IOSR Journal of Applied Chemistry (IOSR-JAC)
e-ISSN: 2278-5736. Volume 18, Issue 4 Ser. 1 (April 2025), PP 34-71
www.iosrjournals.org

The Actual Atomic Structure and Bonding

By

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Dr. Prof. R. K. Prasad, Vice Chancellor of B.R. Atalbihari University, Goregaon (East), Mumbai 400063.For his keen interest and valuable suggestions.

Dr. Prof. A. K. Shrivastav (H.O.D. Chemistry) University of Mumbai 400098.For his advises and encouragements. The man, who explained to the Writer importance of the work.

Dr. Prof. Rahul Diggikar (Asst. Professor) Pune University, for his suggestions and encouragements.

Dr. Prof. Ramdas Atram [The Principal, Ismail Yusuf College, Jogeshwari (E), Mumbai 60]. The first person the writer met, who appreciated and encouraged the writer to complete the work.

Dr. Ravindra Kalesh (H.O.D. of Physics Dept.) Ismail Yusuf

College, Jogeshwari (E), Mumbai - 400060.For his suggestions and encouragements.

KEY WORDS:
P= Proton with its Electron, A valence Proton. N= Neutron,
E, e, e^- = Electron,
P^+= Proton without Electron, PAP= Proton Affinity Point, Fig. = Figure,
No., or no., = number.
The writer also uses General Abbreviations as applicable in science. New terms adopted:
Atomic current, Atomic circuit,
Atomic Electron Polarization Closed circuit single coil solenoid In-Atomic-Electron-Flow,
Inter-Atomic Voltage Difference, Inter-Atomic current,
Neutron demand

I. Introduction

Why the new atomic structure is necessary?

Up till now the laid down atomic structure consists of a) a centrally positively charged nucleus; and b) outer surface surrounded by negatively charged bodies moving around it. All atoms have the same structure. If, outer part of atoms, forming molecule, have the same negative charge, it will repel each other and molecule formation is impossible**. But, molecule formation takes place, it's fact?** The scientific explanation for that, is not satisfactory. Though great efforts were made, in the past, but, still it is illogical. It seems, there was no better way to explain and somehow it is made explained. The reason was lack of information related to Atomic Structure in those days.

History:

1. Around and before 3100.B.C.E. Bhagwat Puran explains the World is made of atoms and molecules. "BALAGRA SHAT BHAGASYA SHAT DHA KALPITASYA SYA CHA" Means, "tip of hair on body, divided in to ten thousand times, is an Atom. (Ref. a) hi.m.wikipedia.org/wiki; b) https://pparihar.com/205/08/16). UPNISHHADA, which explains VEDA, says, there is a single particle omnipresent, having tremendous speed, create matters by unification in various ways much more.
2. Around 600 B.C. an Indian philosopher Rishi Kanhad, defined PARMANHU and ANHU, today's atom and molecules. Refer, EEHSAVASHYOPNISHHAD, NYAYA-VAISHESHIK SHASTRA, TAITTARIEYA
UPANISHHAD, etc. This says, the world is being created by a single particle, which, on proper control can

yield all requirements, can travel the World's one to another end within fraction of a second. Till the World-War MAHABHARATA weapons could appear from sky for certain warriors.

3. Around 400 B.C. A Greek Philosopher Democritus dreamed of Atoms. His definition and imagination was almost like the VEDA, a *Natural Science*, known as SANATAN DHRM and some people mis-named it as 'Hinduism' for their own identification.

4. THE FOUR MODELS OF ATOMS: In the beginning of 18th century, physicists started dreaming atomic structure. ***John Dalton (1800) imagined atoms hard as "billiard ball"---1st.*** The Actual work started with, the cathode ray or Electron was discovered by a German mathematician and physicist, Julius Pucker in 1859. 1885 William Crook discovered Cathode ray. Proton was discovered by Eugene Goldstein in 1886. In 1897 Thomson revealed particle nature of cathode ray. ***After discovery of the above two particles (Electron and Proton) a British physicist Sir J.J. Thomson, in 1904 imagined a "Plumb Pudding or Raisin bun model of atom"---2nd.*** Ernest Rutherford (1911) and Neil Bohr (1913) introduced where, the positive charge particle is at the centre and the negative charge particle moves around it in in a circular path like the SUN and PLANETS, so called "***Planetary model of atom"---3rd.*** Somerfield (1915) observed spectral fine lines and suggested elliptical path instead of circular path of electron. [Previously, spectral lines were observed by Zeeman's magnetic (1896) and Stark's electro-magnetic fields.]. Scientists were satisfied with above two particles till the discovery of Neutrons in 1920 by Ernest Rutherford (a British physicist and Father of Nuclear Physics) α- particles or charged helium ions and [in 1932 by James Chadwick. In 1935, he Separated Neutron by bombarding beryllium with fast α-particles, from radium, Ra(c).]

In 1920 (mid) Louis de Broglie and Australian scientist Ervin Schrodinger put "***Electron Cloud Model (A Fuzzy Cloud of Electrons)"---4th.*** Thus, four models of Atoms were presented.

Later, Bohr discarded all concepts and applied its quantum theory, considering,

a) Nucleus – A central body, consisting of Protons and Neutrons. It is positively charged.

b) Electrons – moving around it, distributed in a system, in orbitals, called SHELLS.

He used (1900) plank's "black body radiation theory" called plank's quantum theory and (1800s) Hydrogen spectrum. Thus, he postulated electrons absorb energy in quanta and jumps to a higher energy level shells, i.e. far from nucleus and vice versa.

Thus, the energy difference between shells = E1-E2, (for an electron), was named "quanta".

He also tried to keep electrons moving around the nucleus and not let it to fall into the nucleus, due to its electromagnetic attraction force (+ve & -ve), by using kinetic energy concept, (centrifugal and centripetal forces). This energy level shell, was named, Principal Quantum Number(n).

But, Bohr's theory was insufficient to explain FINE LINES, observed by high resolving power spectrometer to hydrogen spectrum by Somerfield in 1915.

Somerfield asserted an elliptical path of different eccentricity. Thus, atomic model hanged between circle and ellipses.

In (1932) Neutron was separated by James Chadwick, an imagination by his senior Rutherford. Rutherford got the idea in Europe, particularly by Fredrik and Irene Joliot Curie (1897-!956) son of Madam Marie Curie, the Nobel Prize winner1903 in physics and 1911 in chemistry. In (1935) James Chadwick confirmed it in Nucleus. He published paper, "Possible Neutron Existence". Thus, 'Atomic Structure Model' finalized. Which is-

A) Nucleus consists, Protons and Neutrons.

B) The nucleus is surrounded by Electrons, arranged systematically in shells. But, many questions remained unanswered. Like-

1) Why Electrons don't fall into the nucleus?

2) Why masses of Proton and Neutron are extra heavy as compared to Electron?

3) Why Zeeman and Stark find different numbers of lines in spectroscopic study in different orientations?

And the most important-

4) How molecule formation takes place?

Molecule formation is natural and obvious, needed bonding explanation. Since, atoms have Electrons around the nucleus; nucleus can't take part in reactions. Only electrons can take part in the reactions. Following introductions were made to explain it-

The Four Quantum Numbers -

a) 1921 Bohr-Burry Scheme was introduced which explains Electron Holding Capacity, **$[2n^2]$,** where, n= is Principal Quantum Number starting from the nucleus outwards. Thus, shell/ orbit number 1, 2, 3, will have 2, 8, 18… electron holding capacity.

b) 1868- Based on spectroscopic fine lines, due to Angular-momentum, by Arnold Somerfield, a German theo**r**etical physicist; Bohr's shell was divided into sub- shells, s, p, d, e and f. Each sub shell will contain

maximum 2 Electrons. This can be represented by- 'l'. This is also called "Azimuthal Quantum Number". An "Electron distribution system" was established to explain 'Multi-valency'.

c) 1896-Pieter Zeeman, a Dutch physicist found different number and breadth of spectral lines in different orientations of magnetic fields. 1913 Johannes Stark a German physicist and in the same year an Italian physicist Antonino Lo Surdo re- found it under electromagnetic field. This laid to "Magnetic Quantum Number" represented by 'mL'. All the discoveries were used to satisfy, how the same charge particles would unite to form a bond to form molecules.

d) d) 1925-Australian physicist, Wolfgang Pauli inserted "Pauli's Exclusion Principle" that, two electrons can't remain in the same orbit with the same physical identities. George Ulhenbeck and Samuel Gaudsmit found need of "Spin Quantum Numbers" to be introduced, represented by "s" or "Ms" (+1 and -1).

Thus, by now the science had following four quantum numbers to identify an Electron.

1) Principal quantum no. (n)
2) Azimuthal quantum no. (l)
3) Magnetic quantum no. (mL or ml) and
4) Spin quantum no.(s) or (Ms).

Still problem was not finished; 1927-Heisenberg did not find any such orbit or electron. He found no electron or electron cloud apart from the nucleus in unexcited state or ground state of hydrogen atom. Thus, he postulated "uncertainty principle" or "probability of finding an electron".

In later Researches, many new particles were discovered.

Discovery of other particles:

- 1800 William Herschel, discovered "heat rays"
- 1801 John Wilhelm Ritter discovered UV, visible, infra rays.
- 1825 Wilhelm Roentgen, professor of physics in Wurzburg, Bavaria, discovered X-Rays (unknown rays).
- 1900 Paul Villard discovered Y-rays.
- 1932 Carl D. Anderson discovered Positron.
- 1935 Yukawa Hideki, a Japanese physicist predicted "Meson particles"
- 1937 Seth Neddermeyer, Carl D. Anderson discovered muon (or mu- lepton).
- 1947 George Dixon Rochester and Cliford Charles Butter discovered kaon (or k- mesons)
- 1947 Cecil Frank Powel, an English physicist confirmed discovery of pi-mesons (pions).
- 1950 In cosmic ray interaction study, lamba baryon was discovered.
- 1955 Owen Chamberlain and others discovered Antiproton.
- 1956 Fredrick Reins and others discovered Electron neutrino.
- 1962 Leon Lederman discovered muon neutrino.
- Other many discoveries, like, barions, parons, quarks, tau, etc. are discovered and being discovered.

The writer questions, from where, it came? is unexplained. Many other particles discovered (see Particle Physics and other atomic particles).

All these are very **confusing** and again came "atomic-spectra", where, spectral lines were considered base of distribution of electrons. Hence, concluded-

1. Each atom of an element has its characteristic spectrum; this should mean structure of each element atom is different.

2. Electrons on absorbing energy get excited and go apart from its base, (within electromagnetic field of the atom). That is a common Physical property of matters, confirms existence of the matter and not Atomic Structure. When the source of supply of energy is stopped, it again comes back towards its base (ground state) releasing the absorbed energy in quanta, in each jump, appearing as lines/bands by spectrometer. This is a common phenomenon.

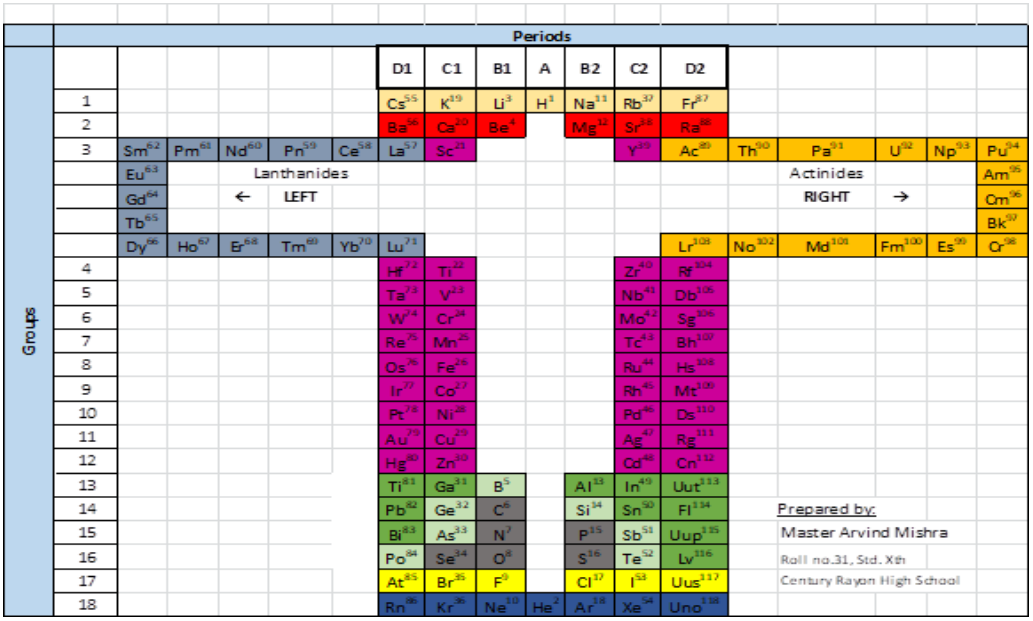
The Reporter questions-

Why a Proton cannot live with an Electron, as, it is found in hydrogen atom, forming a cellular structure in multi-proton big atoms? Instead of aggregating a cluster of positive charge protons in nucleus, which is an unstable structure?

The writer feels, there was some misconception in drawing conclusions from the observations and results in atomic structure. The writer tries to compute suitably and solve the problems to make the subject easy,

interesting and convincing.
The next chapter, will deal with **structure** of sub-atomic particles, namely, Proton, Neutron and Electron. Then, **the Actual Structure of Atoms** will be dealt. After that, the **different types of bonds** will be explained to form molecules. All one can find actual and convincing. The origin of other atomic particles, like X-rays, Y-rays etc. also can be anticipated.

Re-Arranged Periodic Table
MASTER ARVIND'S PERIODIC TABLE - *(RE-ARRANGED MENDELEEVE'S MODERN PERIODIC TABLE)*



II. Material and Methods

"THE ATOMIC STRUCTURE AND BONDING" WORK IS BASED ON WORK RESULTS OF PREVIOUS SCIENTISTS, THE WINNERS OF NOBEL AND MANY OTHER AWARDS. THE WRITER FEELS TO RESPECT THEM FOR THEIR CONTRIBUTIONS, THE POSSIBILITY, BY REMEMBERING THEM UNDER THIS HEADING.

1. The World have been much advanced, if, the World-War MAHABHARAT would not have happened (About 5300.years ago)
2. The Kings of Bharat (India) would not have left The SANATAN DHARMA and have accepted Buddhism, Jainism, which destroyed Indian Defence System and Unity of India.
3. There would not have been terror attack of Anti-Islamic (defaming) Aatankwaad (the Terror in the name of Muslim religion, who made blood choroid, destroyed Universities, like, Nalanda and Takshashila Universities, chopped off heads of scholars. They still rule in some countries of the World).

Therefore, contribution of Indians in the Modern Science is too less. Our Contributors mostly belong to foreign countries, are –

a) Bhagwat Puran: Around and before 3100.B.C. Explains Atoms and Molecules. (Ref - https://pparihar.com)
b) Around 600. B. C. Indian Philosopher Rishi Kanhad explained Atoms and molecules.
c) Around 400. B. C. A Greek Philosopher Democritus dreamed of Atoms.

Please refer the table in following page for more detailed contribution:

The specific work and contributions are-

Sr. No.	Year	Names	Contribution
1	1800	John Dalton	Atomic theory
2	1800	William Herschel	Heat rays
3	1859	Julius Pucker	Pioneer of cathode rays, Electron
4	1886	Eugene Goldstein, German Physicist	Discovery of Proton
5	1825-1895	Wilhelm Roentgen	X-rays
6	1896	Pieter Zeeman, Leyden Physicist	Zeeman's Effect
7	1900	Paul Villard	Y-rays
8	1834-1907	Dmitri Mendeleev	Periodic Table and Periodic Law
9	1906-1914	Theodore Leyman	Hydrogen Spectrum
10	1901-1994	Linus Pauling, American Chemist	Pauling's Electronegativity
11	1911	Ernest Rutherford	Atomic structure
12	1913	Neil Bohr, Danish Physicist	Atomic structure
13	1913	Fredrick Soddy, English Radio-chemist	Isotopes
14	1915	Somerfield	Atomic structure
15	1887-1915	Henry Mosley, English Physicist	Atomic numbers
16	1916	Gilbert Newton Lewis, American Physical Chemist	Valency, Valency-Table
17	1920	Ernest Rutherford, British Physicist	α-particles
18	1925	Erwin Schrodinger	Electron Cloud
19	1925	Wolfgang Pauli, Australian Physicist	Pauli's Exclusion Principle
20	1932	James Chadwick, British Physicist	Neutrons
21	1819-1955	Albert Einstein, A German -Theoretical Physicist	Theory of Relativity
22	1887-1961	Ervin Rudolf Josef Alexander, Schrodinger or Ervin Schrodinger, Austrian-Irish Physicist	Quantum Theory, Equations, etc.
23	1901-1976	Warner Heisenberg	Pioneer of Quantum mechanics; Heisenberg's uncertainty Principle

There are many more other respected authors and scientists, who had contributed extensively in science, and writer is obliged to all them. THANKS AGAIN.

1. Structure of Sub Atomic Particles *[FUNDAMENTAL PARTICLES]*

1.1. THE VEDA AND THE SCIENCE

In Indian history, called PURANAS, before and about 3100.B.C.E. in BHAGWAT PURAN, a brief explanation of Atom and Molecule is there. The Writer has mentioned it in Chapter-2, under HISTORY. It shows, the India was having a very good knowledge about it. The Eeshwar (The God) is explained on the basis (Eesha-washyo-panishhad).

