Modified Atomic Theory Identifies Formation of Superconductor

Pijush Kanti Bhattacharjee, *Member, IACSIT*

Abstract—**Modified atomic theory is proposed with the explanation of creation of neutron in the nucleus and revolving motion of electrons around the nucleus. Neutron is formed and adopted in between two protons in the nucleus to minimize or stabilize the same positive charge repulsive forces of the protons; as a result the electrons are moving in circular or elliptical path around the nucleus. Atoms of an element are exhibiting individual properties like motion, electronic configuration in different shells, valency, magnetism, electrostatic, conductivity, electropositivity and electronegativity etc within certain range of temperature and pressure, called Working Range of Temperature and Pressure (WRTP). In this modified atomic theory Magnetism, Nuclear Fission and Fusion, Superconductivity etc are explained in a new horizon. Above and below the WRTP, atoms of all elements have no separate existence i.e. developing a unique character and conductivity of the atoms or the elements become highest, behaving as Superconductor. Within WRTP, there is also some range of temperature and pressure which is the best suited for appearing atoms of the elements in a perfect individual behavior, nomenclature as the Suitable Temperature and Pressure (STP). The STP is a subset of the WRTP. If an atom or element is subjected to very high electric field or magnetic field or mixing with other elements having high difference range of bandgaps (energy gap between valence and conduction bands), superconductivity property evolves due to merging of all shell-subshells. Hence, Global Warming may affect on atomic properties and earth's basic characteristics.**

Index Terms—**Bandgap, Bose-Einstein Condensation Theory (BEC), Curie Temperature, Global Warming, Modified Atomic Structure, Nuclear Fission and Fusion, Suitable Temperature and Pressure (STP), Super Conductor, Working Range of Temperature and Pressure (WRTP).**

I. ATOMIC PROPERTIES WITH TEMPERATURE AND PRESSURE

All atoms are shown their individual properties like atomic structure, electronic configurations in different energy levels or shells-subshells, vallency, chemical structures, magnetism, conductivity, electrostatic property, motion, participation in chemical reaction as an electropositive or an electronegative atoms etc within a certain range of temperature and pressure.

Pijush Kanti Bhattacharjee is an Assistant Professor in the Department of Electronics and Communication Engineering, Bengal Institute of Technology and Management, Santiniketan, P.O. Doranda, West Bengal, Pin-731236, India. He was an Ex Asssitant Director in the Department of Telecommunications (DoT), Government of India, India. He has possessed vast working experience in the field of Telecommunications including Mobile Communications, Image Processing, Network Security, VLSI etc.

He is a member of IACSIT, IAENG, CSTA, IE, ISTE, IAPQR, IIM. (phone: +91-33-25954148; email: pijushbhatta_6@hotmail.com).

Beyond this range of temperature and pressure, atoms loss their individual properties and will act as a common atom which resembles to wave property like Einstein's famous equation $E = mc^2$, where E is the energy emitted by a mass m and c is the velocity of light, $c = 3 \times 10^8$ m/sec. Thus, all atoms behave as a wave below and above the Working Range of Temperature and Pressure (WRTP). Individual property of the atoms exhibit within the working range of temperature and pressure (WRTP) only. All atoms are best shown their individual properties at some specific range of temperature and pressure. Thus, this range of the best suitable temperature and pressure for a particular atom or element can be termed as Suitable Temperature and Pressure (STP) for the concerned atoms. This STP may differ atoms of an element to the atoms of the other element. The STP of an atom falls with in the WRTP of that atom. So, the STP is a subset of the WRTP. The STP of the atom depends on so many parameters of the atom like atomic number, atomic weight, atomic motion, magnetism, electrostatic, conductivity, crystalline structure- symmetrical or asymmetrical, natural environment etc. The STP and the WRTP of the atoms can be evaluated by laboratory experiment for individual elements and corresponding table containing the WRTP and the STP range can be prepared. If the Table or Chart having the WRTP and the STP is made similar to the Periodic Table, we can easily identify or predict the properties and behavior of the elements and ability to form their chemical compounds by the elements. Also we can investigate the best acting or the performance range of temperature and pressure. It can assure a new direction and easy detection for medical treatment and drug activity, chemical plant and synthesis, agricultural fertilizers and growth of botanic life, metallic characterization, applied electronics and best performing conditions of the instruments etc. An element or atom below and above the WRTP range behaves as Superconductor due to unique character and breaking or merging of all shells, sub-shells consisting of the electrons.

