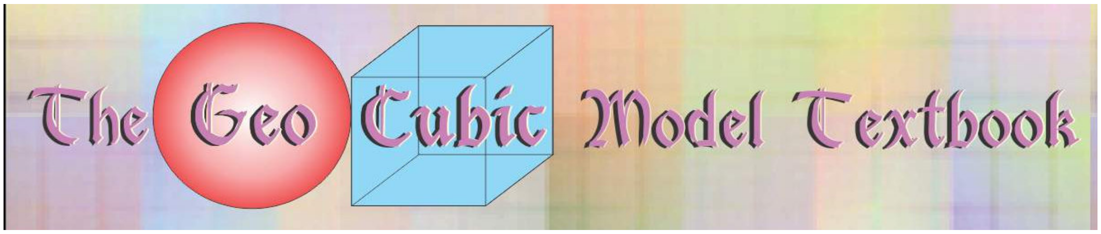


The Geocubic Model

by Tom Gilmore

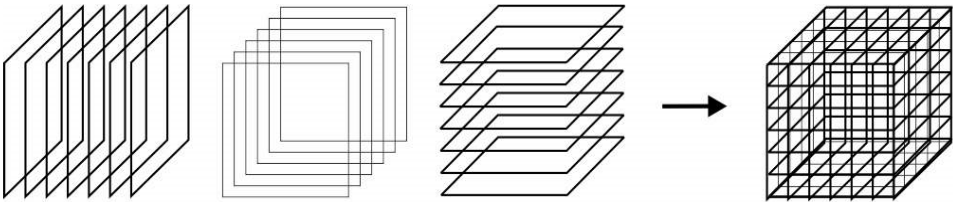
All graphics by Tom Gilmore

Chapter 1: The Geocubic Unification

The Geocubic Model is based on force-surfaces of the cube and sphere.

Cube: **Strong Atomic Force** (Atomic containment)
Time
Sphere: **Weak Atomic Force** (Proton/Electron separation)
Gravity
Electromagnetism

The Geocubic Matrix: Space/Time & Atomic Containment



Throughout space is a **matrix of unit cubes,** formed from 3 mutually perpendicular stacks of impenetrable force planes that combine to enclose a matrix of unit-cubes (with a volume of 1), as diagrammed above. The matrix is the conventional **Strong Atomic Force** providing atomic containment and quantum motion.

The matrix of force planes is very rapidly **flashing** in and out of existence at a constant rate. This flashing is the force of **Time**. While the matrix is in existence nothing can move between the cubes. While the matrix is out of existence, atoms and free atomic particles can (quantum) jump to an adjacent cube.

The flashing matrix is the time/space connection.

Motion occurs when the momentum of mass in atoms incrementally builds up in the unit-cube until it is sufficient to cause a (quantum) jump to an adjacent unit-cube. For example, matter moving at 1/5 the speed of light is jumping once every 5 flashes.

Photons (light in a vacuum) jump between cubes at every flash, so the speed of light equals the size of the unit-cube times the flashing-rate.

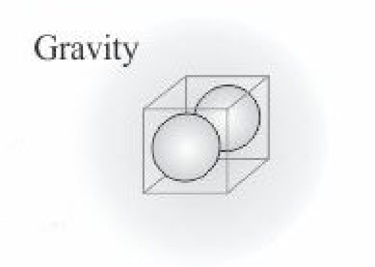
The Compression Sphere: Polarity Separation & Gravity

In the Geocubic Model the **Weak Atomic Force** **is a** **spherical force surface** (conventionally known as the **Neutrino)** compressed inside the unit-cube.

The Neutrino force-surface is inversely proportional to its volume. A free-Neutrino has a volume of nearly 1 and a force surface of nearly zero (barely detectable). It does not reach a volume of 1 because the surface inverse-energy would be zero (it would not exist).

Gravity

The compressed Neutrinos project a gravitational field of strength and reach in inverse to the compression.



The gravity from all the Neutrinos compressed in an atom merge.
Overlapping gravity of proximate atoms merge into one gravity field.

The gravity field **exponentially diminishes** (because space is 3-dimensional) with distance from the source, dissipating to zero.

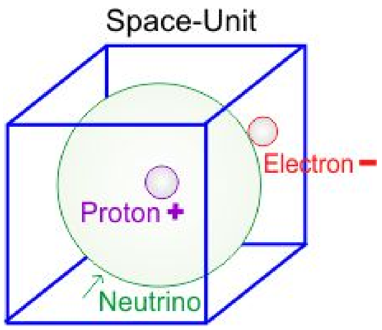
When compressed inside a unit-cube, the force-surface of the contained Neutrino is energized.

Polarity Separation

The 3 basic atomic particle charges are:

Neutron = 0
Proton = +1
Electron = -1

The diagram below shows the compressed Neutrino surface preventing the Electron(-1), which is attracted to the Proton(+1) by the opposite charges, from penetrating to the Proton contained inside the Neutrino. *(The compressed Neutrino is conventionally called the "electroweak particle")*



Although the Electron is not bound to the Proton (called "ionized" if missing), in the Geocubic Model the 3 components are referred to as a "Geosphere" or simply "Sphere".