Learnt from the VEDA scholars (UPNISHHADAS), various "Parmanus" have been created by different combinations of a single basic particle. The universe is composed of 60 (sixty) such fundamental particles called "PARMANU" which may be X-Rays, Y-Rays, β-Rays, Pions, Mesons etc. VEDAS name Atom as ANHU. Molecule is termed "STHOOL ANNHU", is composed of more than one Anhu.

Thus, as per the VEDA, air is composed of Dui (bi-atomic) ANU like O2, N2, H2 etc., water is composed of Three (tri- atomic) ANU like H2O. The earth is composed of Panch (Penta- atomic) ANU (chemical symbol C, H, O, N, S). Fire is composed of four (Quadra or tetra atomic), may be, H2 + O2 forms fire or is to be discovered. These numbers are minimum i.e. smallest general compositions, in nature. Further, developments by the Nature or Man may vary.

1.2. THE MODERN SCIENCE

"Particle Physics" explains better about different particles creating the world. It says Protons, Electrons and Neutrons as sub-atomic particles, the main constituents of Atoms. The Reporter exhibits some atomic particles already invented in TABLE-1., with current remarks, subject to approval.

Table 1:

PHYSICAL PROPERTIES OF ATOMIC PRTICLES

Sr No.	Particle	Symbol	Charge	Atomic weight	EMU weight	Remark
1	Proton	P+	+	1.00815	1836	Neutron minus electron with loss of extra energy
2	Neutron	n	0	1.00899	1838.5	Energy mass with e+ and e-
3	Positron	e+	+	1/1836	1.0	Smallest +ve particle
4	Anti-proton	p-	-	1.00815	1836	Neutron minus electron with extra loss of energy
5	Neutrin o	ν	0	0.00002	0.04	Smallest neutral particle
6	Π mesons (+)	π+	+	0.1152	210	Particle with aggregate
7	Π mesons (-)	π-	-	0.1152	210	Particle with aggregate
8	Π mesons (0)	π 0	0	0.1152	210	Particle with aggregate
9	Hyperon s			Heavier than protons	Up to 2585	Aggregated particles
				Similar to mesons	Similar to mesons	Like α-particles
10	Electron	e-	-	1/1836	1.0	The smallest –ve particle

From Table-1, The writer mainly concentrates on Neutron, Proton and Electron, the fundamental particles constituting atoms. Conclusions briefed in Table-2.

Table 2: Particle, Symbol, Charge in emu, Relative Mass and Location of Electron.

Particle name	NEUTRONS	PROTONS	ELECTRONS
Symbol	N	P and P+	e or e-
Charge in emu	0	+1	-1
Relative Mass.(e=1.0) emu	1838.50	1836. 0	1.0
Location of electron	In side body wall	Outside body wall	Alone

The current study reveals the following facts:

1. Protons and Neutrons are much heavier than Electrons, though, magnitude of charge of Protons and Electrons are the same and opposite. The opposite charge cannot be responsible for increase of weight, because, a particle "Positron (e+)" having a mass equal to the Electrons, and equal magnitude of positive charge. *Hence, the extra mass indicates the presence of extra energy particles.*

2. The mass of Neutron is almost nearly equal to the mass of Proton. *It shows presence of the same extra- energy materials, associated in the same way, as in Protons.*

WHAT CAN BE THE EXTRA ENERGY MATERIALS?

To find the form of the extra energy, the writer discusses the structure of HYDROGEN ATOM. That must, because, Hydrogen is smallest and simplest Atom. Hydrogen may be considered as a unit of all higher Atoms, like cells in a body of plants and animals, as atoms in molecule, i.e. a unit of matters. Hydrogen atom consists of a Proton and an Electron. Why Electron is not fusing with the Proton of hydrogen? The Reporter suggests, the Proton and Electron present in the atom, are separated by some barrier. The reporter doesn't feel any centrifugal force responsible to separate them. It is so, because, there exists a continuous retarding "force of attraction" of positive charge as Proton. This will finally stop Electron to fall in it. So, only energy barrier or a covering SHELL can separate them. ***The extra mass of Proton is mass of covering, the barrier OR "SHELL" composed of various energy particles, which is electrically Neutral. The barrier is impermeable to the Electron, i.e. electron cannot penetrate it. But, positive charge of Proton appears over it. The Shell covers a positive charge particle (e+) of Proton from all sides like air in a ball and an Electron of hydrogen atom rests on it, rolling around fast, due to temperature caused kinetic energy.***

Following experiment also proves it -

***X- rays (discovery of presence of charge protector, covering or Shell)*:** Roentgen (1895) discovered X-rays, by scratching Proton body.

OUTLINE OF THE EXPERIMENT: Different metal -foil- elements, when bombarded with Cathode rays, emit X-rays.

Observations:

1. Electrons of cathode rays seemed to be striking some body and emerges out in slight diverted direction from the line of incidence, with lower frequency and higher wavelengths.
2. X-rays emitted.
3. Mosley reported, the square root of the frequency of X-rays emerging out of different foils, are directly proportional to the atomic number of the foil.

Discussion:

A. Cathode rays when enters in to the target consisting of atoms, it is subjected and influenced by an electromagnetic field inside the atom, created by sub atomic particles. The cathode ray will be attracted by the positive charge of Protons. It would have been fused with Proton, but, some barrier was there, which was scratched by the cathode ray Electrons. The scratched part emitted in the form of X-rays. ***This indicates, there exists a protective*** sheath. The positive charge is protected by some energy covering, like air in a ball.

B. In fact, frequencies of emergent X-rays, from the targets of different Atomic numbers are different. It is low for lower and high for higher Atomic number targets. That means, the energy associated with X-ray, in higher frequency is high and lower for low. The energy attained in emerging X-ray is been transferred from the incident Cathode rays. That means, the incident cathode rays get accelerated more in higher proton atoms. This raised controversy with present atomic Structure. In present atomic structure, where, there will have bigger electron cloud around the nucleus in higher atomic number targets. That electron cloud of the target atom will retard speed of the incident cathode ray by repulsion (the same charge). *Naturally, the energy associated will go on decreasing and finally, it may stop. This may not emit any X-ray.*

But, the result is just opposite. The question arises, ***WHAT IS THE ACTUAL ATOMIC STRUCTURE?***

Conclusion:

1. Structure of **PROTON:** A proton is a particle with a unit of positive charge, covered by an energy shell. The shell or covering is composed of other charged (equal and opposite) and neutral energy particles. It covers the actual positive charge particle, may be a Positron, or similar, just like air in a ball. The charged particles present in the shell are equal and opposite, to compensate each other. Finally, the shell is electrically Neutral. The charged particles polarize suitably to appear the inside positive charge, over outer surface of the shell. Central positive charge (Positron) attracts negative particles of the shell. Consequently, positive particle

charge appears on outer surface of Proton, by induction. These charged particles may be π mesons. Π-mesons are positive, negative and neutral charged. The assumption, the shell may be composed of only Neutral particles like Y-rays, X-rays, etc. Then have to accept, these inert particles allow the inside positive charge to appear over its outer surface. The positive charge of Proton can be directed in X, Y and Z directions in space. ***The mass of covering is 1836 – 1 =1835 emu. (as, e+= 1. emu).***

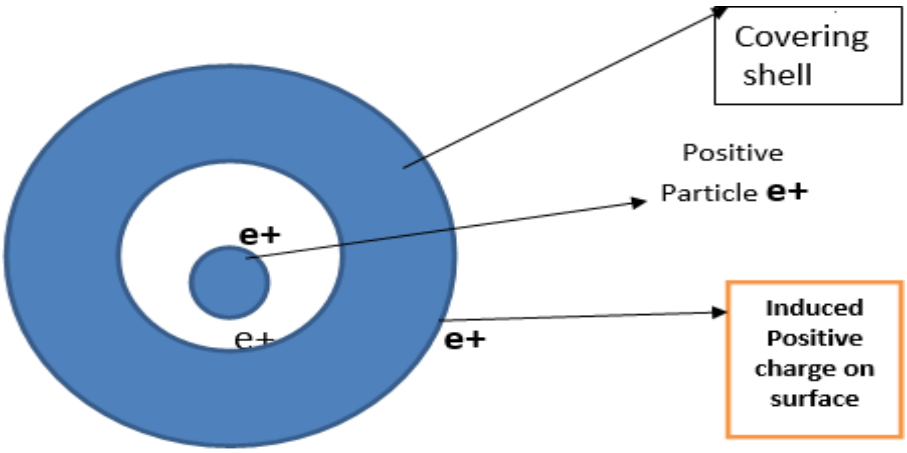


FIG.-1
STRUCTURE OF PROTON

FUNCTION: Proton forms atoms and molecules. As, one new Proton is added, a new atom is created. Change of number of Proton Changes Atom. The number of Proton present in an atom is atomic number of the atom. As valence proton of an atom, it forms bonds with another atom's valence Proton with its electron, forming molecules.

2. **Structure of <u>NEUTRONS:</u>** It is known, mass of Proton is 1836 emu and that of Neutron is 1838.5 emu. Except mass of charged particles, the extra mass, can be concluded, as mass of shell. Neutron is, electrically neutral. It contains one positive and one negative charge particles together. In other words, an Electron and a Positron Form Neutron. Both particles are enclosed and separated by a barrier present in the shell, (Refer Fig -2. A).

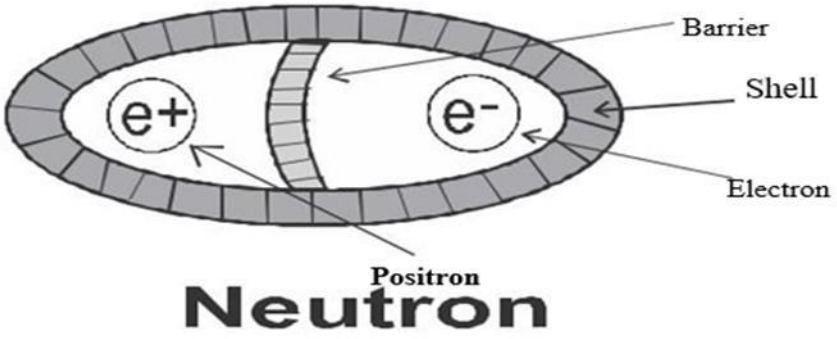
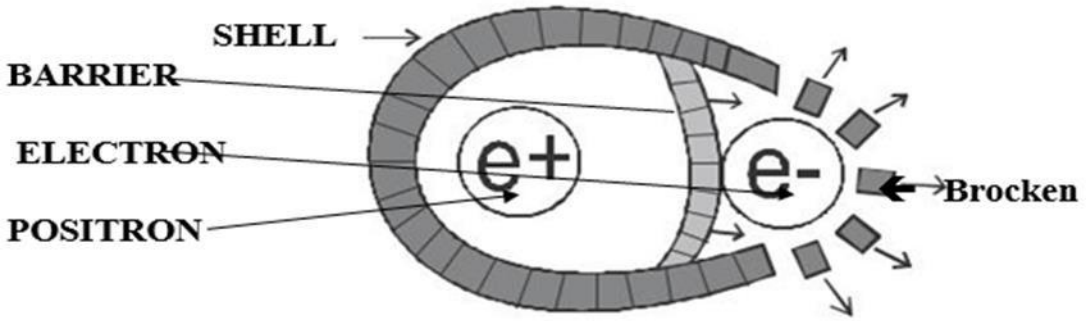


Fig. 2.A [Structure of Neutron]



Burst Neutron
Fig. 2.B Proton formation

When, Neutron releases an Electron or a Positron, it loses an extra mass (energy) almost equal to of 1.5 emu, giving birth of a Proton or Anti-proton respectively. As soon particle is released, the middle barrier occupies the broken place and seals. The burst and detached part of the shell weights 1.5 emu. (Refer Fig-2B, Proton formation)

This is so, because,
Total mass of Neutron shell = mass of Neutron- mass of e+ - mass of e-. Or, = 1838.5 -1. 0 -1. 0 = 1836.5 emu (i)
Mass of Barrier = mass of Neutron shell- mass of Proton shell=Mass of Energy Release on bursting. Or, = 1836.5 – 1835. 0 = 1.5 emu… (ii)

Function: - Neutron polarizes suitably to impart stability to the Atom and atomic bonding. This is the reason, why larger Atoms contain more Neutrons.

Nature of shell (of Protons / Neutron's / Antiprotons)
Similar to Proton shell. The shell is tough strong, made of charged, uncharged, particles, moreover, finally electrically neutral, transmitting inside charge over its surface by induction. It is just like a rubber ball enclosing around electric charge instead of air.

3. Structure of ELECTRON:
It is a negatively charged mass, rolling around Proton just like Mercury ball, stretching like rubber band. In Hydrogen Atom it rolls around Proton, jumping spinning. Thus, possess spin, circular and wavy path. As a ray, it is called "cathode ray". Mass of an Electron is a unit, called, e. m. u.
It is known that, Gasses solidifies at - 273^0C (absolute zero, i.e. zero volume). Electrons are too small, as compared to gas particles. It remains in motion with tremendous velocity at normal temperature, is high temperature to it. So, it is wave also.
Nature of Electrons: - (a) Photo-electric-effect [Hertz,1887], (b) Compton effect [1923] showed its particle nature. But, during bond formation, it seems stretched like rubber band, act as a wave. Therefore, it is considered in dual form. It is particle as well wave, in nature.
Function: Electron is binding device. It binds Proton to Proton electro-magnetically in Atoms and Molecules.

Summary

1) The India was having atomic knowledge before 3100 B.C.E.
2) Summary of "Structure of Sub-Atomic particles (Chapter-3)" and "Some experiments explaining Electrons (Chapter-4)" are drawn together after the coming chapter.
3) Points 1-5, of Chapter-3 and points 6-7 of Chapter-4.

2. Some Experiments Explaining Electrons [Attached with Protons]

It is necessary to discuss nature and behaviour of electrons in different conditions. The Reporter feels that, some experiments may be re-explained for better prediction of behaviour of Electrons in atoms. Those are -

A) *Experiment: Bohr's Hydrogen spectrum

Studies on Hydrogen atom is very important example of behaviour of an Electron with a Proton. Hydrogen is the smallest atom. Positive charge of Proton, is neutralized by an Electron, moving fast around and finally rendering the atom electrically neutral - (i)

Outline of the Experiment: Hydrogen atom was subjected at a low pressure. Electric current was passed through. The atom got excited. The source of energy supply was removed Hydrogen atom slowly got cooled by releasing energy. The experiment was recorded with spectrometer.

Observations: Spectrum obtained. (*Spectrum is available in text books, chem. Ibrtexts.org>Book shelves, Google. com)

Explanations:

1) Electron absorbed energy and moved further from Proton, to a certain distance, stepwise, within electromagnetic field of the Proton. i. e. Work done against electromagnetic force of attraction, created by the concerned Proton, by the energy absorbed.

2) The unit of quantity of energy absorbed for each step jump was named, a **"quantum"** {or **"quanta"** in plural.}

3) On cooling, it releases out the same absorbed energy, in "quanta".

4) Frequency of the released quanta is higher to lower as electron move inward. This is due to linear velocity difference of the electron. (Angular velocity is almost the same.)

5) For each step, an orbit around the Proton, a name is assigned (K, L, M, N or 1, 2, 3, 4…) from nearer to further from the Proton.

(*Refer, 'Atomic physics, Neil's Bohr and Ernest Rutherford-1913'.)

CONCLUSION OF THE REPORTER:

The Author's opinion varies in the opinion to accept it as base of 'Atomic Model'. The Reporter considers it as a *Simple Physical Phenomena*. **This *provides a very good information regarding behavior of an Electron, with respect to its Proton it is attached with and nothing more than that. The Reporter comments, Hydrogen atom is just a smallest unit of further atoms. So, the information is very important.*** The energy levels shown are the **"electromagnetic, plus, gravitational force field effect"** around the Proton. It is 'mutual interaction force effect', over the Electron of the Proton. It is Strong and Weak interaction force effect between Proton and Electron.

This phenomenon can be observed, just like heating water in a beaker containing some grains. Beaker's bottom is Proton and water Electron. (Grains show effect of heat on water visually.).

When, beaker is heated from bottom, first bottom absorbs heat. The beaker cannot attain kinetic energy due to its heavy mass. It transfers heat to the attached water molecules, due to temperature difference. The water molecules get excited, the Kinetic energy is attained. As many quanta is absorbed, excitation is more and more and finally it moves away from bottom of the beaker. At the last, it boils. This is clearly visible by movement of grains. As the source of energy supply, heating is removed, slowly grains come down to settle at the bottom of the beaker. In this experiment, bottom of beaker is surface of Proton, water or grain is Electron, as explained earlier. The co- relation is clear. **[**Proton doesn't move due to its heavy mass. The electron absorbs energy in quanta and goes further from Proton. The electron attained a position, posses, potential energy of both gravity and electromagnetic attraction towards the Proton. Boiling is release out of electron**]**. The water or grain releases the absorbed energy in Quanta to come back towards its original position, when, energy supplying source is removed. Thus, Lyman, Ballmer, Paschen, Brackett, Pfund (discovered in 1906 to 1914) etc. levels are marked. ***This, really explains, what happens, when, a single Proton with and Electron is subjected to such condition.*** The difference between beaker and hydrogen atom is,

1. Water molecules have Brownian motion. But, Electron revolves around Proton in angular / circular motion. Speed of the Electron increases with increase of radius. This results to higher frequency energy.
2. Water molecules must overcome weight of depth of water, the Electron has to overcome attraction force of the Proton.