II. EXISTING ATOMIC THEORY

Subatomic particles in an atom are Proton, Neutron, Electron, Positron, Neutrino, Meson etc [1]-[3]. Out of these particles, the proton and the neutron consisting one unit mass each, rest in the center position of the atom, called the nucleus and the proton is having one unit positive charge also. Electron is having negligible mass and one unit negative charge revolving around the positive charged nucleus in circular or elliptical path. Positron (e^+) exists for

a very short time, it is having one unit positive charge and its mass is equal to that of an electron. Photon is a neutral particle, its mass is same as that of an electron. It creates like, Photon = Electron + Positron. Meson is either positive or negative or neutral charged, may stay in the nucleus, and mass is 200-990 times that of an electron. Neutrino having mass of an electron is a tiny neutron in the nucleus.

Neutrino + Proton = Neutron + Positron

Also symmetry is fundamental character: The universe seems to follow on concepts of symmetry. One of the important factors in the determination of chemical structures has been the use of symmetry and group theory. The structure of the molecules either symmetrical or asymmetrical is analyzed by X-Ray spectrosgraphy of the molecules. By continuous heat treatment at higher temperature, the symmetrical molecules become asymmetrical nature due to breaking of the valence band.

A. Classical Atomic Theory

First atomic structure invented by Rutherford told that the electrons could revolve around the nucleus in orbits of any radius, but later on it is modified by Bohr. For preventing the electrons to jump in the positive charged nucleus, Bohr introduced [1]-[3] a restriction on the values of such radii. According to Bohr, there exist only a number of permitted orbits in which the electrons can exist outside the nucleus. Angular momentum of the electrons (mvr) in such an orbit will be an integral multiple of $h/2\pi$, if the mass and the velocity of an electron be m and v respectively at an orbit of radius r. Thus, angular momentum is quantized i.e. $mvr = nh/2\pi$, where n is an integer 1,2,3...etc. h is Planck's constant, $h = 6.626 \times 10^{-34}$ J-s. So, $v^2 = n^2h^2/4\pi^2m^2r^2$ ....(1) For an electron staying in an orbit, it does not radiate or absorb energy, in this case pulling force towards nucleus i.e. Coulombic attractive force $(Ze^2/4\pi\varepsilon_0r^2)$, [where Z is the number of charges on the nucleus, ε_0 is permittivity of vacuum] is equal to the centrifugal force (mv^2/r), Thus, $v^2 = Ze^2/4\pi\varepsilon_0mr$ .....(2). Equating (1) and (2), we get, $r = \varepsilon_0n^2h^2/\pi mZe^2$, for Hydrogen charge on the nucleus Z =1, if n =1, r = 0.05293 nm i.e. approximate size of hydrogen atom. Kinetic energy of an electron in the nth orbit is written, $E = -\frac{1}{2}mv^2 = -Ze^2/8\pi\varepsilon_0r = -mZ^2e^4/8\varepsilon_0^2n^2h^2$. If an electron jumps from shell one to shell two (shell two towards the nucleus), energy emitted by the electron $E_2 - E_1$ $(\Delta E) = hv$, where v is the frequency of emitted radiation and λ is the wave length of emitted radiation. If t is the wave number, then $t = 1/\lambda = v/c = \Delta E/hc = R[1/n_f^2 - 1/n_i^2]$, where R is called Rydberg constant, $R = mZ^2e^4/8\varepsilon_0^2h^3c = 1.096776 \times 10^7$ m^{-1}, n_f is the final cell the electron arriving and n_i is the cell from where the electron jumping to other cell. By hydrogen atom spectrum analysis, we get different spectrum like Lyman series, Balmer series, Paschen series, Brackett series, Pfund series etc from ultra-violet to infrared region i.e. frequency of spectrum increases if the electron jumps closer shell to the nucleus. If an electron moves towards the nucleus, energy is radiated by the electrons and vice versa. So the electrons near the nucleus possess less energy than that of the electrons far from the nucleus.

Sommerfield proposed [1], [3] that corresponding to each principal quantum number (n), several orbits of varying ellipticity were possible. When the two axes of an ellipse

become equal, a circular orbit is obtained. The motion of an electron along an elliptical orbit was described by the two quantum numbers-