Each atomic Element has a specific number of Protons termed the atomic number. Each Proton is contained individually in a compressed Neutrino.

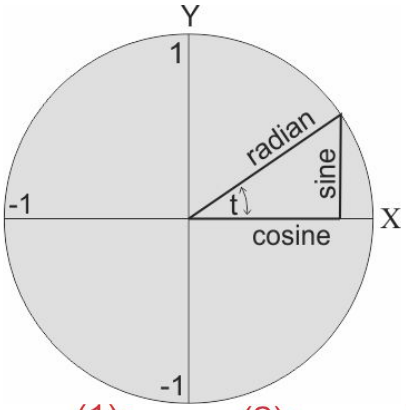
Electromagnetism

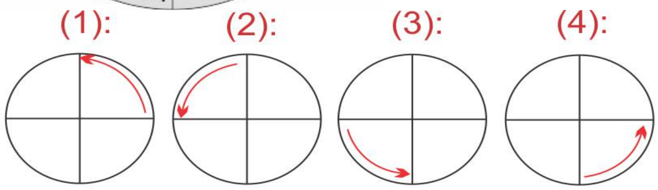
The Perpetually Oscillating Electro-Particle

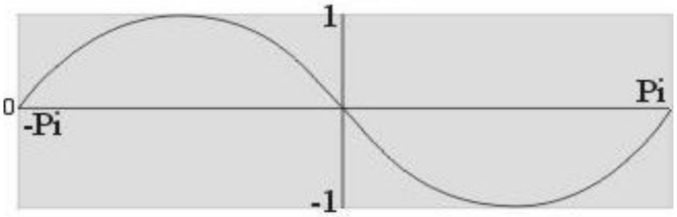
The Electron and the Photon are the same particle. (Electron ← → Photon).
The oscillation of the Electro-Particle is mathematically described by a trigonometric sine-wave.

The Sine-Wave

The sine-wave is a trigonometric function plotted by the rotation of a radian (line from the circle center to the circumference) counter-clockwise around the full 360 degrees. The angle of the transiting radian from the positive X-axis is labeled "t", and the length of the sine (along the Y axis) as the radian transits the circuit is labeled sine(t).







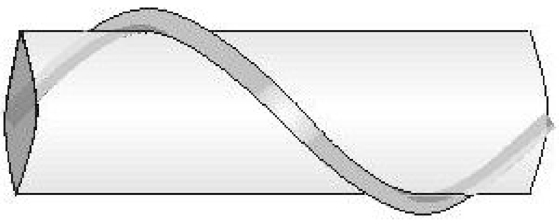
The radian begins transit from the positive X-axis, where Y is zero. **(1):** The sine(t) value increases to 1 (at the Y-axis), then **(2):** Sine(t) decreases back down to zero (at the negative X-axis). *In the graph above this is the left half of the sine wave.*

As the radian continues the transit, **(3):** the sine(t) value goes negative, decreasing down to –1 (at the negative Y-axis), and then **(4):** increases back up to zero. I*n the graph above this is the right half of the sine wave*.

Since the circumference of a circle is (Pi x Diameter), and Diameter=2, the length of the sine-wave is 2Pi.

Sine-Wave Spin (The Helix Spiral)

In light propagation, the 2-dimensional sine-wave "spins" in the 3rd dimension, forming a **helix spiral** as illustrated below. The Photon(-) traveling on the helix generates a cylindrical electromagnetic field.

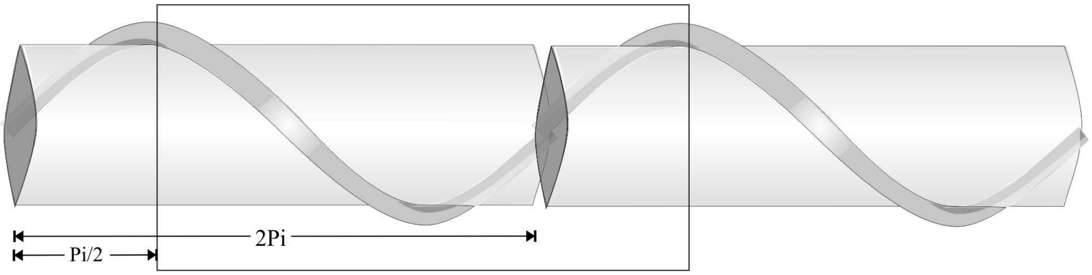


The sine-wave completes **one full cycle and one full** spin in the distance of 2Pi, so the spin is 1 to 1. It is commonly expressed as "a spin of ½" (in the distance of Pi), a very misleading description suggesting incorrectly that the spin is half that of the wave.

Cosine-Wave

Using the same transit of the circle as for the sine-wave, but measuring on the X-axis rather than the Y-axis, produces the cosine-wave.

"Cosine-Wave"



As illustrated above, the cosine-wave corresponds to a section of the continued sine-wave, offset from the single sine-wave by the distance of Pi/2. It is Pi/2 because the arc distance from the X-axis to the Y-axis is 1/4 the circle circumference of 2Pi.