This can be helpful in behaviour prediction of Proton with Electron in atoms. ***The data is useful.***

B) *__Experiment Electron Cloud,__ by-Erwin Schrodinger **(1925,), (updated by Anne Marie Helmenstine, July 27, 2018; Ref. google.com):**

While Hydrogen Atom study, the negative charge found diffused around the Proton. The probability of finding the Electron of Hydrogen atom is around the Proton, in normal state (*Max Born a German physicist 1920-1930, found Electron as **particle**, in very high speed as a **wave, in 1st orbital, i. e. n=1,** in Hydrogen atom), is bound by electromagnetic force of Proton. ***Thus, the Writer concludes, Electron and Proton are bound together.***

C) ***Photo-Electric Effect (Hertz 1887; Ref. google.com):**

In this experiment, ejection of Electrons are just like, a bullet thrust by Photons, over Electrons, ejecting them out. This shows particle nature of Electrons.

Electrons are superficially or laterally placed in Atoms (along with other nucleons). Only Electrons, which, is light-weighted, comes out-by photon stroke.
*Only light of certain characteristic frequency is needed for expulsion of Electrons from a particular metal surface, reveals, ***different Atomic Structure of different metals***.

D) ***PHOTOELECTRIC EFFECT by A. H. Compton (1923)** - also supports particle nature of electrons.

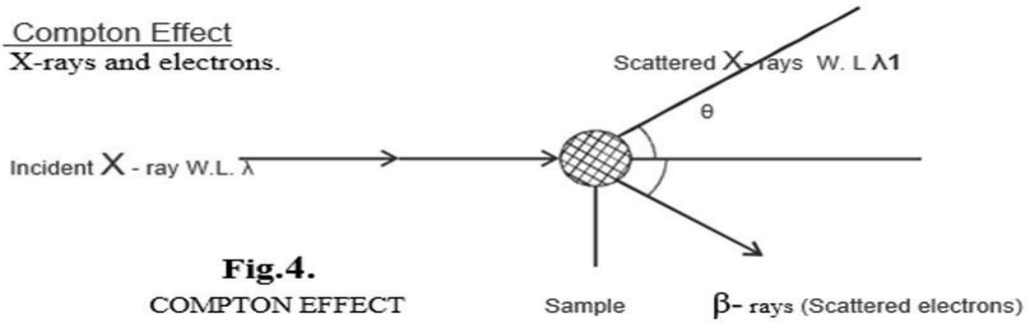


Fig.4.
COMPTON EFFECT

Deflection of Photons, from its original path, as shown in Fig. 4, shows that, X-rays (or Y-rays) collide to a hard surface, where, Electrons are attached. The direction of emergent X- ray gets shifted to an angle 'θ'. The wavelength changes from λ to λ1. The hard surface may be the Proton shell, over which the Electron lies and increase in wavelength is due to transfer of energy to Electrons, ejected out.
Hence overall, the Reporter concludes for, the nature of an electron-

i) In Hydrogen Atom, Electron is electromagnetically attached to Proton, moving fast (with spin, circular and wavy motion) around the Proton. It is fast enough as wave to neutralize positive charge spread over the whole surface of the Proton, 1836 times big mass.
ii) It is attached to its Proton, un till, it is not detached by suitable means.
iii) It is a particle in motion and bonding device due to its stretch ability.
iv) Electrons get excited on absorbing energy, goes farther from its Proton which increases its reactivity.

SUMMARY of Chapter- 4 and 5
Based onChapter-3 and-4, namely, "Structure of Sub-Atomic Particles" and "Some Experiments Explaining Electrons Attached with Protons"; the Reporter summarizes as under (Points 1 to7):

1. Protons are positive charge particles, where, positive particle (e+) IS COVERED IN A SHELL, composed of energy particles, charged, uncharged, but, finally electrically neutral.
2. The positive charge of Proton appears superficially over the outer surface, on shell. The charge can be directed in X, Y and Z directions.
3. A Proton (hydrogen atom) can be ionized by separating electron from it. This yield, P+ and e- ions. A neutral Proton is symbolized as "P".
4. Neutrons contain both positive and negative charges (e+ and e-) enclosed in a shell. The shell is composed of charged and uncharged particles, just like as in Protons. The Neutron shell's inner side is divided by a barrier in two parts, between e+ and e- particles, to keep them separate. The barrier is composed of the shell material. Neutron is symbolized as 'N'.

5. Neutrons polarize suitably to impart stability to atoms. It facilitates electron-flow and in atomic bonding.
6. Electrons are negatively charged particles, symbolized as 'e-'. It weights, 1. emu. dual nature (particle and wave). Electron binds Proton to Proton, by X-Y electromagnetic bond
7. Electrons are attached with Protons. In neutral Proton, Electron move fast, as if, diffused around Proton to compensate the positive charge.

3. Atomic Structure

3.1. Part 1 (Assumptions)

Since, this is a new trend of Atomic structure, the Author explains it in three parts for better understanding in easier way, many things in repetition for mindset.

a) Why Proton based atomic structure preferred?

Answer: Proton is base and identification of an Atom. Change of one Proton changes to a new atom. On other hand, if, an Electron is removed from an atom, it becomes an ionized atom. The atom does not change. This proves, Proton is base of atoms.

b) Why "Master Arvind's Periodic Table (2005)" is taken as base to the Atomic Structure? Answer:

i) The re-arrangement of Elements, as reported by Master Arvin d in his periodic table is more systematic without any change of periodic atomic position. All elements own its original place with respect to their Groups and Periods makes it acceptable on the World basis, as, it is.

ii) The Bohr-Burris's Scheme (1921), made for electron holding capacity in shells of Principal Quantum Numbers are perfectly applicable in "Master Arvin d's Periodic Table" for the number of atoms, arranged in periods exactly.

'Bohr-Burry Scheme' made for principal quantum numbers, holds exactly for Arvin d periods as follows, A = 2 Atoms (K=1st); C1, C2 = 18 Atoms (M=3rd)
B1, B2 = 8 Atoms (L=2nd); D1, D2 = 32 Atoms (N=4th); i.e.2n2
n= 'Principal Quantum Number' of shell, but, here, 'Period Number'.
This makes suitability of possibility of the Proton Based Structure of Atoms.

In Nature, atoms may have been created in following ways:

a) **Addition**: The Constituting particles may unite to form Atoms.
b) **Substation**: Larger Atoms release particles and form New Atoms, as in Radio-active reactions.
c) **Explosion**: In Nature some explosion happens and different types of Atoms are produced, as happens on the Sun.

In all above cases, sub-atomic particles are bound together to form an ATOM. Study of structure and role of constituting particles, system of arrangement and bonding, all together is Atomic Structure.
For 'Structure and role of constituting particles' refer Chapter-3, 4 and now, 'Proton-Arrangement' and 'Binding forces' of particles are to be explained.
As per Particle Physics, four forces working in the universe are (a) weak nuclear force (b) strong nuclear force (c) gravitational force and (d) electromagnetic force. In atomic structure all the four forces work, but, the main pronounced is" Electromagnetic force".

To explain Atomic Structure, following Assumptions are-

1. **Symbolization of sub- atomic particles:** Proton is basic character of atoms. Atoms are composed of Protons=P (with electrons). Neutrons the second particle, act as buffer, rendering atoms stable, by placing and polarizing itself suitably. For that, the Reporter will discuss about Proton arrangement only.
Abbreviations: P= Proton with Electron. P+ = Proton ion**.**
N= Neutron. e or e- = Electron.

2. **Electrons are always attached at X-axis of Protons (P):** There are three types of Hydrogen atoms. a) Proton, b) Nascent hydrogen and c) Hydrogen molecule. Proton is an atomic particle; nascent hydrogen is atomic, unstable and very active in chemical reactions and readily form bi molecular hydrogen molecule which is stable.

3. **Positive charge of Proton is directed in, X, Y and Z directions,** (as discussed earlier.): Its Electron is attached to X-axis and bonds with Y or Z terminal of nearing Proton. (Refer, covalent bond in" Bonding".)

4. **RINGS and OCTETs:** Protons are arranged in Ring or circle in Atoms. Each complete ring contains four Protons. Two complete rings together form an OCTET, a cube form. Eight Protons, placing itself at eight corners of the cube, arranged in cubical form, is "octet". It is a semi stable or almost stable structure.

5. **BIG and SMALL RINGS**: Atoms are similar to a bar magnet, as, in the Earth. It has got North and South Poles. It also has a central middle Null Point. Magnetic flux density or strength decreases from poles to the null point. The rings near to the null point are bigger than the rings near to poles. This is because, Protons near poles are more tightly held towards poles (centre), minimizes periphery of the ring. This gives a spherical shape to the Atom.

6. **SYSTEM OF PROTON DEPOSITION:** The Author likes to explain creation of different atoms in ascending (growing) order, to make it easy to understand. Things grow in nature. The pattern may be easier to grasp the subject. Besides experiments related to Atomic Structure, the Reporter collected idea from "Atomic and Physical Properties of Inert Gases (Table-2,)", "Pauling's Electronegativity Values (Table-3)" and "Valency of Atoms (Table-5)". All together decides 'Atomic Structure'. Physical properties from table -2, gives idea of change in atomic nature as it grows. The electronegativity value and valences gives idea of *placement of individual protons* with respect to the electromagnetic flux of its atomic base. For example, the *most electropositive Protons *will have least* *binding force* on its electrons to get it released easily. Naturally, it should be situated near null point on big rings. In *multivalent atoms the *valence protons will be situated further*, to be free to bond with other atoms. The *most electronegative atom will have *many Protons with open positive charge at Y and Z axes*, demanding negative charge, or, electrons.

Hence, it is decided to take group 18 (the inert) as zero in Proton addition system. Group-1= as starting point; Group- 17 = the last- but- one; Group 9th as centre, groups 8, 9, 10, as points on central axis, at poles, (N (9th P)=top; S(10th P)=bottom). Inert is composed of two components, a) octet and b) central axis (except Helium. Helium is an Axis).

7. **SMALL ATOMS:** Two Protons form '**helium'** atom, the smallest inert, a **single coil solenoid structure,** a smallest electrical circuit. The solenoid poses magnetic flux as a bar-magnet (Refer in detail in Atomic structure, part-III). The magnetic flux associated with it invites 'Proton- deposition' around it. "Neon" inert has ten Protons. Eight Protons form octet, the remaining two Helium Protons, lie at central axis each one at top and bottom of the cube. In octet rings, the first big ring is above null point (contains 2-P) of the atomic bar magnet. Remaining two Protons of the second (containing 2-P) ring lies near to N-pole. These 4-P of 1st and 2nd rings, together form a ring. This ring is inclined to the central axis. The third, smaller ring is above and near to S- pole contains 4- Protons. Thus, 2-P near null point; 2-P near N- pole; and 4 P near S- pole is established (Refer Neon atom). The two rings are parallel to each other, each containing four Protons and bonded by X-Y cyclic-bonding (Refer cyclic covalent bond in "Bonding") form an octet. The two rings are separated by Z-axis positive charge of Protons (same charge repulsion force). It is stable structure yield an inert (Neon). In bigger atoms, this point is semi- stable. In Helium, it is one coil solenoid, the simplest inert. **Neon** atom has two coils with a central axis of helium, completing electronic circuit. Each Proton of axis can hold two rings, or one octet. Another Proton of Helium, or pole, also repeats the same procedure. 2-P occupies the two vacant Proton points above null point (1st ring) and the ring is completed. 2-P complete the second ring near N- pole. Third ring is already with 4-P of Neon at 'S' pole. Fourth ring starts below it with 4- P. For that, third ring shifts up near null point. **[** As four Protons occupy their places in 1st and 2nd ring and third ring (small)is already complete, a space is created above the third ring, due to repulsion between the octet and the rings. Null point slips suitably. A fourth ring formation starts below third ring (usually, 4th ring is formed above 3rd ring) and at S-pole is completed as usual**]**. Another octet is formed. Thus, helium with two octets yield **Argon** atom.
Remark: Only to keep identities of B1 andB2 separate, 4th ring is taken below 3rd ring. Otherwise, 4th ring may be considered formed above 3rd ring.
This procedure is continued in each period. There is some change. Those are following-
i. It is reported only one inert in each 18th group period.
ii. There is one Proton addition serially in each group, starting from group 1 to group 18 and all rings are serially completed with 4-P.

Starting from 'C' periods (C1), inert is formed after completing two octets only. Henceforth, big rings grow bigger and small rings smaller, due to increase of pole strength and stray (Z-axis) positive charge accumulation

of Protons. This increases with atomic growth. This makes atom unstable, which is compensated by Neutron polarization. Therefore, it reveals big atoms have more Neutrons and more isotopes.
In every period, accumulation of Protons increases electro negativity till an octet is completed. Then, a stability point is observed (groups 8, 9. 10). Again, increase of electronegativity starts from group 11 and continues till group 17 of new octet. The 18th group is a switch button, which completes electronic circuit and an Inert is born.

Refer 'observations' below each table in Chapter-7 for following conclusions.

a) In general, Proton Arrangement starts from gr. 1 to 18 (till inertness), periodically. (Except period A, B)

b) Based on electronegativity, gradation can be, Gr. 1 to 4; Gr. 5 to 7, Gr. 8 to 10. Gr. 11 to 14 and Gr. 15 to 18.

c) Thus, there are 4- rings, two small rings at N and S poles and two big rings on the both sides of Null Point. Starting from first big ring above Null-Point, which contains Proton number 1-4, serial wise diagonally opposite to each other at the four quadrants. Then, small ring, the second number ring is filled in the same order. Thus, 8 Protons are arranged. Ninth Proton is placed at N- pole. 10th Proton comes at S- pole. Then, 11th-14th Protons are arranged on third ring, which is small ring. Lastly, 15th- 18th Protons are arranged on fourth ring, a big ring below Null-Point.

d) Protons are arranged spirally, in spring coil form, as, "multi coil closed circuit solenoid". In atomic bar magnet, Gr. 7, 8, 9 are near to one pole arranged in ascending order. Gr. 10, 11 and 12 are at another pole in same way. Now, after the poles are balanced, again normal electronegativity increases up to group 17 is found. Group- 18 is switch button, where, Proton occupation completes electronic circuit and starts **in-atomic-electron flow.** The atom becomes **inert**. This becomes" Nucleus" for the next period.

e) Period A, B1 and B2 are small periods. Periods D1 and D2 are big periods. The way of developments is little different in these periods. The Reporter will explain it in the next chapter, under "Development of Atoms part-3". As shown below, in Fig.5 (Chapter-6, Atomic Structure part-II),

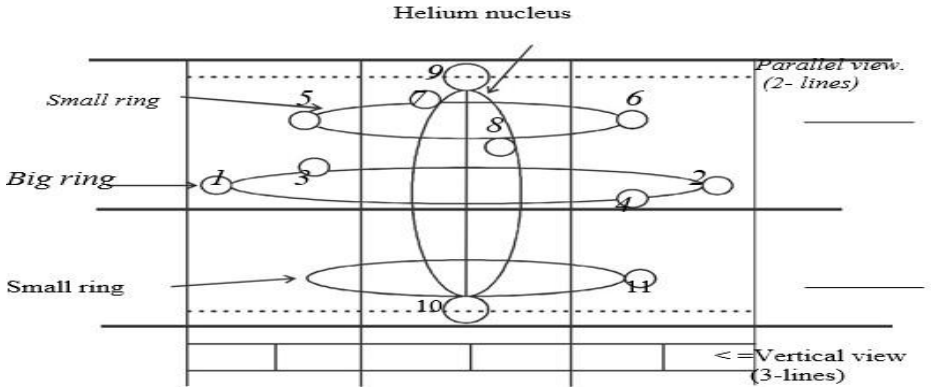
The current work reveals that the Atomic structure ending towards poles are generally metallic. The Atomic structure ending towards middle or null point is generally non-metals. That is because-

It is well known fact that, *the atomic bar magnet is divided in Four parts i.e. the atomic sphere contains Four (4) rings, two near the poles (small rings) and two at both sides of the null point (centre) of the bar magnet (big rings). The pole rings are stronger and hold Electrons more closely than the middle rings***.** This imparts metallic property to the atoms.

*The previous period inert becomes "**Nucleus**" or base, for the running arrangement. Inert are closed circuit solenoids. Till circuit is not complete, it is a normal developing period.*

This system of atomic structure is supported by "ZEEMAN'S EFFECT" (Pieter Zeeman, 1896).

Fig.-3, ZEEMAN'S EFFECT (Pieter Zeeman, 1896). (Sodium Atom)



Explanation of fig. 3, ZEEMAN'S EFFECT (Sodium Atom)

Proton position is clearly drawn in Fig. 3, where, the presences of Protons at appropriate places around Helium nucleus are marked Proton numbers 1 to 11.

*In parallel view (to the magnetic field direction), Protons 1 to 9th numbers are almost together in upper half part of the Atom, Which, absorb more energy giving a line of shorter frequency and longer wave length. While the lower half part, consists only two Protons (No. 10, 11). So, it emits higher frequency and lower wavelength in the magnetic field.

*In vertical view (to the magnetic field direction), the position of Protons are in three compartments.

The 1st contains Proton Nos. 1, 3 and 5 for sodium, (for Cadmium,1,3,5 and 6). The 2nd contains Proton Nos. 7,

8, 9, 10.
The 3rd contains Proton Nos. 2, 4, 6 and 11.

The number of Protons in each compartment is almost equal. Therefore, energy absorption in each compartment is almost equal [by the Proton (P)]. Consequently, 3 lines, of almost equal thickness is observed by spectroscope (Refer Fig.3).

SUMMARY (Chapter-6)

1) Proton is an identifying particle. Each Proton has an Electron attached to its X-axis. Master Arvind's Periodic Table is base of this Atomic Structure.