(i) a radial quantum number, n_r

(ii) an azimuthal quantum number, k

If n be the principal quantum number,

n = n_r + k, and n/k = Length of semi major axis (a)/ Length of semi minor axis (b). Later k is replaced by symbol l, where l = k-1. So, for any n, l = 0 to (n-1) value. For l = (n-1), the orbit becomes circular. Thereafter, Zeeman showed [1], [3] that if atoms were placed in strong magnetic field additional lines appeared on the spectrum, because elliptical orbits can only take up certain orientations with respect to the external field, rather than processing freely. Each of these orientations is associated with a fourth quantum number, called magnetic quantum number (m_l) which have values l, (l-1),.......,0,........, (-l+1), -l, i.e. (2l+1) lines in the magnetic field. Now each orbital may hold upto two electrons, provided they have opposite spins. Thus, the concept of spin quantum number i.e. spin angular momentum (m_s) indicates the orientation of the intrinsic angular momentum of an electron in an atom. By spin angular momentum of an electron identifies that an electron is moving either clockwise or anticlockwise around its own axis just like a planet's or earth's movement around their own axis. It is either +1/2 or -1/2. Pauli Exclusion Principle [1], [3] states that no two electrons in one atom can have all four quantum numbers (n, l, m_l, m_s) the same i.e. if the two electrons occupy the same orbital, they must have paired spins or opposite spins like +1/2 and -1/2. Thus, energy of the orbital increases in the order like s < p < d < f and for high energy level, 4s < 3d < 6s < 5d ≈ 4f < 6p etc. Atoms having only paired electrons are repelled slightly when placed in a magnetic field and are called diamagnetic. Atoms having one or more unpaired electrons or parallel spin are strongly attracted by a magnetic field and are termed paramagnetic. Electrons having the same spin (parallel) strongly repel each other and tend to occupy different regions of space.

Moreover the rates of chemical reactions increase with increasing temperature according to Arrhenius equation [1], [3]. Generally the dependence of the rate constant (d) on temperature (T in ^{0}K) is $d = Ae^{-E/GT}$, where A is called the frequency factor, E is the activation energy and G is Gas Constant, G = 8.31441 J mol^{-1} K^{-1}. The higher the activation energy is, the slower the reaction at any given temperature. E is useful in interpreting the reaction mechanism.

B. Modern Atomic Theory

Modern atomic theory [1]-[5] is explained that an orbital is represented by the wave function in three dimensions, analyzed by Schrödinger equation. It is determined the quantum numbers n, l, m_l and m_s. By wave function, it is not possible to ensure a precise definition of the shape and size of an orbital, unlike in the case of the orbits in Bohr-Sommerfield theory. The angular part of the wave function determines the shape of the electron cloud and varies depending upon the type of the orbital involved (s, p, d, f) and its orientations in space. When number of electrons is more than one in an atom, we have to calculate the wave function for each individual electron with respect to the

protons and all other electrons effect in that atom. The probabilities of all wave equations are estimated by successive approximation which yields general solutions of the orbitals. It is seen that the orbitals in atoms other than hydrogen do not differ in any radical way from the hydrogen orbitals, only in case of the increased nuclear charge- all the orbitals are somewhat contracted. The concept of electron clouds around the nucleus is implemented in Modern Atomic Theory.

III. MODIFIED ATOMIC THEORY

I propose Modified Atomic Structure, because nobody ascertains clear idea about the nucleus so far i.e. the distribution of protons and neutrons in the nucleus of an atom. If the protons are staying side by side, then a high repulsive force between the same positive charges of protons will exist, as a result the nucleus can be easily fragmented or broken with a little energy. Practically a high energy either in the form of thermal energy or particle acceleration is required to nuclear fission or nuclear fusion process. For thermal method, we require temperature tens of 10^6 ^{0}C order. So, we can conclude that the protons are not staying side by side in the nucleus. All elements (in periodic tables) are having at least the number of the neutrons equal to the number of the protons in the nucleus except hydrogen. The diameter of the nucleus is in the range of 1.6 fm (1.6 × 10^{-15} m) (for a single proton in hydrogen atom) to about 15 fm (for the heaviest atoms, like uranium). These dimensions are very much smaller than the diameter of the atom itself, that differs by a factor of about 23,000 (uranium) to about 145,000 (hydrogen). Thus atoms possessing very higher atomic numbers say more than 88 (actinoids), have a tendency to break or decompose into lower atomic number elements due to protons and neutrons in the higher atomic number elements causing mismanagement or disarrangement in the nucleus. For this reason, these types of elements become radioactive elements. This radioactive property is used in different applications like nuclear bomb, medicine, electricity generation etc. In isotopes of the elements, the number of neutrons is more than that of the protons in the nucleus. As the isotopes of an element consist of more number of neutrons than that of the protons, their boiling point, temperature absorption capacity and other properties are in changing manner i.e. generally higher.

