International Union of Pure and Applied Chemistry (IUPAC). Symbols are derived either by using the initial letter of the element's name or by taking the first and second letters from the name (e.g., C for carbon, N for nitrogen, O for oxygen, Ca for calcium, Al for aluminum, etc.). However, there are elements for which the symbol derivation is less obvious, such as Na for sodium, Pb for lead, Ag for silver, Fe for iron, etc. These anomalies arise due to the original naming of the elements, some of which were named in languages like Latin or German. Among all the elements on the periodic table, C, S, Fe, Cu, As, Ag, Sn, Sb, Au, Hg, Ph, and Bi were known to ancient civilizations, so the exact date of their 'discovery' is not ascertainable. Among these, Fe, Cu, Ag, Sn, Sb, Au, Hg, and Pb are abbreviations for the Latin names ferrum, cuprum, argentum, sternum, stibium, aurum, hydrargyrum, and plumbum, respectively.

Nomenclature of Elements with Atomic Numbers > 100

Elements beyond uranium that do not occur naturally are referred to as transuranic or transhumanism elements. Recently reported elements with atomic numbers Z 104-116 and 118 are categorized as transactinide super-heavy elements. These elements are synthetic, meaning they are man-made. The production of synthetic elements involves binuclear reactions, where two positive nuclei must be fused together against the force of electrical repulsion. Nuclear accelerators are employed for this purpose, with two major groups, one in California, USA, and the other in Dubna near Moscow, Russia, actively working on producing super-heavy elements.

By convention, the individuals who discover a new element have the privilege of naming it. However, competitive disputes have arisen in recent years over the names of newly discovered elements.

For instance, both American and Russian scientists claimed credit for the discovery of element 104, with Americans naming it Rutherfordium and Russians naming it Kurchatovium. To address such conflicts, the International Union of Pure and Applied Chemistry (IUPAC) suggested that until the discovery of a new element is proven and its name officially recognized, a systematic nomenclature based on the atomic number of the element should be followed.

The following points outline the nomenclature of elements with atomic numbers greater than 100.

1. The names are derived by using the numerical roots for' three digits in the atomic number of the element and adding the ending -ium:

The roots for the numbers are:

Digit	Name	Abbreviation
0	nil	n
1	un	u
2	bi	b
3	tri	t
4	quad	q
5	pent	p
6	hex	h
7	sept	s
8	oct	o
9	enn	e

2. In certain cases, the names are shortened.
For example, 'barium' and 'tritium are shortened to 'ium' and' 'trump' and 'ennui' .is shortened' to 'ennui'. ' ,

3. The symbol for the elements made up from the first letters from the roots which make up the names. The mixture of Latin arid Greek roots has been chosen to ensure that the symbols are all different.

IUPAC Nomenclature for the Super Heavy-Elements		
Atomic number	**Name of the element**	**Symbol**
101	$\frac{Un}{1}-\frac{\text{nil}}{0}-\frac{\text{un}}{1}-\text{ium}$	(Unu)
102	$\frac{Un}{1}-\frac{nil}{n}-\frac{bi}{2}-um$	(Unb)
103	$\frac{Un}{1}-\frac{\text{nil}}{0}-\frac{tri}{3}-\text{um}$	(Unt)
104	$\frac{Un}{1}-\frac{\text{nil}}{0}-\frac{\text{quad}}{4}-\text{ium}$	(Unq)
105		(Unp)
106		(Unh)
107		(Uns)
108		(Uno)
109		(Une)
110		(Uun)
111	$\frac{\text{Un}}{1}-\frac{\text{un}}{1}-\frac{\text{nu}}{1}-\text{ium}$	(Uuu)
112	$\frac{Un}{1}-\frac{un}{1}-\frac{bi}{2}-um$	(Uub)
113	$\frac{Un}{1}-\frac{\text{un}}{1}-\frac{\text{tri}}{3}-\text{um}$	(Uut)
114	$\frac{\text{Un}}{1}-\frac{\text{un}}{1}-\frac{\text{quad}}{4}-\text{ium}$	(Uuq)
115	$\frac{\text{Un}}{1}-\frac{\text{un}}{1}-\frac{\text{pent}}{5}-\text{ium}$	(Uup)
116	$\frac{Un}{1}-\frac{un}{1}-\frac{\text{hex}}{6}-ium$	(Uuh)
118	$\frac{Un}{1}-\frac{\text{un}}{1}-\frac{oct}{8}-ium$	(Uuo)
120	$\frac{\text{Un}}{1}-\frac{bi}{2}-\frac{\text{nil}}{0}-ium$	(Ubn)

Nomenclature of Elements with Atomic Number above 100			
Atomic number	**Name on the basis of atomic number (Temporary)**	**Official IUPAC name (Permanent)**	**Symbol**
101	Unbiunium	Mendelevium	Md
102	Unbibium	Nobelium	No
103	Unbitrium	Lawrencium	Lx
104	Unnilquadium	Rutherfordium	Rf
105	Unbipentium	Dubnium	Db
106	Urunilhexium	Seaborgium	Sg
107	Unnilseptium	Bohrium	Bh
108	Unniloctium	Hassium	Is
109	Ununennium	Meitnerium	Mit
110	Unununium	Darmstadt	Ds
111	Unununium	Roentgenium	Rg
112	Ununbium*	-	-
113	Ununtrium *	-	-
114	Ununquadium *	-	-
115	Ununpentium*	-	-
116	Ununhexium *	-	-
118	Ununoctium *	-	-