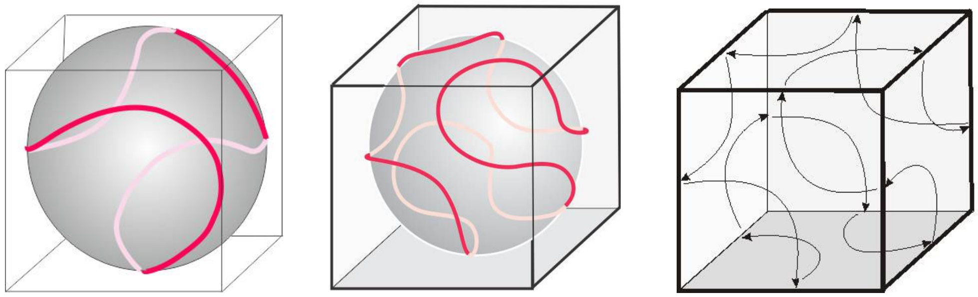
As a Photon the Electro-particle is traveling on a vector in the form of a helix spiral.

As an Electron the Electro-particle is spinning on the spherical surface of a compressed Neutrino.

Electron Spin

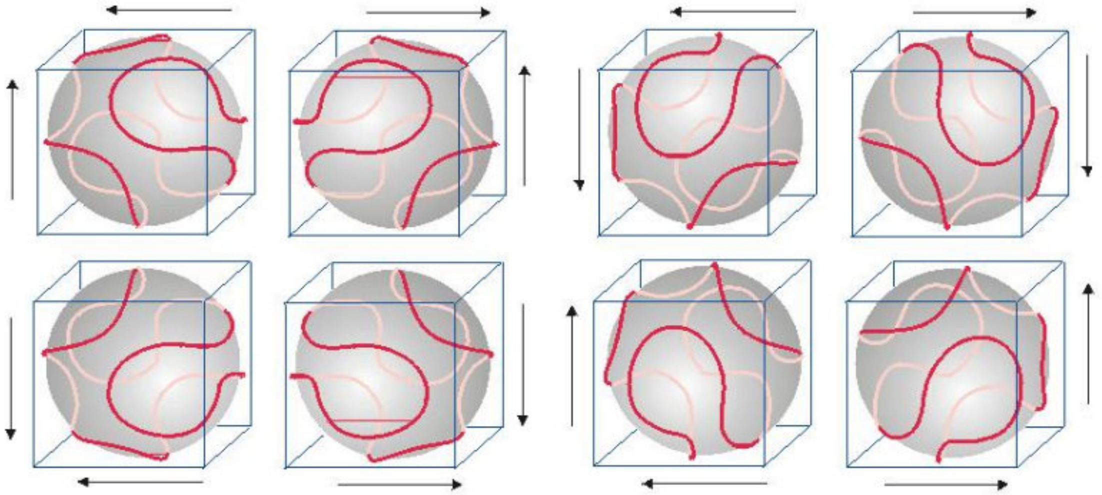
Inside the atom, the Electron is attracted to the Proton that is inside the Neutrino, and the sine-wave oscillation is bent to the Neutrino surface, forming the "baseball seam Electron-spin" illustrated below-left. This is called the "excited state" of Electron-spin.

Electron Spin



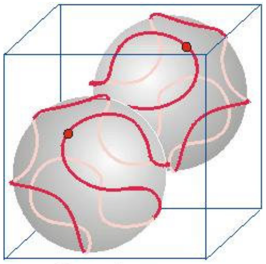
The spin automatically reduces to tighter loops (above-middle) called the "ground state" that are in balance with the 8 corners of the cube. The path of the Electron passes across the mid-point of the 12 edges of a containing cube (as shown above-right).

In the ground state there are 8 possible (anti-parallel) spins in relation to the 8 corners of the containing cube (see diagram below). These 8 insure that any contained Sphere can have a different spin from all of its adjacent (touching) neighbors.



The spins are characterized by the lean of the front loop, which leans up or down <u>and</u> leans left or right, as indicated by the arrows outside of the cubes.

The Helium(2) atom has 2 "Goespheres" (Proton/Neutrino/Electron), as illustrated below. The compressed Spheres arrange diagonally because the diagonal has the greatest span, and the compressed Spheres will expand to their greatest allowed diameter. Notice the 2 Electron spins are anti-parallel.



Helium Atom

Chapter 2: Quarks and Atomic Particles (3,6,9,12)

The 3 Atomic Particles and the 3 Quark Colors

There are 3 atomic particles: the Neutron, Proton, and Electron.

Each particle has an identical structure made up of 3 distinct Quarks labeled as "colors".

The conventional labels for the 3 Quarks are the primary light colors "Red, Blue, and Green".
In this presentation the **intuitive** primary pigment colors of Red, Blue, and Yellow are used.

The 6 Quark Types

The 3 Quark colors each come in one of two polarities: +2/3 or –1/3.