A. Structure of the Nucleus

I propose structure of the nucleus that the protons and the neutrons are arranged alternately for minimizing repulsive force of the same positive charge protons and to ensure circular or elliptical orbits to the electrons revolving outside the nucleus. If the protons are staying in a particular place or haphazardly, the motion of the electrons will be in linear or asymmetric orbit, not circular or elliptical. To maintain a specific distance from the nucleus for an electron moving in an orbit, the positive charge in the nucleus is to be synchronized or distributed uniformly around the nucleus, that is only possible, if the neutral charge neutrons are in same number as that of the protons in an atom. Also these protons and neutrons are arranged alternatively in a circular fashion as shown in Fig. 1. On the contrary, hydrogen is not having any neutron, only single proton in the nucleus. For this single hydrogen atom makes bonding in two sides with non-metal elements like oxygen in water H_2O and with the other nonmetals (F), called hydrogen bonding. For this reason, hydrogen has a very high polarizing power and distorts the electron cloud on other atoms, having electro negativity 2.1 and Ionization Potential for first electron 13.6 eV. 92% of the Universe is made up of hydrogen and 7% of helium, leaving only 1% by all other elements. Also isotope of hydrogen, deuterium (D_2) makes heavy water (D_2O) which has boiling point 101.4^{0}C, act as moderator or coolant in the nuclear reactors.

We may assume that initially the nucleus of an element is formed by the protons only, due to severe attraction positive charged force of the protons (p^+), the electrons (e^-) from outwards shells or outside are jumped to the nucleus, where they combine the protons with the excessive energy produced due to repulsive force of the protons. Outcome of this combination is the neutrons (n), electrically neutral. Here, E_1 is the energy has to be supplied with one proton and one electron to produce one neutron.

$$p^+ + e^- + E_1 \longleftrightarrow n$$
$$\text{or, } p^+ + E_1 \longleftrightarrow n + e^+ \text{ (Positron)}$$
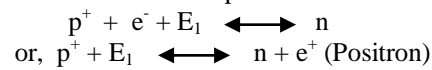
After formation of sufficient number of the neutrons (at least the same number of the protons in the nucleus), the new born neutrons are taking position in between two consecutive protons to bring stability of the electrons and the protons in an atom. Also in this stable situation, the repulsive force (energy) between the protons are considerable less (lesser than E_1), which are not able to give birth further neutron. Henceforth jumping of the electrons in the nucleus is stopped and the electrons are moving in circular or elliptical orbit with their own spin orbit as usual. In this contest, an electron is subjected to as many numbers of attractive forces exerted by the protons in the nucleus as shown in Fig. 1 by axis. As a result when the electron is moving away from a certain axis, the attractive force on the electron due to this far axis becomes less and also the electron comes closer to the next attractive axis exerted by another proton, the attractive force on the electron due to this near axis will be more. So the electron will enhance its acceleration towards near positive attractive force axis and move in a specific orbit, which was assumed by Bohr without proper explanation. This changing acceleration of the electron's motion is uniform in an orbit due to the protons equally spaced in the nucleus.
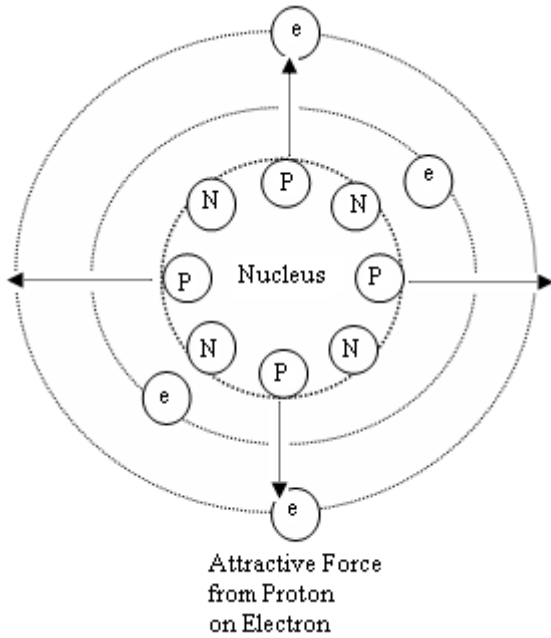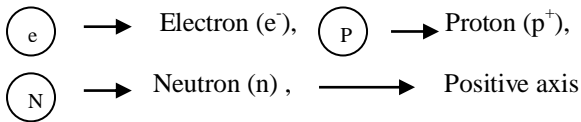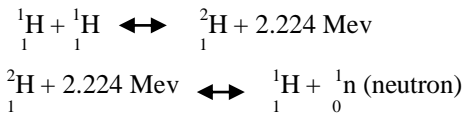
Attractive Force
from Proton
on Electron

Fig.1. Atomic Structure of an element having four protons and four neutrons in the nucleus, revolving four electrons.

 ⟶ Electron (e⁻),   ⟶ Proton (p⁺),

 ⟶ Neutron (n) , ⟶ Positive axis

Initially while jumping the electrons in the protons containing in the nucleus, the number of neutrons formation may differ depending on the environmental parameters like temperature, pressure, humidity etc. Therefore, the number of neutrons is not always the same as that of the protons in an atom. The number of neutrons may be the same or more than that of the protons. Thus appearing the same atom or element with different number of neutrons is called isotopes of the element e.g. ^{1}H is Hydrogen (consists no neutron), ^{2}H is deuterium or D (consists one neutron), ^{3}H is Tritium (consists two neutrons) which is highly radioactive called β^- emitter i.e. the excess third neutron is wanting to decompose and emit with high speed as β^- .