2) Positive charge of Proton appears superficially, can be directed in X, Y, and Z directions (Electron is attached to X-axis).

3) Symbol for Proton=P; Neutron=N; Electron=e or e-; Proton ion=P+.

4) OCTET is an arrangement of Protons, giving a cubical form, arranged at the eight corners of the cube. The Protons lie on two rings. Each ring contains four Protons at quadrants on its periphery, by the diameters (1st and 22nd) crossing at right angle at centre of the ring. Octet is a stable structure. Neon is an inert having one octet and two pole Protons.

5) Atoms are like a bar magnet, containing South and North poles, and a Null point at the centre. The octet rings are formed around it. Big rings are at both sides of null point. Small rings are formed near to poles.

6) Proton deposition starts from big 1st ring above null point at quadrants. The sequence is diagonally opposite on rings e. g. 1- 2(first diameter) and 3-4(second diameter), are situated diagonally opposite on big ring. Similarly, 5-6 and 7-8 are on small ring, near N-pole, diagonally opposite to each other.

7) 9-10 are at each pole N and S (in sequence.). Now, small ring first takes 11-12 and 13-14 Protons. Then, big-ring takes 15-16 and 17-18 Protons, in the same system, as above.
The previous inert becomes nucleus and base to the continued period.

3.2. Part 2 (Outline of Atomic Structure with Basic Table)

TABLE-1A. (From Table: -1A, Chapter-3).
*PHYSICAL PROPERTIES OF **ATOMIC PARTICLES:**

Particles / Physicals	PROTON	NEUTRON	ELECTRON	Remark
Symbol	P	N	E or e	P+, Proton ion
Relative Charge	+1	0	-1	e-, electron ion
Location of Electron	Outside of body Shell	Inside of body Shell	NA	
Relative Mass (e=1. Emu)	1836.emu	1838.5 emu.		

OBSERVATIONS AND REMARKS:
The Reporter mainly concentrates on Neutron, Proton and Electron, as he observes it main "Atom forming particles".

Table 2 – Atomic and Physical Properties of Inter Gases

Elements	He	Ne	Ar	Kr	Xe	Rn.
Atomic No.	2	10	18	36	54	86
Atomic wt.	4.003	20.19	39.94	84.7	13.13	222
Density at B.pt.	0.126	1.20	1.40	2.6	3.06	4.4
Atomic volume	25.96	19.3	28.0	38.5	37.0	39.0
Boiling pt. 0c	268.87	245.9	-185.8	-152.9	-107.1	-62
Melting pt 0c	-272	-248.5	-189.5	-157	-111.5	-71
Critical temp. 0c	2.26	-228.7	-122.4	-62.5	16.6	104.5
Critical Pressure in Atoms	-268	26.86	48.	54.3	85.2	62.4
Solubility at 200c/lit. water	13.8	14.7	37.9	73.0	110.9	-
Ratio of sp. Hear cp/co	1.65	1.6+2	1.65	1.69	1.67	-
PPM in Air bv vol.	1.A0	15.0	9370	0.05	0.006	-
Heat of vaporization Cal / mol at B.P.	25	A05	1600	2240	3100	3600
Atomic Radius in A unit	...	1.60	1.97	2.00	2.20	...
Ionization potential of Gaseous Atoms in Volts . 1st Electron 2nd Electron	24.58 54.40	21.559 41.07	15.755 27.62	13.996 26.40	12.127	10.7 ....

Observations:

1. Atomic Density increases in big atoms.
2. Atomic volume of 'Neon' is less as compared to others including Helium.
3. Ionization potential of Atoms decreases, as, Atomic volume increases i.e. Favors electron removal (electro positivity increases with atomic size).

Table 3 – PAULING'S ELECTRONEGATIVITY VALUES

PERIODS / GROUPS	A	B1	B2	C1	C2	D1	D2
1	H-2.1	Li-i.0	Na:0.9	K.0.8	Rb0.8	Cs0.7	ZFr 0.7
2		Be:1.5	Mg:1.20	Ca:1.0	Sr 1.0	Ba 0.9	Ra 0.9
3				Sc :1:3	Y 1.2	La 1.1	Ac 1.1
4				Ti :1.5	Zr 1.4	Hf 1.3	Th 1.3
5				V :1.6	Nb 1.6	Ta 1.5	Pa 1.5
6				Cr :1.6	Mo 1.8	W 1.7	u 1.7
7				Mn :1.5	Tc 1.9	Re 1.9	-
8				Fe :1.8	Ru 2.2	O_s 2.2	-
9				Co :1.8	Rh 2.2	Ir 2.2	-
10		..		Ni :1.8	Pd 2.2	Pt 2.2	-
11				Cu :1.9	Ag 1.9	Au 2.4	-
12				Zn :1.6	Cd 1.7	Hg 1.9	-
13		B :2.0	Al :15	Ga :1.6	In 1.7	Tl 1.8	-
14		C :2.5	Si :1.8	Ge 1.8	Sn 1.8	Pb 1.8	-
15		N :3.0	P :2.1	As :2.0	Sb 1.9	Bi 1.9	-
16		0 :3.5	S :2.5	Se 2.4	Te 2.1	Po 2.0	-
17	H : 2.1	F :4.0	Cl :3.0	Br :2.8	I 2.5	At 2.2	-
18 or 0							

Observations:

ELECTRONEGATIVITY IN GROUPS, PERIOD WISE:

1. In each period (except group 8-11) Electronegativity increases from Group. 1 to Group. 17.
2. There are three categories, of electronegativity variation.

A. Group 1 to Group-8(increases)

B. Group 12 to 17, (Re- increases)

C. C) Group 8, 9, 10 is almost stable

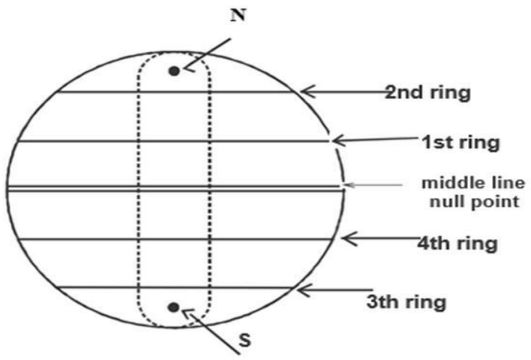
The Reporter finds, group 1. is electro positive or, least electronegative. The increase of electronegativity starts from group -1 and continues till group-8, i.e. OCTET. Again, the similar increase in electronegativity is

observed, starting from Group-11 and continues till Group-17. As soon OCTET completes at group-18, INERT FORMATION is established.
In between the two octet, a bridge of three Groups (8, 9, 10), show almost stable electronegativity. The Reporter finds its place suitability at Central Axis of Atomic bar magnet.

ELECTRONEGATIVITY IN GROUPS, PERIOD WISE:

1. In groups, as, atomic size increases, electronegativity decreases period wise, in every group.
2. In general, it is observed that, except period A, in each group, electronegativity decreases period wise i.e. as size of atoms increases, electronegativity decreases.

Fig. 5, PROTON ADDITION SYSTEM



Sequence of Proton Addition

4-Protons at ring----------	1
4-Protons at ring----------	2
1-Protons at top----------	(N)
1- Proton at bottom--------	(S)
4-Protons at ring----------	(3)
4- Protons at ring----------	(4)
Total 18 Protons =	18 Groups

Outline of Atomic Structure: After careful consideration of all above results, an Atomic structure and Proton addition system is concluded as below. The outline is-

1. Proton addition starts at the first ring. - Four protons are serially and diagonally opposite to each other, i.e. Proton numbers 1 and 2 are situated diagonally opposite to each other.
2. Proton numbers 3 and 4 are also situated at the opposite ends of the second diameter, intersecting the first at Centre at right angles.
3. Similarly, the second, i.e. small ring is completed, by 5th to 8th Protons. Thereafter, 9th Proton lies above the Centre of the small ring (North- Pole).
4. After completing Proton addition up to group-9 (i.e. 1st, 2nd, rings and N-pole), 10th Proton comes at South Pole, above which, 3rd ring is situated. This is also a small ring. Proton no. 11th to 14th completes 3rd ring. As Proton arrangement starts at the South- Pole, electro negativity remains increasing (with a slight decrease, at group – 12).

Since, the first group Proton addition starts and continues till the period lasts, the accumulation of Protons, increase stray positive charges of Protons and make the resulting atom rich in positive charge, resulting demand of negative charge and electronegativity increases. But, at the same time,

as periods grow higher i. e. A to D, distance of valence Proton from the Central Axis of the Atom also increases. This weakens electromagnetic force of attraction between Nucleus of the atom (the last inert) and Electron of the Valence Proton, which tends to lose the electron easily. This increases electro positivity. So, the Reporter finds a mix effect and slight decrease in electronegativity in periods for a group, is observed.

5. Now, *4th ring is a big ring. Proton number 15th to 18th Protons occupy* the four terminals of the ring in usual system. At 17thgroup Proton the atom becomes most electronegative. That is because, X-Y bonding up to 3rd ring is complete. Electrons of 15thand 16th Proton are tightly held due to high positive charge in the atom of accumulated Protons. Those positive charges are directed towards the remaining only gap, for 18thProton. The atom is hungry to accept an electron. This 17th group atoms are 'Halides', the most electronegative group. The 18th Proton is an electrical switch Proton, which completes electrical circuit rendering the atom inert. This becomes a "Quadra/ multi coil structure" of solenoid.

Small Atoms gives more clear visibility of Atomic structure. As atoms grow larger complexity increases. The Reporter, finds in the list of isotopes, Hydrogen Atom has got '3'isotops (atomic weights 1, 2, 3). Lithium atom has '2' isotopes, (atomic weights 6 and 7). But, larger Atoms have got many isotopes, because of increase in

Neutron for Atomic stabilization. Generally, Neutron is needed to satisfy unblocked positive charge of Protons (2-Neutrons needed to block positive charge at Y and Z axis in Hydrogen isotopes. But, in general, Z-axis is directed towards Nucleus of the Atom. Still at least one Neutron per Proton is required).

Note: - The Reporter point outs, as Atomic size increases, number of isotopes also increases. - Groups 6, 12, 14, 18 have relatively more isotopes, specially, in larger Atoms.

Table 4 – LIST OF ISOTOPES [Elements with Symbol, Atomic numbers, Group numbers, Atomic Wts. and Isotopes by their At. Wts.) -From Essentials of Physical Chemistry.**]**

Sr. No.	Elements (Symbol)	At. No.	Group No.	At Wt.	Isotopes (indicated by their At. Wt)
1	Hydrogen (H)	1	1	1.0081	1, 2, 3
2	Lithium (Li)	3	1	6.94	7, 6
3	Boron (B)	5	13	10.82	10, 11
4	Carbon (C)	6	14	12	12, 13
5	Nitrogen (N)	7	15	14	14, 15
6	Oxygen (O)	8	16	16	16, 17, 18
7	Neon (Ne)	10	18	20.183	20, 21, 22
8	Magnesium (Mg)	12	2	24.82	24, 25, 26
9	Silicon (Si)	14	14	28.06	28, 29, 30
10	Sulphur (S)	16	16	32.06	32, 33, 34
11	Chlorine (l)	17	17	35.46	35, 37, 39
12	Argon (Ar)	18	18	39.95	36, 40
	Potassium (K)	19	1	39.1	39.41
14	Chromium (Cr)	24	6	52.01	50, 52, 53, 54
15	Iron (Fe)	26	8	55.84	54, 56
16	Nickel (Ni)	28	10	58.69	58, 60
17	Copper (Cu)	29	11	63.57	63, 65
18	Zink (Zn)	30	12	65.38	64, 66, 67, 68, 70
19	Bromine (Br)	35	17	79.91	77, 81,79
20	Krypton (Kr)	36	18	83.7	78, 80, 82, 83, 84, 86
21	Strontium (Sr)	38	2	87.63	88, 87, 86
22	Silver (Ag)	47	11	108.88	107, 109
23	Cadmium (Cd)	48	12	112.4	110, 111, 112, 113, 114, 116
24	Tin (Sn)	50	14	118.7	112, 114 to 120, 122, 124
25	Antimony (Sb)	51	15	121.76	121, 123
26	Xenon (Xe)	54	18	113.3	124, 126, 128 to132, 134, 136
27	Barium (Ba)	56	2	137.36	135 to 138
28	Tungsten (W)	74	6	184	182, 183, 184, 186
29	Mercury (Hg)	80	12	200.6	196,198to 202, 204
30	Lead (Pb)	82	14	207.22	203, 205 to 210

3.3. Part 3 (Development of Atoms)

Development of Atoms

In the present chapter, the Reporter explains, how and why Protons unite to form atoms? Considering electromagnetic reasons, the Writer concentrates on Protons and Electrons, the main responsible particles. As Neutron is a stabilizing (buffer) particle, the Author omits Neutron arrangement system. Neutron keeps atom stable. It is naturally accepted at the proper place of demand and get naturally polarized to compensate the charge, creating instability in atoms. Starting from period 'A'-

A. DEVELOPMENT from Hydrogen to Helium [i.e. Period 'A'] [Atomic. No: 1, 2; Atomic groups. 1 and 18.]

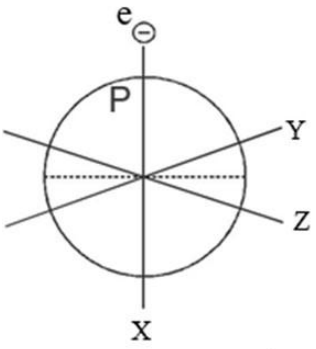


Fig. A-1(Protium)

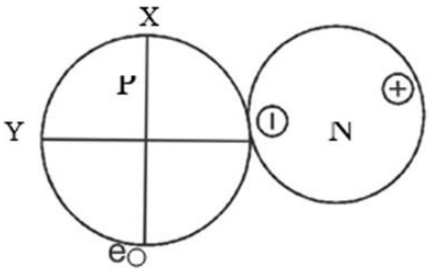


Fig.A-2(Deuterium)

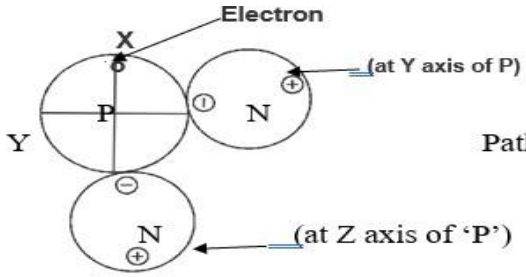
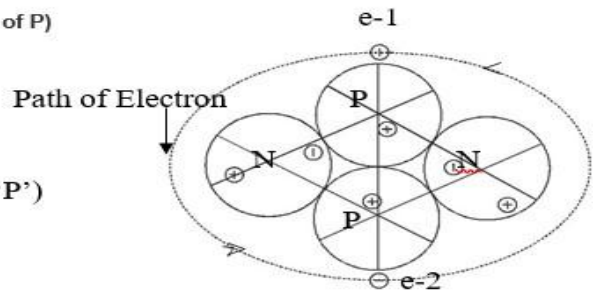


Fig. A-3(Tritium)



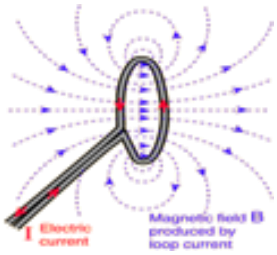
Hellium (He)
Fig - A - 4

EXPLANATION

Hydrogen, the first Atom, contains a Proton with an Electron at its X-axis (Fig - A -1.). The central Positive charge of Proton is shown directed in X, Y and Z axis. Positive charge of X-axis is blocked by its own electron. Positive charges directed in Y and Z axes are necked. To block it, Neutrons, one by one occupy the axes. Neutrons polarize having Electrons toward the Y and Z axes, the positive charge directions of Hydrogen Proton, as shown in Fig.A-2 and Fig.A-3, giving other two isotopes of Hydrogen with Atomic weights 1, 2, 3, namely, **Protium, Deuterium** and **Tritium** respectively. (Refer Fig - A - 2 and A-3).

[It is, Notable that, negatives particle (Electron), in Neutron polarizes inward in its shell and Electron of Proton (outside of the shell) polarizes in outward direction in an Atom] Now, due to presence of '3' electrons (2- from Neutrons and one of Hydrogen Atom Proton), **Tritium** is rich of negative charge. A deficiency of negative charge results, at positive end of Neutrons, as, Electrons of Neutrons are polarized towards Proton. These positive points of Neutron attract Electron of another Proton. The Electron is attached to a Proton, pulls the Proton 'P' to join the Atom. (The positive charges of polarized Neutrons appear in Y and Z direction of 1st Proton). As the second 'P' comes in between the Neutrons situated at $120.^0$angle to each other, the Electron of 2nd 'P' is strongly repelled by the Electron of 1st Proton. The second Electron swings with an angle of $180.^0$ Thus, the Electron goes outward and 2nd Proton settles in between Neutrons. Thus, the resulting atom contains two Protons with 2 Neutrons i.e. Helium (He). This is a single-coil-solenoid structure with *electron flow* as shown in Fig.A-4. Protons in Helium atom, get arranged suitably to satisfy their X, Y, Z axes.

Thus, period 'A' is completed with "HELIUM" INERT. This is a **closed circuit single coil solenoid (Refer Fig.A-5).**



The Reporter clearly explains Neutron demand and Inert formation by the circuit completion process.