Designating the 3 Quarks by the primary pigment colors, and assigning the 2 polarities, the 6 quark types are shown below in color/charge shorthand.

+2/3, -1/3, +2/3, -1/3, +2/3, -1/3

The 9 Atomic Particle Variations

The 3 atomic particles combine the charges of 3 Quarks as follows:

Neutron: +2/3 -1/3 -1/3 = 0
Proton: +2/3 +2/3 -1/3 = +1
Electron: -1/3 -1/3 -1/3 = -1

The variations of the 2 charges (+2/3, –1/3) across colors produce 3 variants of each particle.
The variations are labeled by the color or combined colors of the +2/3 Quarks.

Neutrons:
Red (+2/3, -1/3, -1/3)
Blue (-1/3, +2/3, -1/3)
Yellow (-1/3, -1/3, +2/3)

Protons:
Purple (+2/3, +2/3, -1/3) Red+Blue
Orange (+2/3, -1/3, +2/3) Red+Yellow
Green (-1/3, +2/3, +2/3) Blue+Yellow

Electrons are all (-1/3, -1/3, -1/3)
There are 3 different Electrons, conventionally labeled **Electron, Muon, and Tau.**
(They have different miniscule mass)

In the Geocubic Model the Electron mass ratios are the primary pigment color/number additions of

(7), (3), and (1)

(10) = **(7)** + **(3)**
(8) = **(7)** + **(1)**
(4) = **(3)** + **(1)**

Electrons: (The Electrons are labeled with their paired Proton's colors)
Purple (-1/3, -1/3, -1/3) Mass ratio **=10**
Orange (-1/3, -1/3, -1/3) Mass ratio **=8**
Green (-1/3, -1/3, -1/3) Mass ratio **=4**

The 12 Accelerated-Collision Tracings

Detection grids of accelerated particle collisions reveal tracings of 12 distinct objects.
Six of these have the single Quark charges of +2/3 and -1/3,
and six have the opposite charges of -2/3 and +1/3.

The six objects with opposite charges are conventionally mistakenly considered to be "anti-Quarks".

The actual situation is that the collision does not always split up all 3 Quarks. What happens in the collision is that often a single Quark is split off, leaving a **Quark-pair**.

The opposite charges result from the combined polarities of Quark-pairs from Neutrons **(+2/3 -1/3 -1/3)**:
(+2/3 -1/3) = +1/3
(-1/3 -1/3) = -2/3

A Proton (+2/3 +2/3 -1/3) has never been detected outside of atomic containment (because it is always inside a compressed Neutrino), so it cannot be split.

By simple permutation of pairs of the 6 Quark types there are 15 possible color/charge Quark-pairs.
(5+4+3+2+1=15)

3 of the pairs that pair +2/3 charges are **precluded** because their combined charge of 4/3 is not in the 12 tracings.
(+2/3 +2/3), (+2/3 +2/3), (+2/3 +2/3).

3 of the pairs are **precluded** because they pair the same color, and the particles must have only one of each color.
(+2/3 -1/3), (+2/3 -1/3), (+2/3 -1/3).

This leaves (15 – 6) = 9 possible pairs

6 of the pairs are reduced to 3 distinguishable pairs because only the combined color and charge is detected.
(-1/3 +2/3) = +1/3   (-1/3 +2/3) = +1/3   (-1/3 +2/3) = +1/3
(+2/3 -1/3) = +1/3   (+2/3 -1/3) = +1/3   (+2/3 -1/3) = +1/3

These 3 pairs (**+1/3 +1/3 +1/3**) were originally conventionally labeled as "Strange, Charm, and Beauty".

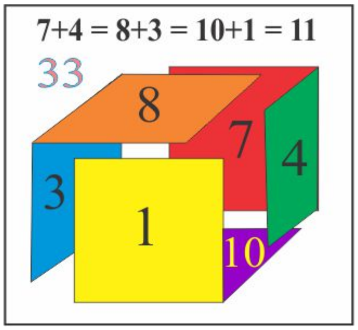
The **12** distinguishable collision results are shown below. The 6 single Quarks are on the top row. The 6 distinguishable Quark-pairs are shown on the bottom row (with the 9 possible Quark-pairs enclosed in a rectangle above them).

-1/3	+2/3	-1/3	+2/3	-1/3	+2/3
(-1/3 +2/3) (+2/3 -1/3)	(-1/3 -1/3)	(-1/3 +2/3) (+2/3 -1/3)	(-1/3--1/3)	(-1/3 +2/3) (+2/3 -1/3)	(-1/3 -1/3)
+1/3	-2/3	+1/3	-2/3	+1/3	-2/3

There are no anti-Quarks (and no anti-particles).