We observe that the two hydrogen (^{1}H) atoms are connected to give deuterium (D or ^{2}H) and 2.224 Mev energy. This excess energy is called binding energy.

$$_1^1\text{H} + {}_1^1\text{H} \longleftrightarrow {}_1^2\text{H} + 2.224 \text{ Mev}$$

$$_1^2\text{H} + 2.224 \text{ Mev} \longleftrightarrow {}_1^1\text{H} + {}_0^1\text{n (neutron)}$$

B. Electrons Movement in Different Shells

The electrons moving around different shells and sub-shells can be explained likewise. The two forces are responsible for an electron movement in circular or elliptical path-
(i) The attractive force on electron due to opposite charged proton at the nucleus.
(ii) The repulsive force between adjacent electrons moving in own shell-subshell, adjacent shell-sub-shell etc and the concerned electron. Since mass of an electron is very less,

this repulsive force between the electrons is not considerable amount and have very less impact to orbit determination.

Having very light weight, the electron which is subjected to above two forces, moves around the nucleus in different shell, subshells as stated above. Attractive force of the positive charge protons on the electrons are mainly varying with the distance from the nucleus. If the distance is more, this attractive force on the electrons is obviously less. So, the outward shell electrons are experiencing less attractive force by the protons of the nucleus. Also the outward shell size is having more periphery (large) than that of the inner shell, so it can hold more number of electrons or electron cloud. Minimum distance is maintained between two adjacent electrons in an orbit for reducing repulsive force between the electrons.

In hydrogen spectrum analysis, as we go to higher and still higher orbits the energy gap between two immediate orbits continues to decrease. This is because of while an electron is moving inner shell, its energy becomes less and also having less number of electrons in an inner shell, as a result it exerts less repulsive force to the nearby electrons and the attractive force due to positive charge protons is increasing towards the nucleus, hence distance between the nearby orbits towards the nucleus becomes more. The opposite thing has happened at the outward shells i.e. away from the nucleus which are closely energy gaped due to less attractive force of the protons in the nucleus and the higher energy possessing electrons repulsive force. Thus attractive force of the nucleus as well as the repulsive force between the adjacent electrons in their respective shells, sub-shells decide the orbital or the quantum numbers i.e. the distance of the shell or the sub-shells from the nucleus.

C. Development of Magnetism

Magnetism [1]-[5] is a special property that is evolved in certain elements like Iron (Fe), Cobalt (Co), Nickel (Ni) and lanthanide or rare earth elements. These elements can sustain magnetism or emit magnetic lines of forces when they are subjected to be magnetized. The electronic configuration of iron, Fe^{26} = [Ar] $3d^6$ $4s^2$. Electronic structure of Argon is Ar^{18} = $1s^2$ $2s^2$ $2p^6$ $3s^2$ $3p^6$. The electrons in outer orbits of an atom having parallel or unpaired spin repel each other and exhibit magnetic character. Due to these repulsive forces of electron spin, some quantum energy is radiated as magnetic lines of force in surrounding medium which cause alignment of the surrounding electrons spin in different atoms either anticlockwise by North Pole magnet or clockwise by South Pole magnet. When one iron bar is magnetized, the outermost unfilled d sub-shell electrons (4 number) spin of the atoms take alignment in the North Pole (N) side as in Fig. 2 and in the South Pole (S) side as in Fig. 3. Thus in iron, outermost d shell unfilled six electrons spin are arranged in following two ways:
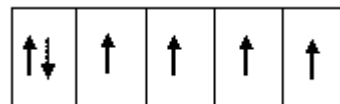

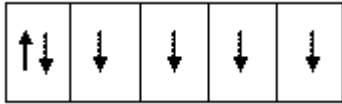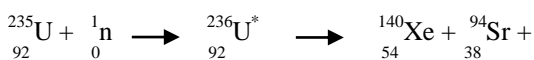Fig. 2. Iron unfilled electrons spin d sub-shell- anticlockwise