B1- DEVELOPMENT from Lithium (Li) to Neon (Ne): [Period B1]
Atomic numbers: 3, 4, 5, 6, 7, 8, 9, 10.
Atomic groups: 1, 2, 13, 14, 15, 16, 17, 18

'Electro-positivity' increases as size of atom increases. In B1 period, Atom is very small. Helium is a single coil solenoid, having magnetic poles at Protons. Further Proton deposition starts around it. Helium atom, is inert and now nucleus for period 'B1' and then for period 'B2'. Each Proton of Helium can hold one octet or two rings. The first Proton addition bears atom, named Lithium (Li), group-1. The second Proton, Beryllium (Be), group-2. The third Proton addition bears atom Boron (B), which owns properties matching to group no.13. This is because of low number of Protons, (small size) atom. It is notable that only 2-P occupies at null point ring region (1st Ring). The next 2-P get deposited at N-pole ring region (2nd Ring). These 4-P collectively, form as a single **'Upper ring'** inclined to Atomic axis. Next 4-P form a single ring at S-pole is inclined parallel to the Upper ring. *N-pole Protons (3rd and 4th) being pole Protons show negativity and show properties of groups13-14.* The next 4-P are at S-pole ring. So, groups 15, 16, 17, 18, properties observed. The same thing happens in period B2. 2-P completes the first ring near null point. Next 2-P completes the ring at N- pole. The last 4-P forms a fourth ring above 3rd ring of Neon period, which adjusts suitably. In small atoms electro negativity pronounces.

Study of multi-Valence of Atoms: In B1, fourth Proton addition appears as Carbon and fifth Proton gives Nitrogen atoms. These are multivalent atoms. To understand multi-valence, initial stage of atomic development is suitable, as, Atoms are small and effects clear.

In this period, valences are- B (1,2,3.); C (1,2,3,4.); N (1,2,3,4,5.); O (-2, 2.); F (-1). [Key: Atomic Symbol (valences of the atom)]

Multi-Valency Explanation of Carbon, Nitrogen and oxygen Atoms: It is already explained,

a) Each Helium Proton has capacity to hold two rings of Proton deposition at quadrants, or one OCTET. The sequence of each consecutive pair is diagonally opposite to each other. In B1, 2 Protons of Helium, occupy 9th and 10th Proton points. 1st and 2nd Protons are diagonally opposite at first diameter, near to null point. 3rd and 4th Protons are at the terminals, near to N- pole of crossing 2nd diameter of inclined ring.

Carbon atom, containing four Protons at its four terminals of first, Upper ring i.e.one ring completed, has sufficient space available to form bonds with all the four Protons one by one. The Upper ring is Big-ring. **Therefore, Carbon atom has electron sharing (positive) valences 1, 2, 3 and 4.**

b) 5th Proton, addition is at second or lower ring near S-pole. This atom is Nitrogen. This is unpaired single Proton on second ring. Therefore, Nitrogen atom can share it's all electrons of five Protons. Therefore, **Nitrogen atom has valences positive 1, 2, 3, 4 and 5.**

c) To complete an octet, three Protons needed. Positive charge is also increased. Hence, 6th Proton deposition occurs. This is Oxygen (O). Now, 5th – 6th pair is established near to S-pole. These two Protons can share its electrons with other atoms (the first and second ring Protons become stable). **Therefore, oxygen atom show '+2'valency in O2 molecule.**

d) Also, due to accumulation of Protons, positive charge in oxygen atom increases. It can pull two electrons to accommodate at two vacant points of the Second ring. The valences changes from positive to negative.

i. e. Oxygen valences '-2'.

The reason for multiple and positive to negative valences is clearly explained. An atom, showing multiple-valences, needs higher energies for increasing Valence Protons to be activated. Octet rule holds for Electrons also for Bonding is observed.

Explanation of Nitrogen atom valences in detail:

Nitrogen atom shows valences, ±1, ±2, ±3, +4 and +5. Nitrogen atom contains 4 Protons at upper ring and one Proton at lower ring. Three Proton points at lower ring is vacant. Nitrogen atom is electronegative. Therefore, it accepts three Electrons one by one, in that three vacant points.
Therefore, Nitrogen shows, -1, -2, -3, valences.
[Note: It is notable that, during 'molecule formation bonding', only Electron holds OCTET rule. Whereas, in 'Atomic- octet', Proton with Electron is needed].
All the five Protons share their electrons to form bonds with reacting Protons. Hence, multiple valences, +1, +2, +3, +4, and +5 observed.
Thus, OCTET rule is being followed. (Refer Fig. B1- 2, Nitrogen Atom;
Numbered corners show Proton occupied points.)

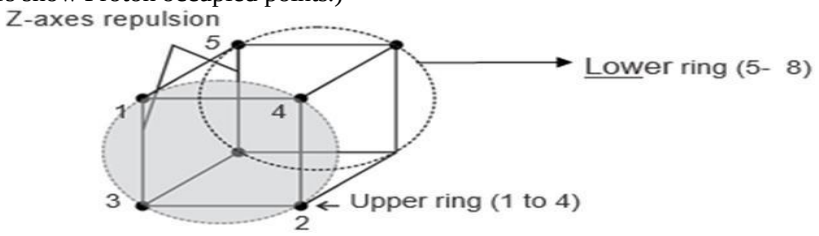


Fig.B1-2, NITROGEN ATOM.

Effect of growth of atomic size:
Atoms containing below 18 Protons, are small Atoms. Helium (He) is a single layer solenoid. Helium is central axis and octets of B1 and B2 are attached solenoid coils to it. In small atoms, positive and negative poles are sharp. The middle part is slim; rings are big and almost cylindrical. As layers increases, i.e. after 'B' period, Atomic Density increases, positive charge in atoms increases and thickness of middle part grows. Naturally, it affects valence Protons, resulting to multi-valence and isotopes in higher periods. Small rings shrink due to increase of pole strength, which, pull electron- ring inward.
[NOTE- REQIREMENT OF NEUTRONS: Electrons of Protons binds adjacent Protons by sharing itself between X-axis of self and Y-axis of another. In 1st ring, 1st to 4th, Protons are bound by X-Y bonding. But, Z-axes of Protons are open. When, 2nd ring is formed, it keeps the rings apart by mutual positive charge repulsion. The accumulation of positive charge in the Atom goes on increasing with successive Proton addition. That tends to make atom unstable. Neutrons act as buffer. It stabilizes atoms by suitably polarizing itself.**]**

Fluorine Atom:

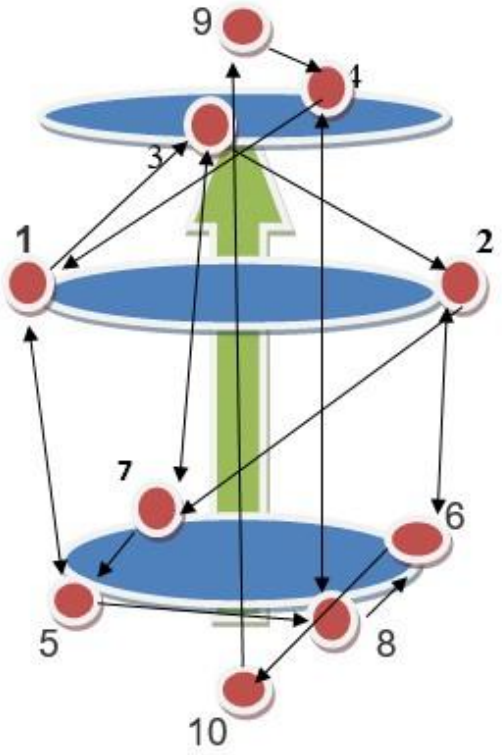
The 7th Proton addition, results in Fluorine (F) atom formation. This is highly electronegative Atom. That is due to the positive charges of the Atom is directed collectively towards the 8th Proton's vacant place, the only open point, above 4th Proton. The Atom being small, the acting electromagnetic forces are sharp. Low atomic weight makes the atom more active and negative. So, fluorine is very sharp electronegative Atom. It pulls Electron from the reacting Proton.
Neon Atom:
Addition of 8th Proton completes second ring. It completes ***octet cube*** and ***electronic circuit*** resulting an inert Atom, Neon (Ne) formation. Protons, 5th to 8th, (here 7-10,) form another X-Y bonded ring. Z-axes positive charges keep the rings separate. Helium Atom becomes central axis of B1 period atoms. Thus, it contains total 10 Protons with Electrons and Neutrons.
NOTE: It is important to note that, Inertness is by completion of an electronic circuit. Cubical structure or Octet is a stable structure, but, not inert, is observed starting from period -C. Table-1, shows, atomic volume shrinks from Helium (He) to Neon (Ne).

NEON INERT ELECTRONIC CIRCUIT:
Form an inert. The circuit is as follows. The Writer numbered

Upper ring (2-P at 1st ring near to null point and 2-P at 2nd ring near N- pole).
5-8 = at 3rd ring above S-pole. 9th and 10th Protons are the

Protons of Helium Atom at N - pole and S –pole respectively.
(Refer, Fig. B1 – 3).

NEON CIRCUI T:



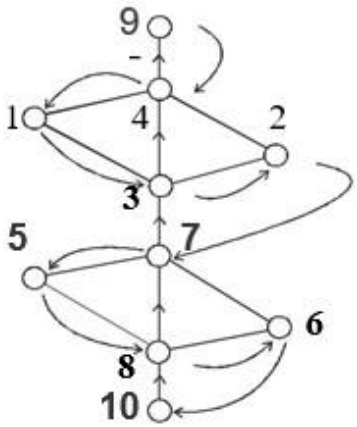
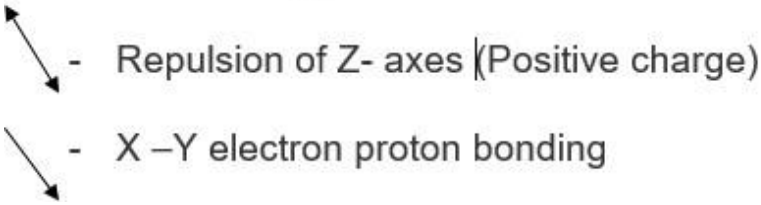


Fig. B1-3
Neon inert Electronic Circuit



Helium atom has two Protons, So, it can hold two octets. Another octet starts from Sodium (Na) and ends at **Argon (Ar).**
Development of period-B2, is in similar way, as in B1. The second octet is around the second Proton of Helium.
B2- DEVELOPMENT from Sodium (Na) to Argon (Ar)

Period: B2; At. No. 11to 18; At. Groups: 1, 2 and 13 to 18.
As soon period B2 starts, 2-Protons (1st and 2nd) occupy the two vacant points of the First Ring of Period B1. Again 2-Protons (3rd and 4th) occupy the two vacant points of Second Ring of Period B1. Then electronic bond of Protons 9 - 10 breaks. Third ring slips-dawn (6th -10th Proton bond breaks) and a new ring formation starts above 3rd ring of B1, which is above 10th Proton /S-pole. A 4th Ring is formed by **4-P, 5th to 8th deposition, as usual Proton deposition process.** (Refer, Fig. B2-1, BREAKING OF 9-10 PROTON BOND**).**

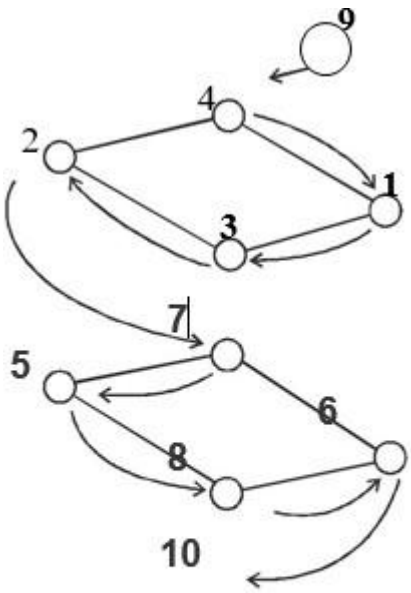


Fig.B2-1

BREAKING OF 9-10 PROTON BOND

The 4th ring contains 15th to 18th Protons. As soon the 2ndring is completed, i.e. 18th "P" joins, 9th "P" gets connected with 10Th "P" through Central axis and 6th P to the adjacent P of 4th ring. Thus, Argon circuit is - 10->--11□-14□-12□-13-□15□-18-□16-□17□-01-□04□-02□-03-□05□-o8□-06-□07□-09□-to---10.

NOTE:

1. Numbering of Proton is from left to right and from front to back. (In figures it is not followed strictly)
2. Circular electron flow / bond through rings, starts from Proton number 10 to 09.
3. Central flow of Electron is from Proton number 09 to 10.

Thus, the Period starts with atom Sodium (Na) and ends with inert Argon (Ar) Atom. It contains '18' Protons. Since, the Atom is one layer, one nucleus Helium (He), its properties vary from other further periodic Atoms. For example, a) in B_1 and B_2 Atoms fall from 2nd group to direct 13th group. b) Only, 2P addition observed in 1st and 2nd rings. c) It gave one more inert atom, namely Neon (Ne). This is because, of sufficient space available and sharp-free effective electro-magnetic forces of constituting particles. In periods C_1 and C_2, Protons form all 18 groups and at the last, only one inert Atom. In period D_1 and D_2 extra Atoms namely Lanthanides and Actinides series are there.

This is due to increase in atomic density, size and presence of more sub-atomic particles. Their collective effect imparts varieties of extra chemical and physical properties in Atoms.

**In period B1 andB2, the ring formation is gradual. Effect of new Proton addition is sharp. The 3rd proton addition directly goes to group 13. As new ring of B2 period starts, null point shifts up,*

the rings of B1period shift upwards to upper pole. The ring nearing pole shrinks to small ring. The rings nearing centre or null points are rather big rings. When 4th ring starts, the first ring shifts to above null point. Thus, big rings are placed on both sides of the null point.

[The pole proton atom regions are most electronegative. That should be the reason, why atomic sequence fall from second period to directly thirteenth period in B1 and B2 periods. The Writer felt for the both periods, only two Protons should occupy 1st ring near to Null point, falling to groups 1st and 2nd. The Protons falling to groups 13th and 14th should occupy 2nd ring near to N- pole, is electronegative region. 4-Protons form third ring of B1period and 4-Protons form fourth ring of B2 period, as, all those atoms belong to suitable groups. First and Second ring of B1 period skips up, due to formation of fourth ring of B2 period. The 1st and 4th rings are big rings situated in both sides of null point. 2nd and 3rd rings are small rings, situated near to N and S poles

respectively. Atomic volume of Neon shrinks to =19.3 A.U., from atomic volume of Helium=25.96 A.U.**]**
NOTE: In periods B_1 and B_2 when B_2 is completed i.e. as soon Argon (Ar) is formed the atomic electronic bond re-arranges itself to give a single circuit.
(Refer Fig. C_1-2 & C_1-3,s for inert electronic bond structure, of 18 Protons).

C1-DEVELOPMENTS from Potassium (K) to krypton (Kr)
Period: C_1. Atomic numbers: from 19 to 36. Atomic groups: From 1 to 18
Before starting development around Argon nucleus, it is better to know Argon Atom. All atoms behave like a bar magnet, as shown in Fig - C_1 - 1. The 4 rings (inert) formed are also shown in the figure C_1-1.
Rings near **poles** are more closely (smaller) as compared to those nearer to the middle **null-Point**. This is because poles are attracting the particles more force fully than middle part, based to the magnetic flux density. So, 2nd and 3rd are small rings (smaller) and 1st and 4th rings are big rings (bigger) comparatively.

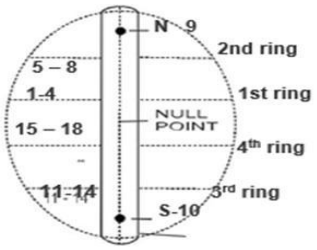


Fig. C_1 -1

BAR MAGNET
ARGON (Ar) ATOM

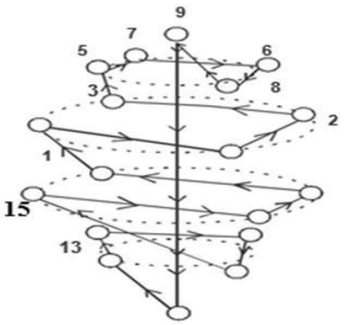
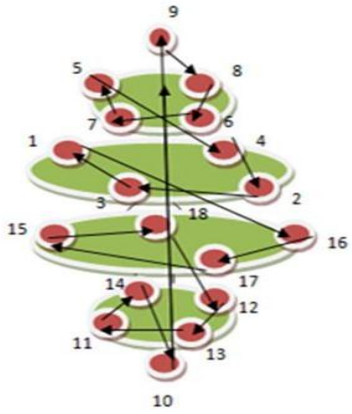
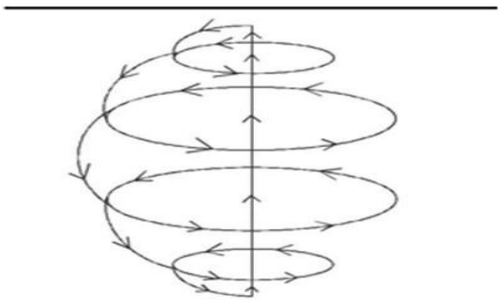


Fig. - C_1-2

INERT FORMATION
(Electron - flow diagramme)
POINT - FLOW



(CLOCK-WISE)



(ANTI-CLOCK-WISE)
INERT - FORMATION

STREAM FLOW

DIRECTION OF FLOW OF ELETRONS IN INERTS OF '18' PROTONS.

