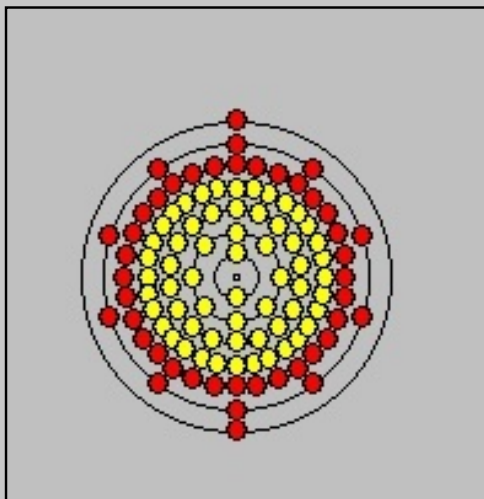


Atomic No. Order:



Alphabetic Order:

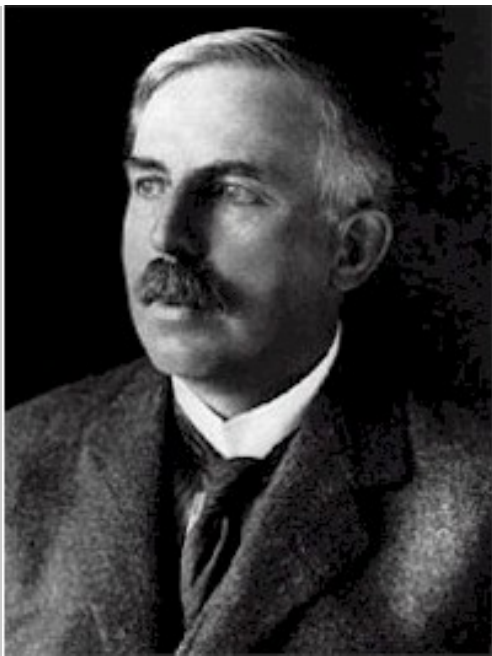


2, 8, 18, 32, 32, 10, 2

<u>Ti</u> 22	<u>Zr</u> 40	<u>Hf</u> 72	<u>Rf</u> 104	<u>Upq</u> 154	<u>Bnq</u> 204	
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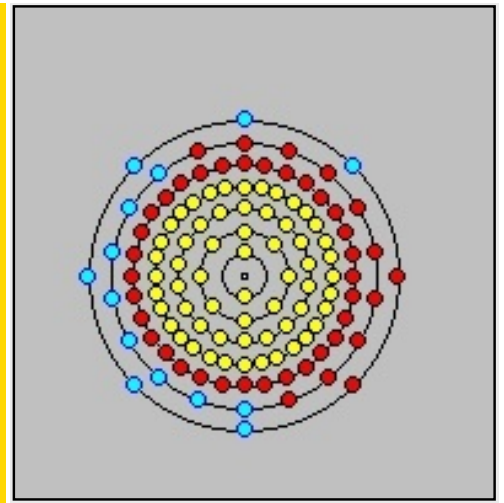
Rutherfordium

Symbol	Rf
Atomic Number	104 (Unnilquadium)
Relative Atomic Mass $^{12}\text{C} = 12.0000$	[261] 261.1088 1.3 min
<u>Significant Atomic Mass</u>	266 Neutrons 162
Atomic Radius pm	150 (est.)
First Ionisation Energy kJ mol^{-1}	490 (est.)
Ionisation Energy (eV)	6.0 ?
Electronegativity	-
Density kg m^{-3}	23000 (est.)
Molar Volume cm^3	-
Thermal Conductivity $\text{W m}^{-1} \text{K}^{-1}$	-
Melting Point K	2400 (est.)
Boiling Point K	5800 (est.)
Number of Isotopes	10
Inner + outer Shells	4 + 3 = 7
Inner + outer Orbitals	60 + 44 = 104
Filling Orbital	6d ²
Ground State Electron Configuration	[Rn] 5f ¹⁴ 6d ² 7s ²



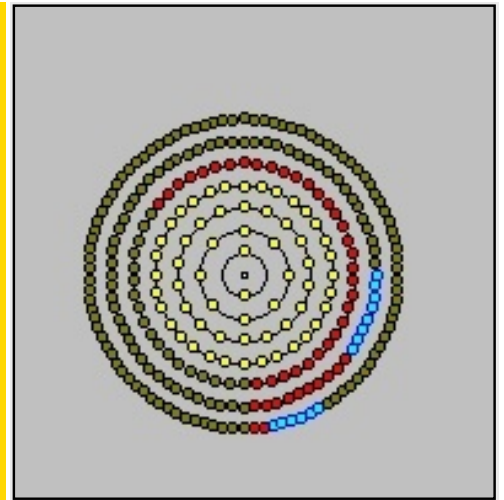
Ground State Electron Configuration with free Orbitals (n= 14)

0, 0, 0, 0, 0, 8, 6



Ground State Electron Configuration with compressed Orbitals (n= 162)

0, 0, 0, 0, 18, 54, 90



Singularity

280 = 60 + 44 + 14 + 162

	s	p	d	f	g	h	i	j
1	2							
2	2	6						
3	2	6	10					
4	2	6	10	14				
5	2	6	10	14	18			
6	2	6	2	8	14	18	22	

7	2	6	10	14	18	22	26	
8								

Term Symbol	3F_2
Discovery	260Rf discovered by a group of scientists (Dubna, Russia) in 1964. 264Rf was discovered by a group of scientists (Berkeley, USA) in 1969.
Not used name or symbol	Unnilquadium [Unq] Dubnium [Db] Kurchatovium, [Ku]
The name preferred by the Russians was "kurchatovium"	Element 104 was named after Igor Kurchatov who was father of the Russian atomic bomb, and this was one reason the name was objectionable to the Americans.
In 1994, the IUPAC proposed "dubnium"	This attempted to resolve the dispute by replacing the name for 104 with a name after the the Dubna research center, and to not name 106 after Seaborg.
Finally in 1997, the name was agreed to Rutherfordium [Rf]	
Name Derived From	Named after the British physicist Lord Rutherford