Fig. 3. Iron unfilled electrons spin d sub-shell- clockwise

Hence, there is an unbalanced of electron spins in unpaired two types cause the existence of magnetism in the iron bar. The magnetic lines of forces are emanating spontaneously from North Pole (N) to South Pole (S) due to different mechanism of unpaired electron spins alignment in the two pole sides, till the magnetism persists. Again the magnetizing force is almost nil at the middle position of the magnetic bar or medium due to neutralizing two type of spins. This is happening because of surrounding electrons take spin alignment in anticlockwise around North Pole magnet side and clockwise around South Pole magnet side, but their resultant effect becomes zero (nil) at the mid position of the permanent magnet or magnetic medium. Cobalt and Nickel show lesser magnetic property or ferromagnetism than that of Iron, because they have less number of unpaired electron spin in 5d subshell. Likewise lanthanide elements (atomic number 58 to 71) show paramagnetic property due to unfilled unpaired electrons spin in 4f and 5d orbitals, e.g. Gadolinium (Gd^{64}) = [Xe] $4f^7$ $5d^1$ $6s^2$, [where Xenon = Xe^{54} = {Ar} $3d^{10}$ $4s^2$ $4p^6$ $4d^{10}$ $5s^2$ $5p^6$] has seven unpaired electrons spin in 4f and one unpaired electron spin in 5d subshells, showing extreme magnetic property. Also alloy like Alnico (12% Al, 20% Ni, 5% Co and rest Fe), Heusler alloy (24% Mn, 16% Al and 60% Cu) etc are used for manufacturing strong permanent magnet due to unpaired electrons spin and asymmetric lattice structure.

Again in a magnetite crystal (FeO, Fe_2O_3), the Fe^{++} ions are substituted by divalent metals like Mg, Ni, Co, Mn, Cu etc, we get ferrite as XO, Fe_2O_3. In ferrites, magnetizations of two sub-lattices is oppositely aligned i.e. spin quantum number of the different atoms are unpaired and unequal, hence they exhibit strong magnetism, called ferrimagnetism. Moreover, when these ferrites are sintered at high temperature (1200~1400 ^{0}C), the lattice structure of the ferrites are more asymmetrical form which contribute dielectric and charge storage property like capacitor in the ferrite molecules. Thus, the ferrites are used as semiconductor memory, storage battery and radio frequency antenna etc. Research is going on whether ferrites may exhibit superconductivity property due to heavy magnetism and asymmetrical crystal structure.

D. Relevant to Nuclear Fission and Fusion

Nuclear fission and fusion reaction [1]–[3], [6]-[9] satisfies the above modified atomic theory. In nuclear fission reaction, a heavy nucleus has undergone fission or breaking producing lower weight atoms, neutrons and high energy,

$$^{235}_{92}U + ^{1}_{0}n \longrightarrow ^{236}_{92}U^* \longrightarrow ^{140}_{54}Xe + ^{94}_{38}Sr +$$

$$^{1}_{0}n + ^{1}_{0}n + \text{Energy (some 150 Mev – 200 Mev)}$$

High energy possessing flying neutrons break further nucleus of the atoms in chain reactions. Therefore, huge amount of energy is produced by destruction of the mass of the nucleus as per E = mc^2 equation. To keep the nuclear fission under control, the excessive neutrons produced by the fission is absorbed.

In nuclear fusion, two or more light nuclei fuse or joined to give a heavier nucleus and producing high energy. In the stars, the galaxy and the sun, energy is the outcome of nuclear fusions.
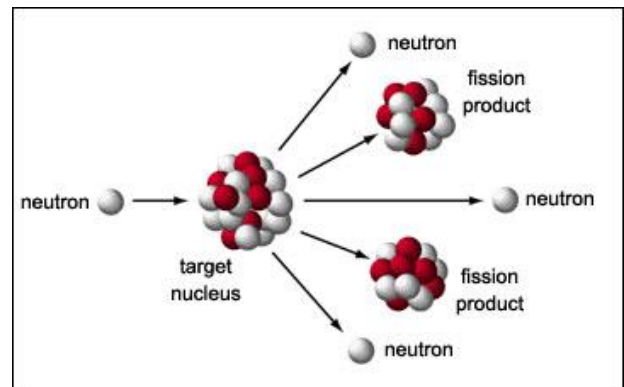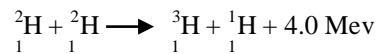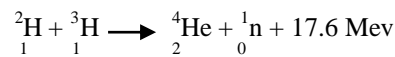

Fig. 4. Block diagram of Nuclear Fission

$$^{2}_{1}H + ^{3}_{1}H \longrightarrow ^{4}_{2}He + ^{1}_{0}n + 17.6 \text{ Mev}$$

$$^{2}_{1}H + ^{2}_{1}H \longrightarrow ^{3}_{1}H + ^{1}_{1}H + 4.0 \text{ Mev}$$