FIG - C_1-3

Proton Deposition: As explained earlier, Proton accumulation starts around 1st ring, above null point, at the points at right angles and the sequence one-opposite next as explained earlier. Thus, very first Potassium, then Calcium, then Transition element starts. 4 Protons are deposited (1-4) at 1st ring, the next 4 Protons (5-8) at 2nd ring, 9th Proton on top, above 'N' pole, 10th Proton at bottom, below 'S' pole. Again, from (11- 14) Protons at 3rd ring and (15 – 18) at the 4th ring occupies. Thus, the period starts with atom Potassium (K) and ends at inert Krypton (Kr).
THIS PROTON ADDITION SYSTEM IS VALID FOR ALL PERIODS, starting from C_1. [Proton means with its

electron. everywhere in Atomic Development]

INERT (or Nucleus) formation (in 18-member periods): As shown in Fig. C1-2 and Fig C1-3, an inert is formed; when, Electronic-Circuit is completed i.e. all Protons are bonded electromagnetically. Helium is nucleus for B periods [Actually, Helium is component of B period]. Argon is nucleus for C1 period and so on. The last inert of a period is nucleus of running period atoms. Only, Neon is a temporary inert, which, breaks, as, B2 period starts in order to complete 18member new inert "Argon". The number of members of a period increases, because of, "electromagnetic field space" created by the nucleus. As nucleus grows heavier, electromagnetic field around it also increases. This creates space for Proton accommodation. The number of atoms a period can hold is expressed by $2n^2$ (n = period number. A=1, B=2, C=3 and D=4). Higher number of Protons, stronger is nucleus. All periods, except 'A', are in pair.

C2: - DEVELOPMENT from Rubidium (Rb) to Xenon (Xe). At. Nos. 37 to 54: At. Groups: 1 to 18. Period: C2.

Reason for Pair-Periods: *The reason for pair period, like, B1-B2, C1-C2 and D1-D2, is to compensate the direction (clock-wise and anti-clock wise) of magnetic flux effect created by previous period. This is so, due to the direction of electronic bonding/flow of the previous period (inert). Argon formation compensates Helium flux. Others, C1-C2, D1-D2, all are in duplicate to compensate flux created by C1, D1 periods.*

Development of C2 is exactly the same as that of C1 starting from Rubidium (Rb) and ends to inert Xenon (Xe).

Period 'A' is centre containing 2 atoms, the Principal quantum number = '1' or 'K'; Period B is the 2nd Quantum number, or, L = '2'; contains '8' atoms, in pair (B1 and B2). Similarly, Period 'C' is 3rd Principal quantum number, or, M = '3' containing '18' members, is also, in pair (C1 and C2). Period 'D' is'4th' Principal quantum number, or, N = '4,' containing '32' members. (D1 contains 32, so, D2 also should contain 32 members). The number of Protons arranged in periods (A, B, C, D,) exactly follows 'Bohr-Bury'1921 Scheme.

The electronic bonding or electron-flow-direction may be clock wise and Anti clock wise in inert. To compensate electromagnetic field direction, except 'A' all periods are in pair. (Refer, Fig C2-1and Fig C2-2). It is possible, South and North poles changes alternatively in periods. For example, Proton deposition of C2 starts from S-pole side of C1 inert.

Fig C2-1 Fig C2-2

D1: DEVELOPMENT from Caesium (Ce) to Radon (Rn) At. No. 55 to 86; Atomic groups: 1 to 18 + Lanthanides; Period: D1

Refer, Fig. D1-1, RADON (Rn)

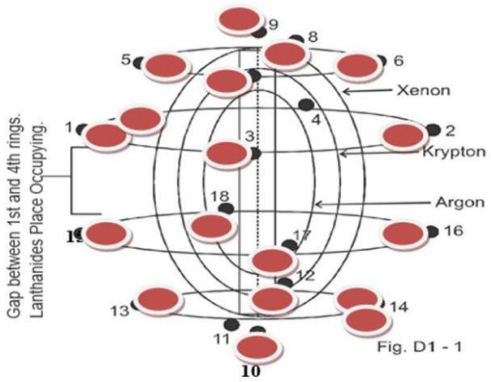


Fig. D1 -1, RADON (Rn)

The Proton arrangement system is, the same, as it is in C1 and C2 periods. The modification is, after Cesium,

Barium and 3rd Proton Lanthanum, lanthanide series starts.
Between 3rd and 4th Proton about 14 Protons are consumed in the gap created between first and fourth ring. The gap is created due to largeness of the Atom. That is so, because, North and South poles are more powerful and attracts Protons towards it-selves. The effect at middle of the atom is pronounced due to large periphery of it. The atom is almost spherical. So, potential of Proton deposition is created between 1st and 4th ring. A new atomic pole appears in the gap i.e. N-pole side shows new S- pole and S-pole side creates new N-pole. In between the new poles ***proton- accepting- affinity*** *appears to join the poles for atomic stability and electronic bonding reasons.*
The place of deposition of such Protons are around null point or middle of the atom having almost similar electro-magnetic field, they are almost of similar nature. Such atoms are collectively called Rare-Earths or Lanthanides, (La). After satisfying the new Proton affinity points created by the Gap, the next Hafnium $(Hf)^{72}$ comes at the 4th Proton point completing the 1st ring. The potential to accept a Proton at a certain point is observed here. The points termed as "Proton Affinity Point" or 'PAP' in short.
After 4th group, other protons are arranged smoothly in the general way. The last atom of the period is Radon (Rn), the inert.

D2-DEVELOPMENT - from Francium (Fr) to the inert to be discovered.
Period: D2; At. Nos.87- 118(Predicted by Master Arvind). At. Groups: 1 to 18 + (14-Actinides).
{*New inert Atom now discovered is Oganesson (Og). Many atoms of this period, are discovered after start of the Writer's this work and Publishment of Master Arvind's Periodic Table in year-2005***}**
The Writer mentions some of the new invented atoms:

At. Nos.	Names (symbol)	Years of discovery)
113	Nihonium (Nh)	2003
114	Flavorium (Fl)	1999
115	Moscovium (Mc)	2003
116	Livermonium (Lv)	2006
117	Tennessissine (Ts)	2010
118	Oganessium (Og)	2006

Majority of the discoveries are synthesized Atoms, Radio-actives having very short Half –lives, even in milli-seconds.
The Atomic development of period D2 is the same as D1. Like Lanthanides, D2 also contains 14 Member Proton group to fill the gap, they are called '*Actinides (Ac)'
Gravitational and Electromagnetic forces in big atoms pull particles towards center. So, Atomic Density increases (Refer, Table -2. ATOMIC AND PHYSICAL PROPERTIES OF INERT GASES).

MASTER ARVIND-PERIODIC TABLE

Master Arvind D. Mishra, a 10th standard student, Re-arranged Periodic table in year 2005. He was student of Century Rayon High School, Shahad, Kalyan, Dist. Thane, (Mumbai), Maharashtra, 10th std. Roll No. 31. He won 1st Prize in the Science Competition of yr. 2005. As much the Reporter knows, till that time, the discovered elements were up to with Atomic Number 107. It was believed that, atoms, up to 106 atomic numbers only can be possible. **[His arrangement, especially by a child, was appreciable. He was nominated for National award, is still waiting for a call to receive the Award. Thanks to the Govt. of India. Master Arvind don't like to ask for the award, is not suiting for a true worker.**
The Periodic table clearly indicates probability of Atoms with Atomic Number up to At. No.118. After that, the discovered Atoms are up to the At. No.117 (and now up to 118) is learnt. But, no one credited to the child. (Refer, the periodic table by master Arvind). Influenced by the Periodic Table, the Writer was impressed to write **''The Actual Atomic Structure and Bonding'**'. The Writer congratulates and thanks him for his *bonafide work*. 'Master Arvind's Periodic Table' has no limitation of number of possible atoms. After, 'D' period, a new period 'E' may start. E-period will contain 50 atoms **$(2n^2)$** in each E1 and E2 periods. Like Lanthanides and Actinides, Period 'E' will have 50 - 18 = 32 atoms. But, subject to the limitation of atomic stabilization remains.

Summary:
1. Though, all the four forces are active, the Reporter considers electromagnetic force mainly, the sub-atomic particles are bound together.

2. In period 'A', one Proton accepted one Neutron, then second Neutron, then another Proton, to form a single coil solenoid structure, a complete electronic circuit. This is the first inert, Helium (He). This shows-

a. Inert have a complete electronic circuit.

b. Before a new Proton addition, stray positive charge of previous proton is suitably blocked by Neutron.

3. Atoms are similar to a bar magnet. If it is a Proton, like, Hydrogen atom, Electron and Positrons are the two poles. If it is a solenoid, it has magnetic flux and poles.

4. Each pole Proton can hold one octet or two rings, one big ring and one small ring. Small ring is near to pole and big ring near to null point of the pole side.

5. Proton deposition points are at the quadrant points of rings, at periphery. The second Proton is posted diagonally opposite to the first. Then, third Proton is at one side of the second diameter (which, intersects the first at center perpendicularly forming an angle 900) and fourth is at diagonally opposite to third P. Then, small ring is completed in the same way, with fifth to eighth Protons and one octet is competed. Ninth Proton goes above N- pole and tenth Proton comes below and opposite, at S- pole,
i.e. outer side, where, new octet formation is to be started.

6. At second octet, opposite to the first, small ring is completed first, then big ring, in the same way, as explained above.

7. Lanthanides and Actinides are gap filling elements, in D1 and D2 periods. This is due to increased periphery and largeness of the atom. "Proton Affinity Point" (PAP) is observed here.

8. If, there is possibility of a further period, that will be period 'E', will contain 5o members and 32 members of lanthanide/actinide type gap filler protons. But, will be unstable.

9. Protons are arranged spirally, one above the other, with respect to the atomic axis. The Writer divided it into rings, to make the subject easy to understand.

4. Electronegativity

Approving this atomic structure

Electro-negativity is defined as the tendency of an Atom to accept an Electron. It is related both to the ionization potential and electron affinity of an element.

Pauling scaled it, called "Pauling's Electronegativity scale" taking fluorine as an arbitrary standard value = 4.0, against which the electro-negativities of elements are calculated.

The available table is shown in Table - 3.

It is one of the bases to this Atomic structure and supports it. The Writer explains it on this atomic structure basis.

Period wise (of groups)

1. [Groups 7 to 12]

(Protons, on or near to poles): As atoms grow, Electrons of 'P' are shared between X and Y axes. But, Z – Axis positive charge goes on accumulating. Gravitational and magnetic forces increase, are most effective around poles. **Observing** *Periods of this region, there is mild increase in electronegativity with increase in Atomic size in groups '7' to '12'.*

[7^{th} 8^{th} and 9^{th} Protons are near to 'N' pole and 10^{th}, 11^{th} and 12^{th} Protons are near 'S' pole.]

At Poles, as Atomic size increases, electronegativity increases (mildly) period-wise.

2. [Groups 1 to 4] and [groups 15 to 17]

(big ring's Protons): These Protons lie on the rings on both sides of Null point of Atoms (i.e. 1^{st} and 4^{th} ring), where,

a) Magnetic flux is weak,

b) Presence of Neutrons are more?

c) Diameter of rings increase to spherical.

The above reasons effect with increase in size of atoms, which lowers electronegativity, due to spreading of positive charge to larger area. The presence of large number of Neutrons, also absorb positive charge.

It is clearly observed that, as size of Atoms increases, electronegativity decreases period-wise in this region.

3. [Groups 5 to 8] and [groups 11 to 14].

(small ring's Protons): 5th Proton show minor decrease in electro-negativity in periods D1 and D2, but, from 6th to 8th Proton electronegativity increases. This informs that, points of attachment of Proton 5th is near to 1st ring and below level of Proton 6th 'P'. P 6th Is at lower level of 7th 'P' point and 7th P is below 8th Proton at the 2nd ring with respect to magnetic axis of atomic bar magnet or Atomic-Axis, from S to N. Similar gradation is observed in groups 11 to 14.

This shows the sequence of Proton Arrangement.

Electronegativity of 8P, 9P, and 10P are the same in all periods. That shows, 8P, 9P and 10P are almost at the same level with respect to Atomic axis (i.e. angular momentum). The Position of Protons 8P and9P with respect to N- pole is similar to that of 10th Proton (10P) to S- pole.
This clarifies; 8P of second (small) ring is near to join at 9th Proton 'N' or Head Proton forming electronic circuit. *As size increases, period-wise, electronegativity increases or is stable in this region.*
It is clear that electron bonding is spiral, and ascending. It is observed, group 11 to13 show slight **increase** of electronegativity from B_2 to D_1. These Protons are members of 3rd ring, showing its position near 'S' pole.
Group wise study (in periods):
Group 14 and 15, electro negativities are almost stable i.e. it is above 13th and nearby the 4th ring. Group 17 is more electronegative than group16 and electronegativity of both (16 and17) groups **decrease** from period B2 to D1, like, 1st ring Protons, which is near null point and diameter of the ring increases.
The electro-negativity variation reveals that, the current study of atoms through the new Atomic Structure is perfect. Therefore, termed **"The Actual".**
The electrons in atoms are polarized creating voltage difference during Proton deposition. The region where, positive charge is more (S-pole), electrons are bound more forcefully by electromagnetic force of attraction (by X-Y bond) and accept electrons readily, increasing electro negativity. The region, where, electronic negative charge is more (N-pole), electrons get released easily, due to negative charge repulsion, increasing electro-positivity. This, the Writer terms ***"Atomic Electron Polarization".***
The atomic electron polarization creates voltage difference, called, **"Inter-Atomic voltage difference",** which creates **"Inter Atomic current" on inert formation.** On completion of this circuit yield Inert.
Electronegativity up to gr.17, in periods.
In period ~~'A' o~~nly one-member Hydrogen (H) and the next is inert ''Helium" (He). Electronegativity is= 2.1.
Period B_1 and B2: Electronegativity increases from group 1 to 17th in periods B_1 and B_2.
Period C_1 to D_1: Electro-negativity goes on increasing till group10th and in D_1 up to group 11. Groups 8,9 and 10 have the same electronegativity in all periods (pole Protons). 'P' 8 and 9 are very close. Second octet starts at 11th, where, electronegativity goes down as compared to 8-10 Protons, gradually increasing till group 17th.

This shows, after inert (i.e. electro-negativity is zero.) electro-negativity gradually increases with addition of new Protons up to 10th 'P' (Neon structure) and restarts from 11th 'P' to 17th. As soon as, the first new Proton is added at N-side at first ring (group-1), the Electrons of nucleus get polarized towards N-pole, due to the naked positive charge of the new Proton. The polarization is of Nucleus Electrons. This phenomenon is similar to, a stone thrown into a stagnant water of pond, where, water waves get created. The negative charge polarization on N-side minimizes by new Electrons and Neutrons. That is why, group-1 atoms are the most electropositive and readily donate electron. On further addition of Protons, the polarization effect minimizes and electronegativity increases. It reaches to peak level at group no.8 and maintains till group 10th or 11th i.e. electronegativity increase stops at this level. Showing completion of the first octet and ready to start second octet, which, is at 'S' or negative side, showing atom's electro-negativity higher, than the first octet. Positive charge increases in atoms, demanding electrons.

This demand goes on increasing till group '17' is reached. On Addition of 18th Proton the electronic circuit is completed and flow of electrons start, forming a new Inert. The electron flows all over the atom. The atom becomes electrically Neutral.
As size of atoms increase, more Neutrons are accepted to block stray positive charge of Protons. The number of Neutrons needed depends on Proton-deposition. This leads to 'Isotope' formation. Groups 6th 12th 14th 16th and 18th, all even number Protons, show more isotopes.
Negative charge of Neutrons goes inner side to absorb Z- axis positive charges of Protons, suitably to stabilize the Atom. The upper positive charge of Neutrons facilitates electron bonding / flow.

Summary:

1. Electro-negativity is defined as the tendency of an Atom to accept an Electron to it. It is related both to the ionization potential and electron affinity of an element.
2. Pauling scaled it, called "Pauling's Electronegativity scale" taking fluorine as an arbitrary standard value = 4.0, against which the electro-negativities of elements are calculated.
3. Electronegativity of Atoms depends on the atomic position of the last Proton (Proton of identification).
4. It is affected by Electro-magnetic force of the Atom.

5. Atomic Configuration and Activation Energy

In present investigation, 'Proton Configuration' of atom is easier by, there are no quantum numbers. One can designate an atom only by-

a. Period,
b. Proton group number (1 to 18 numbered)
c. With Lanthanides and Actinides numbers and
d. Atomic symbol.

One can identify the Protons (with electron) taking part in reactions. Lanthanides and Actinides will have to identify separately (1 -14).

For, example, Proton configuration of Elements –

Atom= Period-Group number + Lanthanides /Actinides numbers or Atomic numbers (Valence 'P' numbers, first to the last serially.)

i. Potassium (K) can be written, **K = C1 -1(1)**; This means, potassium atom belongs to first group of C1 Period, has only one valence Proton taking part in reactions.

ii. Tungsten **(W): W=D_1-6 (± 1, 2, 3, 4, 5, 6).** This means, tungsten atom is after lanthanides, (as Lanthanides belongs to third group) in 6th group of D1 period. This atom can have valency up to 6 (another valence P can be written as, W= +/-1, 2, 3, 4, 5, 6).

iii. Cerium **(Ce)**: **Ce= D_1 -3, La 58, or La-2(1, 2, 3, 4)** This means, the atom 2nd lanthanide of third group of D1 period having valences 1 to 4. (here 'La' mentioned at right)

iv. Americium **(A_m); D_2, -3, Ac-95 or Ac-7(1, 2, 3, 4)** Means 7th Actinide of 3rd group of D2 period having valences 1 to 4. *(Refer internet, periodictable.com/prop)*

NOTE: La and Ac belongs to only 'D' Period and 3rdgroup only. Their serial number is sufficient to assign the Proton.

