

Structure of an Atom Cheat Sheet

by Ayesha Talib via cheatography.com/173447/cs/36721/

CHARACTERISTICS OF SUB-ATOMIC PARTICLEES				
PROPERTY	ELECTRON	PROTON	NEUTRON	
DISCOVERY	JJ Thomson	E Goldstein	Chadwick	
ABSOLUTE MASS	9×10 ⁻³¹ kg	1.6×10 ⁻²⁷ kg	1.6×10 ⁻²⁷ kg	
RELATIVE MASS	1/1840u	1u	1u	
CHARGE	negative	positive	no charge	
ABSOLUTE CHARGE	-1.6×10 ⁻¹⁹	+1.6×10 ⁻¹⁹	0	
LOCATION	outside nucleus	inside nucleus	inside nucleus	

THOMSON'S MODEL

limitations of JJ's model of an atom?

couldn't explain stability of an atom, neutron & nucleus. acc. to him, mass of atom was uniformly distributed but mass is concentrated in the nucleus. results of experiments by scientists couldn't be explained by this model.

explain his model.

an atom consists of a +vely charged sphere and e are embedded in it. -ve & +ve charges are equal in magnitude, so the atom is electrically neutral.

RUTHERFORD'S MODEL

any particle in a circular orbit would undergo acc.. during accn, charged particles would radiate energy. thus, revolving electrons would lose energy and fall into the nucleus. thus the atoms would be highly unstable but they're not.

radius of nucleus is about 10⁵ times less than the radius of the atom.

BOHR'S MODEL

only certain special orbits known as discrete orbits of e⁻, are allowed inside atom. while revolving, e⁻ don't radiate energy. these energy shells are represented by letters K,L,M,N.. or numbers n=1,2,3,4..

ATOMIC & MASS NUMBER

atomic number = total N^p OR N^e ex; Na: 11, N^p OR N^e = 11 mass number = N^p+Nⁿ [neuclons]

average atomic mass = mass no.×percentage+mass no.×percentage

atoms of the same element atoms of different elements with having same atomic numbers but different mass numbers same mass numbers have same chemical properties but different physical properties but same physical properties ex; 126 C 146 C ex; 40 20 Co 40 18 Ar

isotope of: uranium- fuel in nuclear reactors; cobalt- treatment of cancer; iodine- treatment of goitre.

ELEMENTS & NEUTRONS				
1. H: 0	7. N: 7	13. Al: 14		
2. He: 2	8. O: 8	14. Si: 14		
3. Li: 4	9. F: 10	15. P: 16		
4. Be: 5	10. Ne: 10	16. S: 16		
5. B: 6	11. Na: 12	17. Cl: 18		
6. C: 6	12. Mg: 12	18. Ar: 22		

SYMBOLS OF IONS	
Sodium	Na ⁺
Potassium	K ⁺
Silver	Ag^{t}
Copper [I]	Cu ⁺
Magnesium	Mg ²⁺
Calcium	Ca ²⁺
Zinc	Zn ²⁺
Iron [II]	Fe ²⁺
Copper [II]	Cu ²⁺
Aluminium	Al ³⁺
Iron [III]	Fe ³⁺



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SYMBOLS OF IONS [non-metallic elements]	
Hydrogen	H ⁺
Hydride	H⁻
Chloride	Cl¯
Bromide	Br ⁻
lodide	Γ
Oxide	O ²⁻
Sulphide	S ²⁻
Nitride	N ³⁻

SYMBOLS OF IONS [polyatomic ions]	
Ammonium	NH4 ⁺
Hydroxide	OH
Nitrate	NO3 ⁻
Hydrogen Carbonate	HCO3 ⁻
Carbonate	CO3 ²⁻ SO3 ²⁻
Sulphite	SO 3 ²⁻
Sulphate	SO4 ²⁻
Phosphate	PO4 ³⁻



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