The atoms or the elements above the WRTP require less energy for nuclear fission and fusion process, since their all electrons possessing high energy level and not absorbing any energy. Beyond above WRTP, any energy is added to the atoms or the elements that energy is directly take part for nuclear fission or fusion process. For this reason, above WRTP the atoms or the elements act as a superconductor. The atoms or the elements under the WRTP range also require less energy to go for nuclear fission or fusion process.
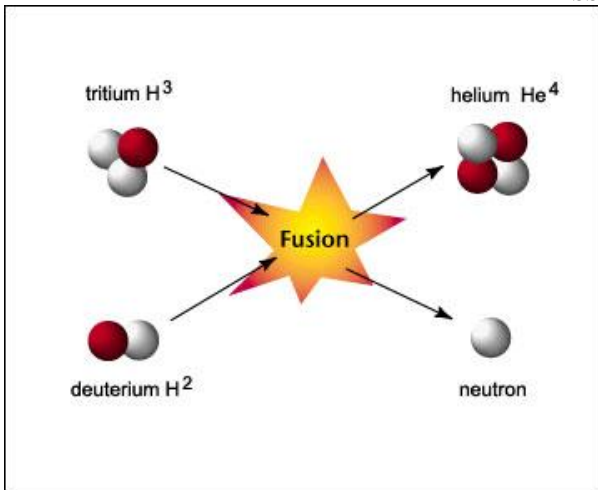
Fig. 5. Block diagram of Nuclear Fusion

Also if they are super-cooled far below WRTP range i.e. below 0 K or −273.15 ℃, the situation will come when spontaneously nucleus of the atom will break or join causing nuclear fission or fusion. Therefore, this super cooling method can be used for nuclear fission or fusion process.

IV. WRTP AND STP EFFECT ON ATOMIC PROPERTIES

It is seen that the above or below the working range of temperature and pressure (WRTP), the atom's individual property will disappear i.e. beyond the WRTP, the atoms are nothing, only a collection of waves having certain energy. Above the working range of temperature and pressure (WRTP), [1], [3]-[6], [9] the atoms are packed very loosely, say 8000-10,000 ^{0}C or more, most of the cases in gaseous state, are locked together in the highest quantum state. The electrons lying in the different shells including the outer shell are becoming completely in dynamic nature and randomly moving shell to shell i.e. no one electron is assumed to stay in a particular shell; all electrons belong to all shells like a common shell phenomena exist. In this situation, the repulsive force between the same charge electrons and the attractive force of the protons on the electrons are completely varying due to the electrons possessing high energy. As a result no significant or particular character of the atom is exhibiting above the WRTP. Again below the working range of temperature and pressure (WRTP) [0 K i.e. −273.15 ℃ or less temperature], Called Bose-Einstein Condensation temperature, the atoms are very compact, generally in hard solid state. This time, the electrons in the various shells including the outermost shell are densely packed, so that they are assumed to lying in one shell having uniform character i.e. all the electrons are assumed to carry same energy or same repulsive force in between them and experience same attractive force causing by the protons in the nucleus. In both the cases, atomic characteristics are analyzed by wave mechanics. These waves of the atoms above or below the WRTP are having the uniform properties. It can be explained by Quantum Mechanics and Heisenberg Uncertainty Principle [1], [3], [9]. In Heisenberg Uncertainty Principle, it is told that the electrons in the atoms are not statically lying in particular shell or sub-shell, they are randomly jumping neighborhood shell or sub-shell by gaining or loosing some energy spontaneously. We already know that the atoms having magnetism property can be permanently demagnetized above Curie Temperature. Magnetism theory as described above explains the magnetism property due to spinning effect of the electrons. This spinning effect vanishes above Curie Temperature because of random motion of electrons from shell to shell. According to Bose-Einstein Condensation theory (BEC) [4], [8], if the atoms are cooled down to very very low temperature stage i.e. at 0 K or less, its individual property disappears producing general wave property and the atoms assume to lock together in the lowest quantum state of the system. In between WRTP, the atoms of different elements are differed from each other by forming many more individual characteristics due to electrons uniform interaction, balanced crystallography i.e. symmetrical or asymmetrical crystalline structure, homogenous valence band and conduction band etc. On the other hand above and below the WRTP, their individual existence disappeared, because the electrons are not static in a particular shell. In these regions i.e. above or below the WRTP, the characteristics of the atoms become unique for all type of elements and they act as superconductor. Thus superconductor may be manufactured by imparting very high temperature in a reactor or creating cryogenic condition (super-cooled) to an atom or element.