Geocubic Model Quark-Structure of Particles

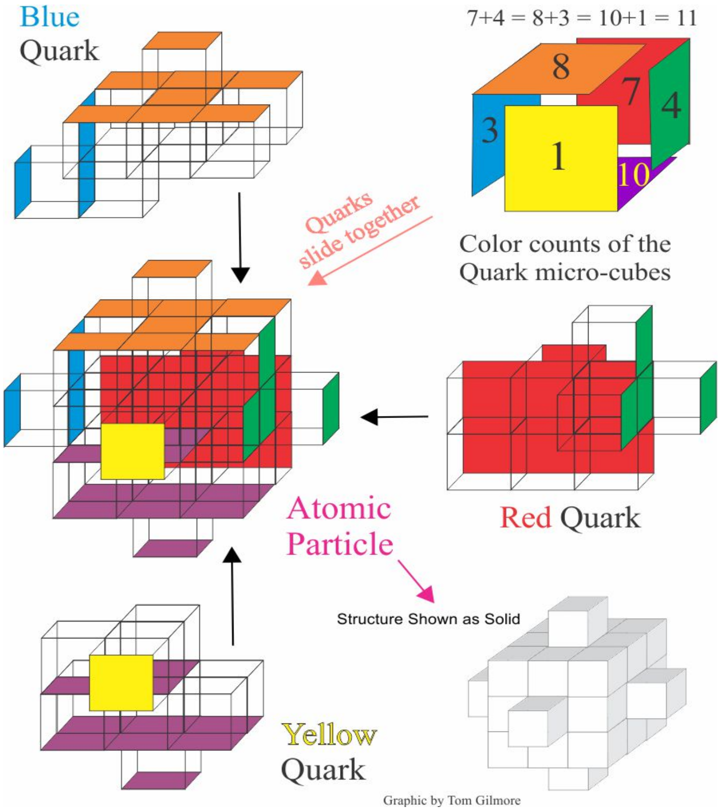
In the Geocubic Model, the **numeric color-cube** (discovered by Tom Gilmore) shown below assigns the relative positions of the six colors to the 6 faces of a cube, and splits the cube into 3 paired faces that each add to 11.



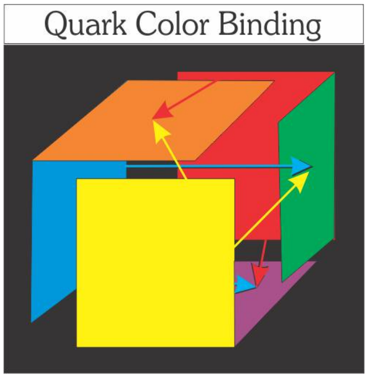
These color-numbers are a symbolic key to the Quark dimensional structure of atomic particles.

The Quarks are composed of **face-charged frame-cubes** that are edge-only frameworks energized on 1 of the six faces with 6 distinct energies symbolized by 6 colors.

Each quark is made up of **11 frame-cubes** in 2 colors that have counts matching the color/numbers of the 6 cube faces. The charged frame-cubes are positioned matching the faces of the color-cube (as illustrated below).



The Quarks slide together and do not interlock, they can slide apart (for particle transformations), but a strong **binding force** draws them together.



The colors of the cube faces are an analogue of the binding force as illustrated above with colored arrows.
Each primary-color face (red, blue, yellow) is paired to a face that is the additive color combination of the other two primary color faces.

Yellow’s pair is Purple which combines primary faces Red and Blue.
Blue’s pair is Orange which combines primary faces Red and Yellow.
Red’s pair is Green which combines primary faces Blue and Yellow.

Chapter 3: The Isotope Balance Equation

(Discovered by Tom Gilmore)

Atomic Number and Elements

The integer number of Protons in an atom is called its "**atomic number**", and these integer-based atoms are termed "**Elements**". One Proton in an atom is the Element Hydrogen (H), two Protons is Helium (He), three Protons is Lithium (Li), and so on.

Atomic Weight and Isotopes

Both Protons and Neutrons contain a Mass (massive energy of 1,000,000,000 mega-electron-volts) that is termed an "**atomic weight**" of 1. The atomic weight (Z) of an atom is the sum of Protons (P) and Neutrons (N), or (**Z=P+N**). Many Elements occur with variable numbers of Neutrons, and these are called **"Isotopes"** of the Element.

The syntax used in this text for identifying an Isotope is (Z)Element(P). For example Helium has 2 Protons and 2 Neutrons and is written (4)Helium(2).

The “n-value”

With the exception of Hydrogen, which has no Neutrons, every Element has at least as many Neutrons as Protons.

The excess of Neutrons over Protons is termed the ”n-value” and by definition of being in excess it is the atomic weight less twice the number of Protons or **n = Z-2P**.

The “b-value”

The Isotope balance equation was discovered because at (Z=195)Platinum(P=78) a proportional relationship of 1/2 between Protons(P) and excess-Neutrons(n) occurs.

n = (Z-2P) = (195 - 2x78) = 39 -- and 39/78=1/2

In other words, for (195)Platinum(78), excess Neutrons is 1/2 of P **(P/2)** when P is 78 **(P/78)**.

It turns out that (P/2 x P/78) = (78/2 x 78/78) = (39 x 1) = 39
and (P/2 x P/78) = (P^2/156)

The Platinum equation **P^2/156** when applied to the other Elements matches with their Isotopes in a significant manner that demonstrates it is the sliding-scale **isotope balance** that applies to all the Elements.