*The Protons taking part in reactions start from the First to backwards. The First Proton is called **"proton of identification",** that gives name to the atom. This is because, to activate more Protons higher energy of Activation needed. Naturally, other Protons will be activated later. But, while designating Protons in Multi-valences, it will be written in reverse sequence, as explained above. Thus, it is easy and exact.*

Effect of Activation Energy in Reactions

The positions of Electrons of Excited Valence Protons can be explained with Quantum Numbers (n. or l..), as explained in Hydrogen atom spectrum (Refer, Plank's Back Body Radiation/ Hydrogen spectrum, Refer, google.com). It remains important and useful, while explaining position of electrons and related matters.

Multi-valency Explanation and designation:

For example, any atom 'X' is having four valence Protons, falling in different groups, 1, 2, 13 and 14. (The last Proton designates atomic identity). Each Proton can be easily designated, like, X-1, X-2, X-13, X-14.

Special: In rare earths, generally, Extra Protons filling the gap can also be indicated similarly by La or Ac with numbers e. g. La-2 or Ac-1, 2, 3 etc.

For Bonding details, Refer the chapter-10, "Bonding".

Summary:

One can designate P(configuration) of an atom only by-

a) Period,
b) Proton group number (1 to 18 numbered)
c) With Lanthanides and Actinides numbers and
d) Atomic symbol.

One can identify the Protons (with electron) taking part in reactions. Lanthanides and Actinides will have to identify separately (1 -14).

Proton configuration of Elements –

Atom= Period-Group number + Lanthanides /Actinides numbers or Atomic numbers, mentioning La or Ac (Valence 'P' numbers, first to the last/)

For example,

Americium **(A_m): D_2, -3, Ac-95 or Ac-7(1, 2, 3, 4)** Means 7th Actinide of 3rd group of D2 period having valences 1 to 4.

6. Valency of Atoms

Valency is the number of 'Valence Proton', taking part in chemical reactions of an atom. There are three ways of taking part -

a) Positive (+) = donates or shares electron,
b) Negative (-) = accepts electron,
c) Both minus and plus (±) i.e. positive and negative, for duel nature

(Refer internet, periodictable.com/prop)
The activation of 'P' is in reverse sequence, starting backwards from the last 'P' i.e. Proton of identification. The lanthanides and Actinides are exceptions, where, out of all, only one or two Protons can get activated. The reason is, they are below atomic surface level (i.e. in ditch).

TABLE 5 - Valency in Groups and Periods: Groups 1, 2, 3, show valences +1, +2 and +3 respectively in all periods. Others are shown as

Justification of H^- (Negative ion)

Hydrogen Atom is electro-positive as well electro-negative in nature. It shows both positive and negative valences due to its small size. This is so because, positive charge of its Proton is open at Y and Z axes, it therefore, accepts one electron. That makes, the atom negatively charged.

Group number (general valences)	Period	Valences
Group=4 (+4)	**C1=**	**± 2, +3, +4.**
Group = 5 (+5)	**C1 =**	**±2, +3, +4, +5** **C2 = +3, +5**
Group -= 6 (+ 6)	**C1 =**	**±2, +3, +6**
Group = 7 (+ 7)	**C1 =** **D1 & C2 =**	**±2, ±3, +4, +7** **+4, +6, +7**
Group = 8 (…)	**C1 = C2 =** **D1 =**	**+2, +3** **+3** **+3, +4**
Group = 9 (…)	**C1 = C2 =** **D1 =**	**+2, +3** **+3** **+3, +4**
Group = 10 (…)	**C1 = C2 = D1 =**	**±2, ±3** **±2, +4** **+2, +4**
Group= 11 (…)	**C1= C2= D1=**	**+1, +2** **+1** **+1, +3**
Group = 12(…)	**C1= C2= D1=**	**+2** **+2** **+1, +2**
Group = 13(…)	**B1 to C2 = D1 =**	**+3** **+1, +3**
Group = 14(…)	**B1 to B2 = C1, C2, D1 =**	**+2, ±4** **+2, ±4**
Group = 15(…)	**B1 =** **B2, C1, C2 =**	**±1±2+3; +4, +5** **±3, +5; D1= ±3+5**

Group = 16 (…)	**B1 =** **B2, C1, C2, = D1 =**	**-2** **+4, +6, -2** **+2, +4**
Group= 17 (…)	**B1, =** **B2, C2, D1, = C1 =**	**-1** **± 1, +5, +7** **± 1, +5.**

As explained in beginning, valency is defined as ''the number of Hydrogen Atoms or twice the number of oxygen atoms with which one atom of that element can combine.''
It is combining power of an Atom to react with another atom, (homo or hetero), to form molecules. TABLE - 5, clearly shows that, Valences are positive (+), Negative (-) and both (±) positive and negative.

1. In present Atomic structure, all Protons of a Period around the Nucleus of an Atom can take part in forming molecular bonds.
2. The valence in general, can be 1 to 7, i.e. below octet number due to some limitations. The limitations are -

a) The activation energy and suitable circumstances.
b) ***The availability of valence 'P' around the nucleus, (maximum seven, i. e. below octet).***

For example,

i. Group-1 elements have only one valence Proton, cannot have valency more than that. Nucleus breaking is almost impossible. If, it breaks, the pieces will produce different new Atoms.
ii. Group 17, periods B2, C2 andD1 show Valences ±1, +5 & +7.
iii. Only one or two 'P' of La / Ac take part in reactions.

3. **Proton Activation Energy:** The energy required to activate valence Proton to react, is Proton Activation Energy. In groups 1 to 4, almost all Protons of 1st ring takes part in bonding. In period C1, it shows +2, +3 and +4 valences. The first Proton activation needs the least energy of activation. Here, two Protons are activated together (+2) at the same energy level. The values increase serially for 2nd, 3rd and so on till the maximum Protons of the atom can be activated (max. 7). That is applicable to all atoms.
4. **Reason for increase of Activation Energy:** Due to sharing electrons for bonding, positive charge on parent atom increases. Increase of positive charge in the Atom, results as, stronger holding attraction force on Electrons. To overcome that, an extra energy and situation needed. Thus, to activate 3rd Proton for valency +3, requires a higher energy of activation and goes on increasing to maximum possible (max. 7). Eighth Proton, at 8th group, act as a switch for octet formation.
5. **Effects of Nucleus enlargement:** As size of Nucleus increases, tendency to loose/share Electron increases. Starting from period C1 in group 8, valences goes from +2 to +4. i.e. +2+3+4. This is due to increase of size of Nucleus. Positive charge accumulated and increase of periphery of atom overcomes octet effect and second ring Protons react. Protons numbered 8 and 9 are equi-levels (equal electronegativity), get activated together (+2). Argon nucleus contains 18 Protons. Henceforth, inert have at least 18 Protons. That makes '4' Protons of 2nd ring take part in the reaction. The last Protons need least energy to get activated. **[In group 7,** it finds +4 or +3 or +6 or +7 valences (N – pole side). Both ring Protons take part in bonding**.** In periods C2 and D1, first +4 then +6 then +7 valences observed. All seven valence Protons take part in bonding. Though, the 2nd ring contains only 3- Protons, but, the last (4th) Proton of the 1st ring also gets activated at that energy level**].** As already explained, the Proton arrangement in rings are not exactly in one plane. It is in ascending order from Proton no. 1 to 9 and from 10 to 18. So, 4 Protons get activated simultaneously. When more energy supplied the lower 2 Protons get activated. Thus, valency becomes +6. To activate the 1st Proton (of 1st ring) still more energy needed. Thus, the total valence Electrons (of the Protons) get activated and it valences +7, observed.

Others:

Group – 9 to Group-13 Show +2 to +3 / +4 valences. In this structure one octet is complete and one Head Proton is there. That means, it can activate 9th, 8th, 7th and 6th Proton's electrons (P).
In Period C1 9th, 8th together get activated then 7th (for valences +2, +3,)
In period C2, 9th, 8th, 7th all together get activated (for valences +3).
In Period D1 9th, 8th, 7th all together get activated then, 6th Proton (+3, +4)

This type of variations of valences observed, due to increase of atomic size. As atomic size increases, positive charge in atom increases. Also, electrons forming atomic rings get stretched long, weakens electronic- ring-bond, due to larger diameter of the atom. This effect is clearly observed. Valence of an atom depends on-

a) Position of valence Protons, i.e. group and periodical position.
b) Size of the atom and diameter of the atomic ring to which, it belongs. Thus, up to group – 17, variation of valences observed.

Some specials-

In group – 14, in general, the valency is +2, +4. In B_1 and B_2 '(-4)' valency is also observed. This is because B_1 and B_2 are small atoms. Negative valency means positive charge in atom, demands electrons. B_1 and B_2 contain 4 P (In short form, the Writer writes it as "P". The Proton without electron becomes positive ion, P^+).

Group – 15

Period B_1 = $\pm$ 1, $\pm$2, $\pm$3, +4, +5

Period B_2, C_1 and C_2 = $\pm$3, +5

P = 5, B_1 is small atom (Negative side). The variation is natural. Group - 16

P = 6; valences – Period B_1 = - 2

Period B_2 C_1 & C_2 = -2, +4, +6.

Period D_1 = +2, +4

D_1 being heavy Atom do not show negative valency, medium Atom B_1, C_1 and C_2 show both positive and negative valences. While, B_1 being small atom show only negative valency. **This informs that, octet B1 and B2 are together. i. e. B2 shows similar nature of C1 and C2.**

Group 17

Valence proton P = 7; valences- Period B_1 = -1,

Period B_2, C_2, D_1 = $\pm$1, +5, +7; C_1 = $\pm$1, +5

The variation is due to location and size of atoms. Being negative (small) side it shows - ve valency and due to largeness of size, variable + ve valences are observed.

Out of 14, only one or two Protons of Lanthanide or Actinide takes part in reactions. It is considered, as 3rd group of D period, (shows maximum valency 4).

EFFECTIVE POSITION of Group - Protons with respect to the Atomic axis, is shown, Refer, fig. 7.

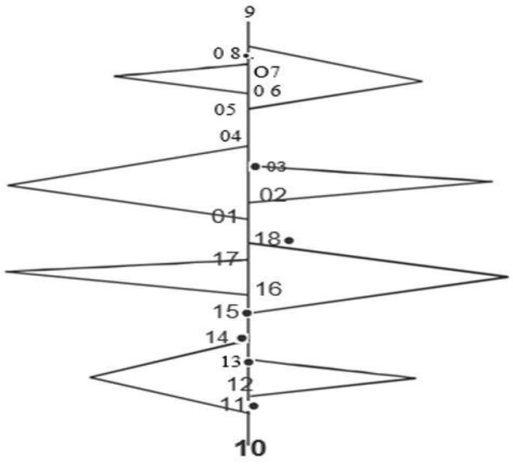


Fig. 7
EFFECTIVE POSITION OF Group – Protons, with respect to the Atomic axis

EFFECTIVE POINT OF GROUP/ VALENCE PROTONS ON ATOMIC AXIS.

Summary:

1. Valency is defined as ''the number of Hydrogen Atoms or twice the number of oxygen atoms with which one atom of that element can combine.'' It is combining power of an Atom to react with another atom, (homo or hetero), to form molecules. TABLE -5, clearly shows that, Valences are positive (+), Negative (-) and both (±) positive and negative.

The activation of 'P' is in reverse sequence, starting backwards from the last 'P' i.e. Proton of identification. The lanthanides and Actinides are exceptions, where, out of all, only one or two Protons can get activated. The reason is, they are below atomic surface level (in ditch).

2. There are three types of pair periods, after single period 'A'.

i. Small periods, contain one octet each (B1and B2).
ii. Medium periods: contain two octets (C1 and C2).
iii. Overloaded periods: contain extra atoms, named as "Lanthanides" and "Actinides", besides, two octets and poles. (D1and D2).

Small periods have tendency to accept Electrons, i.e. electronegative nature, on the other hand, overloaded big atoms have tendency to donate or share Electrons, i.e. electropositive natured. Thus, growth in atomic size changes its nature from electronegative to electropositive.

Deciding factors of Atomic Reactivity:

a. Valences of an atom depends on, the number of valence Protons, group, periodic position of the valence Protons and atomic size, or, diameter of the ring on which, it is situated.
b. Large size rings, possessing large number of valence Protons, give large number of valences.
c. Atoms showing variable valences at successive stages, needs, lower to higher "Energy of activation", from the first stage to the last stage.
d. The effect of charge distribution over the atom, charge strength, nature of charge and position of valence P, all together decide magnitude of the Energy of activation of an atom.
e. Only one or two Protons of Lanthanide or Actinide take part in reactions, is considered, as 3rd group of D period, shows maximum valency 4.

7. Bonding

The Reporter considers, while to begin with bonding, some of the following features, assumptions, are as under:

1. All valence Protons are accompanied with an Electron, represented by 'P'
2. Valence Proton, 'P' as particle, though, Electron possesses duel nature, of particle and wave. The Electrons act as a binding rope, a rubber band, or an energy cloud of negative charge, binding 'P's together, electromagnetically.
3. When atoms come near to each other for bonding to form a molecule, there exists an electromagnetic field. 'P's adjust their positions suitably to facilitate bonding.
4. 'Z' axis of 'P' in atom is inner side, directed towards Nucleus of the atom. 'P' bonding is between X and Y axes of Valence Protons.
5. The Reporter considers Electron attached on X-axis of 'P', and the negative charge is stretched to Y-axis of another 'P' with which it forms bond.

It is clear that, when reacting atoms are suspended free in an inactive media, either in gaseous state or in solvent, it is spinning and remains in motion. Positive charge of Proton attracts Electron. The Electron get transferred or stretched to bind donor and acceptor Protons together electro-magnetically. Therefore, ***Bonding is a phenomenon of binding atoms together electromagnetically. In the process, Valance Protons are bound by Electrons to form Molecule.***

There are three types of bonds:

1. ***Electrovalent bond,***
2. ***Mutual- covalent bond, and***
3. ***Cyclic covalent or Ring bond.***

7.1. Electrovalent bond:

In electrovalent bonding, Donor (electropositive) 'P' donates electron to Acceptor (electronegative) 'P'. The electron is completely transferred. The acceptor 'P' atom becomes negatively charged. The donator 'P' atom attains positive charge due to the lack of the electron. Thus, the both atoms come together due to opposite-charge-attraction and are bound by electro-magnetic reasons, forming molecule. The molecule ionizes in dilute solution as Positive and Negative ions, showing its charges separately.

Examples- -

Sodium chloride: **Na- Cl**:= **Na+, Cl-**) Hydrochloric acid: **H- Cl = H+, Cl-** This is also called strong bond.

7.2. Mutual- covalent bond

When two Valence Protons satisfy their X and Y axes ***mutually***, by sharing their electrons attached to their X-axis, to Y-axis of the another, the bond formed is called "Mutual bond", is mutually ***co-operated***, termed, **"Mutual Covalent Bond".** The Electrons attached to the parent Proton P1 at 'X' axis is stretched to the joining Proton P2, at Y-axis, the second reacting 'P2' also does in the same way and shares its X-axis Electron to Y-axis of P1, the first. Hence, their X and Y axes are satisfied mutually.

Examples
i) H+H=H2
ii) Cl + Cl = Cl2

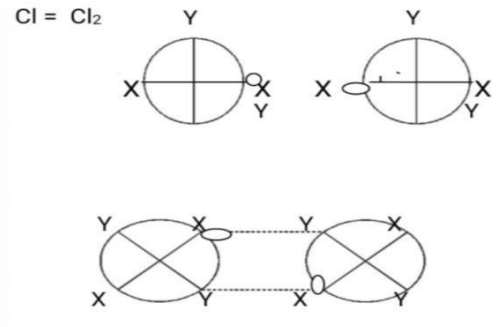
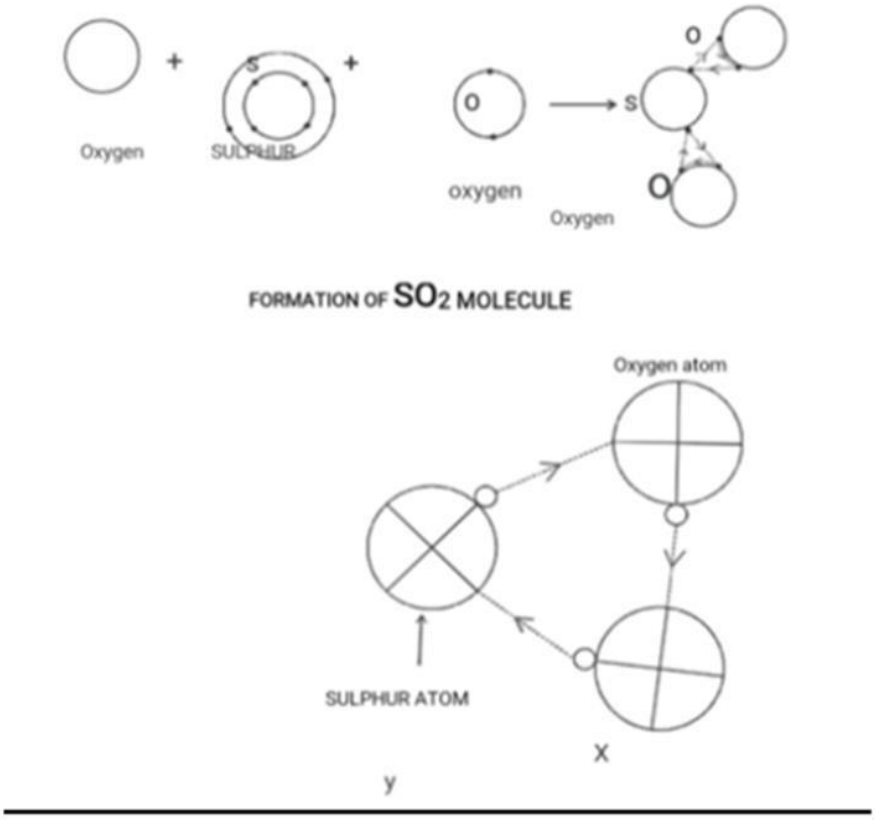


FIG. BON-1
VALENCE PROTONS FORMING MUTUAL COVALENT BOND
MECHANISM (of mutual covalent bond): As valence Protons (P) of atoms come together, Their X and Y axes are as plus mark (+). As soon they come sufficient near, they are influenced mutually, by the electromagnetic field, created by their charged particles. Negatively charged Electrons are pulled by positive charge at Y-axis of another 'P'. At the same time, the same charges of Electrons, the negative points of Protons are repelled. That spin 'P's to turn the axes to multiplication mark confronting X-Y axes. Then, each shares their Electrons at X with another at Y, giving two X-Y bonds (Refer, FIG.BON-1).
This is non-ionisable, electron sharing bond. The double sharing bond, is one bond, represented with a single line (-), named as covalent bond. More than one such covalent bonds present in atoms are, called, 'Poly-valent' (di or trivalent) bonds, such as in oxygen, nitrogen and carbon atoms.
Examples-
Divalent; - [O = O] O2 (Oxygen)**;** [O=C=O] CO2 (carbon dioxide**);** Trivalent: - (N_= N), N2 (Nitrogen), etc.