A. Existence of Superconductivity Property

The electrical conductivity of an element is measured by the difference of energy between valence band and conduction band of the electrons lying in the outermost shell, subshell etc. If it is less or equal to 1 ev, the element behaves as semiconductor, greater or equal to 5 ev assigning non conductor or insulator. For conductor, this two bands are overlapped i.e. energy gap is zero. For super-conductor, these two bands should be completely overlapped i.e. no separate existence of valence band or conduction band, the valence band becomes the conduction band only. So, in the case of Superconductor, the electrons with certain energy pass through the atoms or the elements without any sort loss of energy i.e. facing no resistance while passing through the outermost shell of the superconductor atoms. Generally, resistance means that the incoming electrons from some source while passing through the atoms or the elements, losses some kind of energy due to absorption by the other electrons in the outermost shell and friction etc. This loss of energy is termed as resistance of the atom or the element. Since above and below WRTP range, all elements are behaving similar nature i.e. unique character, all electrons are assumed to lie in one shell with a specific energy i.e. highest energy state in above WRTP and lowest energy state in below WRTP. In this situation when electrons or currents are flowing through the atoms, no energy is either absorbed or induced to the electrons causing electric current. Hence, electrons or current flow becomes without any loss of current and voltage due to superconductivity property appearing in the atoms (elements) above or below WRTP range. When an atom (element) is subjected under very very high electric field or magnetic field or mixing with other atoms (elements) having wide range of bandgaps in WRTP

range or normal temperature and pressure (NTP), electrons lying in different shell-subshells are highly excited to break or merge in one shell, in this situation the atom exhibits unique character i.e. superconductivity property. Again in Stars and Black Holes (Dead Stars), the atoms of elements are behaving as Superconductor due to merging all shell-subshells of the electron orbits having beyond WRTP range.

B. Effect of Global Warming

Global Warming causing temperature rise in environment may effect to change in the atomic properties like motion, valency, magnetism, electrostatic, conduction, electronic structure, crystalline structure, electropositivity and electronegativity etc. Also this Global Warming has a great impact on earth's magnetism, gravitation, ice meltation, sea overflow, change of weather, disease affective bacteria-virus explosion etc. Due to change atomic nature with respect to rise of temperature, human and botanic life will be highly effected and causing serious problem as nature pollution. Therefore, we have to be more careful for maintaining standard natural temperature and pressure at all places in the globe. We have to cut short the use of coal, oil and other hydrocarbons, electromagnetic (em) wave propagation through air etc, so that air pollution and temperature rise may be within certain limit. It can be done only when we can affectively use other non conventional energy sources like solar, rains water, thunderstorm, lightning, wind power, electro-magnetic (em) wave energy, sea water wave forces and bio-fuel sources in full swing.

V. CONCLUSION

The atomic properties of the elements are totally depending on the Working Range of Temperature and Pressure (WRTP) of an element. Atomic structure and property is not remaining same under all conditions like surrounding temperature, pressure, humidity, existing other elements or materials etc. Therefore, WRTP and STP are to be calculated for each individual element signifying a Table which can easily identify properties of the elements. Due to extremely high or low temperature and pressure in the stars (living or dead) or in the planets, satellites of the universe, atoms can not exhibit their individual properties as well and play an unsuitable role for living beings. As a result most of the planets and satellites are not having any sign of life. Hence, beyond the WRTP, there is no question of existence of living beings. In space, it is assumed that the atoms are lying in Plasma State [1], [2], [4] having high energy wave like. So, bonding of atoms, participating in chemical reaction, formation of cell and life etc depend on the temperature and the pressure surrounding the atoms and every individual characteristics of the atom are exhibiting within the WRTP range only. Thus, Temperature and Pressure are the two important parameters or attributes for assigning and changing the atom's nature and earth's ballistic creation.

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Dr. Pijush Kanti Bhattacharjee is associated with the study of Engineering, Management, Law, Indo-Allopathy, Herbal, Homeopathic and Yogic medicines. He is having qualifications ME, MBA, MDCTech, AMIE, BSc, BA, LLB, BIASM, CMS, PET, EDT, FWT, DATHRY, BMus, KOVID, DH, ACE, FDCI etc. He worked in Department of Telecommunications (DoT), Govt. of India as an Engineer from June 1981 to Jan 2007 (26 years), lastly holding Assistant Director post at RTEC [ER], DoT, Kolkata, India. Thereafter, he worked at IMPS College of Engineering and Technology, Malda, WB, India as an Assistant Professor in Electronics and Communication Engineering Department from Jan,2007 to Feb,2008 and Feb, 2008 to Dec, 2008 at Haldia Institute of Technology, Haldia, WB, India. In Dec, 2008 he joined at Bengal Institute of Technology and Management, Santiniketan, WB, India in the same post and department. He has written two books "Telecommunications India" & "Computer". He is a Member of IE, ISTE, IAPQR, IIM, India; CSTA, USA; IACSIT, Singapore and IAENG, Hongkong. His research interests are in Telecommunications including Mobile Communications, Image Processing, Network Security, VLSI, Atomic Theory, Nanotechnology etc.