This balance is termed the b-value, or **b=P^2/156**

The "z-value"

Applying the balance equation to atomic weight (Z), the z-value simply adds 2P to the b-value, so

Isotope Balance is z = (2P + P^2/156) rounded
(z is rounded because atomic weight Z is an integer)

Conformities with the Balance Equation

Isotope abundance data is from "The Elements" by John Emsley

Exact Conformity in some Elements with 100% in one Isotope:

(**19**)Fluorine(9) -- **(2P + P^2/156)** = (2x9 + 9x9/156) = 18.52 rounds to **19**
(**23**)Sodium(11) -- z = (2x11 + 11x11/156 = 22.78 rounds to **23**
(27)Aluminum(13) – z = 27.08 rounds to 27
(31)Phosphorus(15) – z = 31.44 rounds to 31
(45)Scandium(21) – z = 44.83 rounds to 45
(59)Cobalt(27) – z = 58.67 rounds to 59
(93)Niobium(41) – z = 92.78 rounds to 93
(103)Rhodium(45) – z = 102.98 rounds to 103
(169)Thulium(69) – z = 168.52 rounds to 169

Exact Conformity in some Elements with 99% in one Isotope:

(12)Carbon(6) – z = 12.23 rounds to 12
(14)Nitrogen(7) – z = 14.31 rounds to 14
(16)Oxygen(8) – z = 16.41 rounds to 16
(238)Uranium(92) – z = 238.26 rounds to 238

Notice that the Elements with 100% have odd atomic weight and those with 99% have even atomic weight.

Parity Demand

Isotope balance is strongly respondent to parity (of even-to-even or odd-to-odd) between the number of Neutrons and the number of Protons. Since Z=N+P, the parity can be expressed as between atomic-weight(Z) and atomic-number(P).

Due to the parity demand, if the Isotope-balance (z-value) is out of parity with the atomic-number(P), the tendency is the Isotope of that Element will generally be off by 1 from the balance (z-value), in order to conform with number parity.

For example 100% of Magnesium is (Z=55)Mn(P=25), satisfying odd parity between Z and P, but the balance is z=54 (out of parity), one less than the Isotope of Z=55.

Following is a list of 7 Elements that have 100% (or nearly) in one Isotope, and are in parity between P and Z, but in **non-parity** to the z-value (the balance equation). They are 1 off the z-balance because of parity demand.

Isotope	z-value	variance	% abundance
(**51**)V(23)	**50**	-1	99
(**55**)Mn(25)	**54**	-1	100
(89)Y(39)	88	-1	100
(141)Pr(59)	140	-1	100
(175)Lo(71)	174	-1	97
(181)Ta(73)	180	-1	99
(197)Au(79)	198	+1	100

Notice Gold(79) is on the other side of the Platinum(78) balance point, and the variance shifts from -1 to +1.

Non-Parity Isotope Splitting

Six Elements of odd atomic-number split their Isotopes around their even z-value. Their percentage split exhibits a graduated percentage change, centered around the Element Silver(47) which nearly equally splits around the z-value (see list below). All 6 Elements have averaged atomic weights (average Z) that round to the z-value. (Copper example: (.69 x 63) + (.31 x 65) = 63.62)

69% -- (63)Copper(29)
31% -- (65)Cu(29) average Z = 63.62 **z-value = 64**

60% -- (67)Gallium(31)
40% -- (69)Ga(31) average Z = 67.80 **z-value = 68**

51% -- (107)Silver(47)
49% -- (109)Ag(47) average Z = 107.98 **z-value = 108**

37% -- (185)Rhenium(75)
63% -- (187)Re(75) average Z = 186.26 **z-value = 186**

37% -- (191)Iridium(77)
63% -- (193)Ir(77) average Z = 192.26 **z-value = 192**

30% -- (203)Thallium(81)
70% -- (205)Tl(81) average Z = 204.40 **z-value = 204**

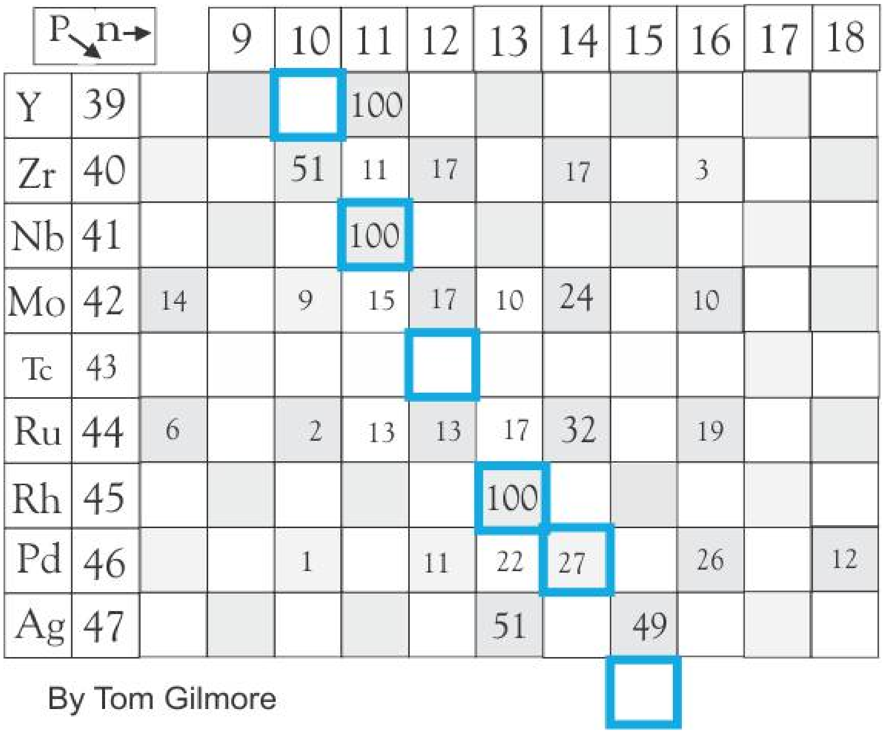
Notice that the percentage split is nearly reversed between Copper(29) and Thallium(81).