7.3. Cyclic covalent bond or Ring-Bond:

In this bonding system, Electrons attached to one 'P' is shared to the next 'P', forming XY bond and goes on sharing in series, till the last 'P' shares its Electron to the first, in cyclic way forming a ring. As sharing is one to another, next to next and returning back to the first at the last, the bond so formed termed "CYCLIC" or RING bond? It is single layer X-Y bonding, covalent type, so, "COVALENT". It is therefore, termed, **'Cyclic Covalent Bond' or Ring-Bond.**
The number of 'P' taking part in the bonding system is more than two. Example: Molecular structure of Sulfur-di-oxide and Sulfuric Acid.
Reagents –
i) Oxygen: group: 16, Period: B1
ii) Sulfur: group: 16, period: B2
Proton arrangement in both:
1st big-ring contains '4'Protons (P); 2nd (small) ring contains '2' Protons (P). Though, Oxygen and Sulfur fall in the same group, but not the same Proton number in the Atoms. OXYGEN: Big ring of B1 period contains 4 'P' as (2+2) distributed at different levels at N-pole side (Refer, B1 period, Atomic Structure Part-3). The lower ring at S- side contains only 2'P' (2 points vacant). SULFUR: At B2 period, fills the 4 vacant Points of big ring of B1 period at different levels of N-side (Refer, B1 period, Atomic Structure Part-3). The lower ring at S- side here also contains only 2 'P' and 2 points are vacant. The total Proton in Oxygen Atom is 8, but, that of Sulfur is 16, have different periods. Naturally, Sulfur is more electropositive than Oxygen. Therefore, Sulfur easily form bonds with its all six Protons (P). Oxygen shares only outer "2" Protons. This atomic structure explains why the two atoms belonging to the same group show different natures. One of the two outer Protons (say =Ps) of Sulfur, shares its Electron to one of the outer 2 'P' (of the 2nd ring) of Oxygen (say=P1). P1 shares its Electron to the second P of its own (say=P2). Now P2 shares its Electron to Ps, giving a triangular cyclic ring bond. The second 'P' of sulfur also does the same thing, forming Sulfur-di-oxide molecule. The mechanism is shown in figure (Refer, Fig. Bon-2).

The mechanism is –



'O' Bonding Mechanism enlarged – Oxygen Atom

Fig. Bon-2

EXPLANATION OF BONDING OF 'SO2' MOLECULE:

As shown in 'Fig. Bon- 2', one of the two Protons (Ps) of Sulfur, shares its Electron to one of the two Protons (P1) of Oxygen atom, forming X -Y bond. Due to the sharing, negative charge at (P1) increases. That results to repulsion of Electron of (P1) to Y- axis of (P2) forming another X-Y bond. 'P2' shares its Electron to the starting point, first 'Ps' of Sulfur for the same reason, where deficiency of negative charge is developed. This forms a triangular cycle. This cyclic bond contains only one Electron between two atomic valence Protons, and a ring is completed. This bond is called Cyclic Covalent Bond. The same procedure is repeated with the 2nd 'P' of Sulfur. Thus, 'SO2' is formed.

Formation of H2SO4

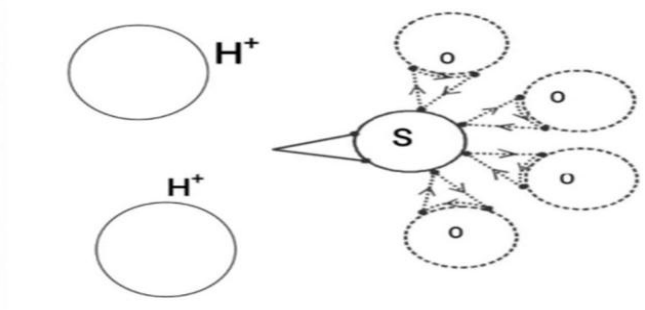


Fig. Bon-3
Sulfuric Acid Molecule

FORMATION OF SULPHURIC ACID

FORMATION OF SULPHATE ION AND SULPHURIC ACI Sulfur with Oxygen forms Sulfur dioxide, is already explained. Now, 4th Proton of 1st ring of sulfur forms third oxygen ring in the same way, i. e. burning 'SO2' (Sulfur dioxide) in air in presence of Vanadium pentoxide(V2O5) as catalyst. Sulfur trioxide [SO3]-2 formed, is negatively charged divalent ion, in gaseous form, at room temperature. When, SO3 is scrubbed in water, it ionizes water [H---O---H => 2H+, O-] and accepts two Hydrogen atoms, forming, H2 SO3. Sulphurous acid is ionic i. e. electrovalent bond. So, 2-Proton (hydrogen) is engaged here and the nascent oxygen released in the hydroxylation, is immediately accepted by 3rd Proton of first ring of Sulfur, forming again a triangular cyclic ring. Thus, total four Oxygen atoms are bonded with one Sulfur atom, in triangular cyclic bond, is, $[SO4]^{-2}$ ion. Similarly, NaHSO3, Na2SO3, NH4Cl etc. formation can be explained.

CHARGE ON RADICALS:

$[SO4]^{-2}$, $[SO3]^{-2}$, $[NH4]^{+1}$ *etc.* show ionic charges. It may be calculated, for example, SO4 contains 4 triangular oxygen rings. Sulphate ion shows -2 electrons charge, which, it accepted from cat ion, Hydrogen (in H2SO4). This shows, the electronegative effect, is been created by the triangular oxygen rings. Therefore, charge (2e_) on SO4 Radical divided by number of rings in So4 Radicals= 2/4=0.5 e- = electronegative effect per oxygen ring. *SO3 ion has 3 such rings. The effect will be 3x0.5=1.5, (weaker). $NH^{+}4$* ion of Ammonium chloride has one triangular ring of 2P of Nitrogen and 1 P of Hydrogen atom. The Result is, *$NH^{+}4$ radical donates one e- to Anion 'Cl –', in NH4 Cl molecule formation. Hydrogen owns positive charge, attached to NH3 molecule. The positive effect will be, 1x0.5= 0.5 e+(weak).*

Explanation of Ammonium ion ($NH4^{)+}$ formation:

Nitrogen atom is already explained during Multi-valence explanation. Out of 5P of Nitrogen, 3P form mutual covalent bond with Hydrogen. Remaining 2p is still open for bond formation. When Ammonia gas is scrubbed in H-Cl, HCl is ionized to form a triangular cyclic bond with the remaining 2P of Nitrogen. Thus NH4+ and Cl- or Ammonium chloride is formed. NOTE: In Sulphate Radical, Sulfur shares only one Proton and attaching atom Oxygen shares two protons and the radical is negatively charged. Reverse is Ammonium, where,

Nitrogen shares two Protons and attaching atom Hydrogen shares only one Proton and the resulting radical is positively charged. [At present, this bond is explained as co-ordinate covalent bond. It so happened, because of octet-electron principle, is ruled out by formation of Sulfur hexafluoride.] Special Features of Cyclic or Ring covalent bonds -

a) As, Ring bond is half strong as compared to the strength of a mutual covalent bond. It is indicated by doted- mark (…) [The Reporter indicates single Mutual covalent bond with a single dash line (-) mark, double with double (=) etc.]

b) Cyclic bond, being covalent, is non-ion sable. The compounds containing cyclic bond in its radicals ionizes in solutions as Radical- ions, like, H2SO4, NH4Cl etc. But, the radical is not ionizing.

8. Other Explanations in Bonding

8.1. Bonds in Acetylene: C2H2

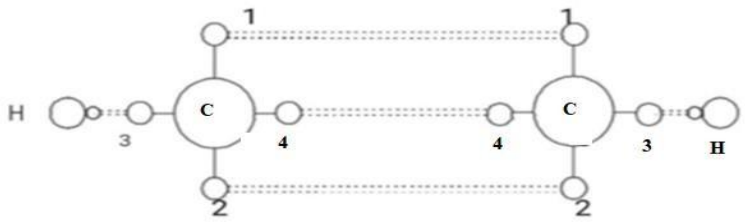


Fig. Bon – 4

Bonds in Acetylene

Carbon Atoms of Acetylene (C2 H2) have four 'P's at right angles from the center. The 'P's along horizontal axis, one at right and one at left sides of carbon atoms are numbered 3, 4. The P's on top and at the bottom, marked as 1, 2 numbers of the two carbon atoms. Refer, **Fig.Bon-4**, 'P's numbered 4 are at the most nearest to each other. The mutual covalent bond 'P' - 4 to 'P' - 4 is stronger than top and bottom mutual covalent, 'P'- 1 and 'P'-2, (are at distant) electrons stretched longer. The mutual covalent bonds are termed - The stronger 'P' 4 to 'P' 4 of carbon atoms, termed **'δ'** or **sigma** bond. The bonds between 'P'-1 to 'P'-1 and 'P'-2 to 'P'-2 are termed **'π'** or **pi** bonds. 'P' –3 forms simple mutual covalent bonds with Hydrogen atoms, at opposite (outer) sides, forming 'C2H2' or '[H-C=-CH]' molecule. Thus, the bonds can be explained.

8.2. Benzene [C6H6] Bond-structure

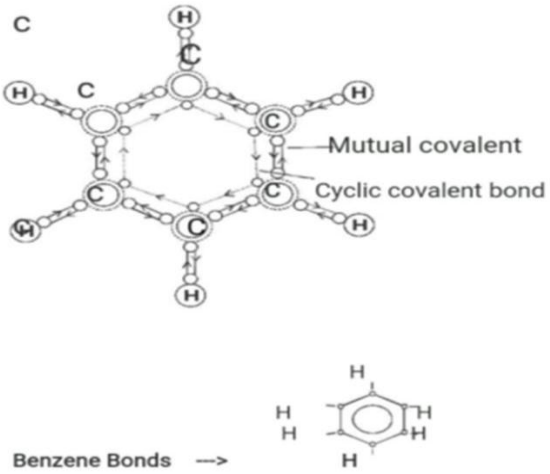


Fig. Bon – 5
(Bonding in Benzene molecule)

Refer, **Fig. Bon -5 (Bonding in Benzene molecule)**, six carbon atoms are arranged in hexagonal cyclic ring. Each Carbon atom containing 4 'P', almost, at right angles are shown. Two opposite 'P's of each carbon atom (one P of each side), form **mutual covalent** bonds with the conjugating carbon atom of that side, is creating a hexagonal cycle (ring) of carbon atoms. The remaining two are situated, one inside of the ring and the other outside of the ring. The Protons, inside of the ring, form **Hexagonal cyclic (ring) covalent bond** with adjacent carbon atoms. The Protons, outside of the carbon atom- ring, form mutual covalent bond with Hydrogen atom. Thus, carbon to carbon there are two (types) rings of bonds. One is mutual and other cyclic. Therefore, bond strength of the ring of all sides will be 1.5 times of bond strength of a mutual covalent bond (is actually found). The similar cyclic rings can be explained suitably.

1) **Zeeman's Effect: [**Refer, chapters-6) ZEEMAN'S EFFECT**]** As per the experiment by Zeeman (in 1896.) in strong magnetic field show different lines, when, viewed parallel (2 lines), and vertical (3 - lines) with high - resolving power spectroscope. Those, lines indicate **"Protons Arrangement System".** It suggests, there are some particles arranged in a system. The Writer tried to understand the system and applied in the present investigation related to 'Proton Arrangement System'. According to the Writer's current study, the absorption of energy responsible of main spectral line is due to Proton. Electron being small particle, show fine lines of the spectrum.

Each Electron is always with a Proton. Each Electron is under influence of electromagnetic field of its own Proton always accompanied. These Proton and Electron are under Atomic electromagnetic influence. So, there are two particle shifts.

1) Shift of Proton under electromagnetic field of the Atom.
2) Shift of Electron under electromagnetic field of its own Proton.

'P' shifts apart from Nucleus and 'e' shifts apart from its Proton. Electron being a fine particle seems to be vibrating indicated by bunches of fine lines. This may be the reason of finding broad and fine lines. Therefore, equations related to electrons are still in force. Suitable calculations may be inserted for more accuracy. The previous scientists also felt some missing factor, they reported.

9. Overall Summary

1. Fundamental Particles:

i. Proton consists of a positive charge e+ (Positron) enclosed in a Neutral shell (covering) composed of charged and neutral energy particles. Mass of e+ =1.emu; mass of the covering = 1835. emu; (total mass of Proton=1836. emu).

ii. Neutron consists of a Positive, 'e+'(Positron) charge and a negative 'e-' (Electron), enclosed in a neutral shell, as in Proton. In addition to that, there is a barrier between e+ and e-, separating them, composed of the shell-energy-Particles. Mass of e+ = 1. emu; e- = 1. emu; shell with barrier = 1838.5- 2 = 1836.5 emu;

iii. Mass of the barrier = 1836.5-mass of Proton shell (1835 emu) = 1.5 emu.

iv. Electron is a negative energy particle, e-, with mass = 1.emu. Stretchable to form bonds.

2. Atomic structure:

i. An atom is composed of Proton, Neutron and Electrons. Electron is attached with Protons at X-axis, here, represented as ‘‘P’’.

ii. Electron of Proton (P) is arranged almost out ward and negative charge of Neutron is inward (almost), suitably, to facilitate electron bonding in atomic structure and its stability.

iii. A general Atom contains a central axis (back bone) and rings around it, on periphery of which, Protons are arranged in a sequence one opposite to other, at the ends of the two diameters crossing each other at center at right angles. Addition of a Proton gives **birth to** a new Atom.

iv. 9th and 10th Protons are ‘Head’ and ‘tail’ Protons, creating back bone (central axis) of the Atom.

v. Each Head and tail can have 2-rings or -8 Protons (an octet). Rings near magnetic poles are smaller and those near null-point (Centre) are bigger, giving a spherical shape (almost) to the Atom (on inertness). An atom act as a bar-magnet like in the Earth. The rings are numbered ‘1’ to ‘4’ serially, starting from big ring above null point and ends at the big ring below null point with sequence of Proton deposition. Each ring can have ‘4’ Protons. Successive Protons in pairs are diagonally opposite to each other, like,1- 2, 3-4,= First ring; 5-6, 7-8, =second ring; 9 at top,10 at foot, again .11-12, 13-14,= third ring; 15-16, 17- 18= fourth ring, effective on central axis one after another. The numbering sequence can be, left to right and front to back.

vi. INERTNESS comes on completion of electronic circuit, as explained.

vii. After one inert atom, another sequence (period) of Atomic structure starts. Each period except ‘A’ are in pairs. The ‘Proton Holding Capacity’ of periods are as per 2n2 formula, where, ‘n’ is ‘Principal quantum number’ of the period. i. e. A=1; B=2, C=3, D=4 and so - on.

viii. Medium Atoms have ‘18’ points of Proton deposition, giving birth to a ‘New Atom’ *at each deposition. i.e. ‘4’ on each ‘4’ rings = 16+ Head and tail (2 Points) = 18 Points.*

ix. Lanthanides and Actinides are deposited in the gap created around null point (Centre of the Atom) between 1st and 4th ring. These points are created due to largeness of the Atoms. Protons of Lanthanide and Actinide get consumed to facilitate electronic circuit of the Atom (Proton affinity points). Proton affinity points (PAP) are the points eagerly accepting new Protons (may be unusual like, Lanthanides and Actinides) to give birth to new atoms. This point is created due the electromagnetic reasons of the atom.

3. Bonding

There are three types of bonds:

i. Electrovalent: where transfer of electrons creates positive and negative ions, bonded together to form an ionisable molecule.

ii. Mutual covalent bond: Where two valence Protons are bonded mutually by X - Y bonding i.e. electron of X - axis get joint with Y - axis of conjugating valence Proton. Thus, giving two X - Y bonding mutually for a single covalent bond. Thus, single, di, tri and/or poly valence bonds are formed.

iii. Cyclic covalent bond: In this bonding system, more than two valence Protons (P) are bonded in a ring form, giving single X-Y bonding in successive sequence and the last P bonds to the first. As in Atomic structure, benzene ring, sulfate ion etc. Bond strength is half of mutual covalent bond.

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