Even-Atomic-Number Isotope Spreads

Elements of even atomic-number tend to spread their Isotopes more than odd atomic-number Elements. This can be seen in the sample Isotope chart below showing Isotope percentages by their n-value.

The **blue squares** mark the integer jumps of the b-value (balance).

The shaded squares are in parity.



P↘ n→			9	10	11	12	13	14	15	16	17	18
Y	39				100							
Zr	40			51	11	17		17		3		
Nb	41				100							
Mo	42	14		9	15	17	10	24		10		
Tc	43											
Ru	44	6		2	13	13	17	32		19		
Rh	45						100					
Pd	46			1		11	22	27		26		12
Ag	47						51		49			

By Tom Gilmore

The even-numbered Elements above have a wide Isotope spread, but their **average-Z** clings to the z-value.

Average-Z calculation example for Zr(40)) using percents as 2-decimals and (isotope-Z=2P+n):
Average-Z = Sum [Isotope% x Isotope-Z]
= ((.51x90) + (.11x91) + (.17x92) + (.17x94) + (.03x96)
= (45.90 + 10.01 + 15.64 + 15.98 + 2.88) = 90.41

	Ave-Z	z	variance
Zr(40)	90.41	90	0
Mo(42)	94.13	95	+1
Ru(44)	101.12	100	-1
Pd(46)	105.64	106	0

Notice that the spread prefers Isotopes in parity (the shaded boxes in the chart above). For example in Zr(40) the isotope percentages that are in parity are 51%+17%+17% +3% = 88%.

Zr(40) is 88% in parity
Mo(42) is 74% in parity.
Ru(44) is 72% in parity.
Pd(46) is 77%) in parity.

Isotope relative abundance percentage charts follow **Chapter 4** because they show atomic decay.

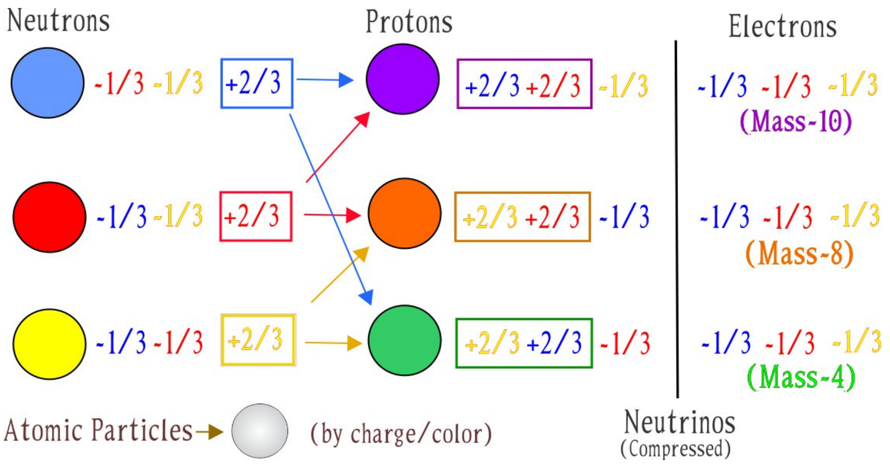
Chapter 4: Atomic Fusion and Decay

Particle Transmutations

Proton/Electron pairs are interchangeable with 2 Neutrons, as shown below.

Neutron = +2/3 -1/3 -1/3 = 0 Proton = +2/3 +2/3 -1/3 = +1
Free Neutrino ← → Compressed Neutrino
Neutron = +2/3 -1/3 -1/3 = 0 Electron = -1/3 -1/3 -1/3 = -1

The transmutations require color compatible particles in order to result in all three quark-colors.
The diagram below shows with colored arrows how the Proton(+1) and Electron(-1) pairs are re-assembled from the Quarks of 2 Neutrons(0). *Reverse the colored arrows for Proton/Electron to 2 Neutrons.*



The Proton is kept separate from the Electron by a compressed Neutrino. This is indicated above by the vertical line between Protons and Electrons.

Atomic Fusion Processes

Solar fusion occurs in phases as the solar body increases temperature.

Clouds of Neutrons and Hydrogen (possibly with Helium and other Elements) in space will contract and begin to form a Sun. As the cloud contracts internal heat builds up until the first phase of fusion initiates.

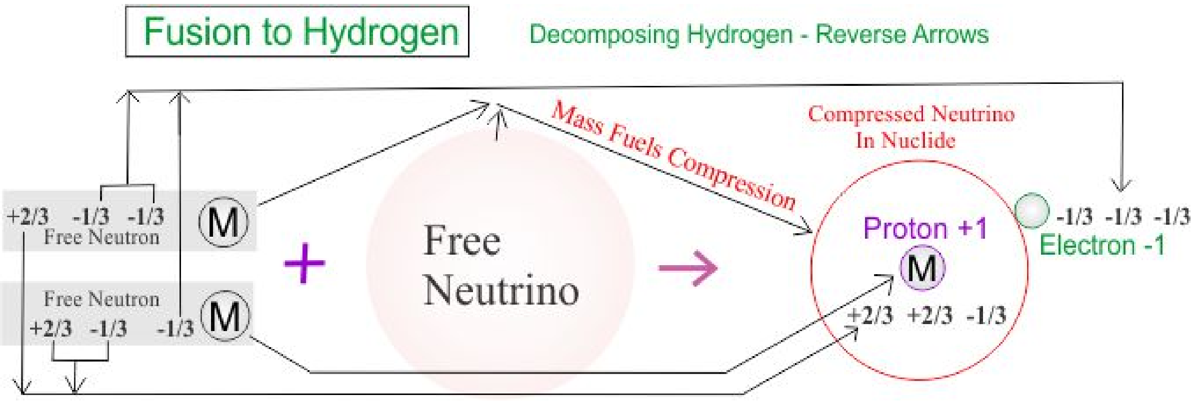
Phase 1: Fusing Neutrons into Hydrogen

In this phase, virtually all of the free Neutrons in the solar body convert into Hydrogen. Two Neutrons convert into a Proton/Electron pair.

Both Neutrons and Protons contain a massive energy (termed Mass) within the Particle (shown as a circled M in the diagram below).

The Mass from one of the Neutrons fuels the compression of the Neutrino, and the Neutron transmutes to an Electron (without Mass). The Mass from the other Neutron stays with its transmutation to the Proton.

In the transmutation, the Quark-makeup of the Particles are rearranged according to the arrows in the diagram.



As the Hydrogen volume increases in the Sun-cloud, the pressure and temperature of the cloud increases.

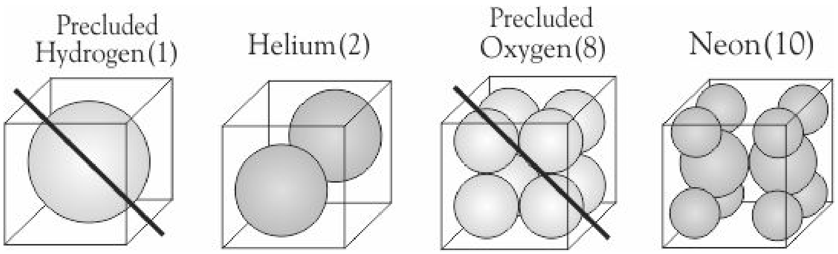
Phase 2: Fusing Hydrogen into Helium

Further fusion (creating Helium) does not begin until the temperature reaches ten million (10,000,000 or 10^7) degrees Kelvin.
The Kelvin scale starts at absolute zero (-273 degrees Celsius)

Atomic Symmetry Law

The **Symmetry Law** is that the internal arrangement of the Spheres in the cube
Must be symmetrical in 2-dimensions, but
Cannot be symmetrical in all 3-dimensions.

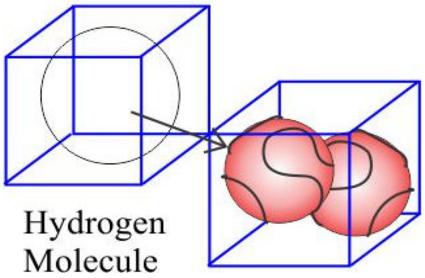
Some of the Elements have no valid Sphere arrangement. Elements with no valid arrangement are **required** to loan out or borrow Spheres to reach a valid Element-form. Transfers of Spheres result in an Element emulating the form of the Element that has the number of Protons that result from the transfers.



Hydrogen(1) and Oxygen(8) are symmetrical in all 3 dimensions, so they are called "active", meaning they are disallowed and must bond.

Nucleonic Binding Force

The Protons of an atom are bound to the atom by energy taken from the individual Protons. This Nucleonic binding force is weaker than the Symmetry demand but strong enough to hold the bonded atoms together. Spheres transferred to adjacent atoms remain bound to the atom of their origin by the Nucleonic binding force.



The diagram above shows the Hydrogen molecule. One Hydrogen atom sends its Sphere to the other Hydrogen atom, leaving one empty (termed Void), and the other with 2 Spheres, emulating Helium-form(2).

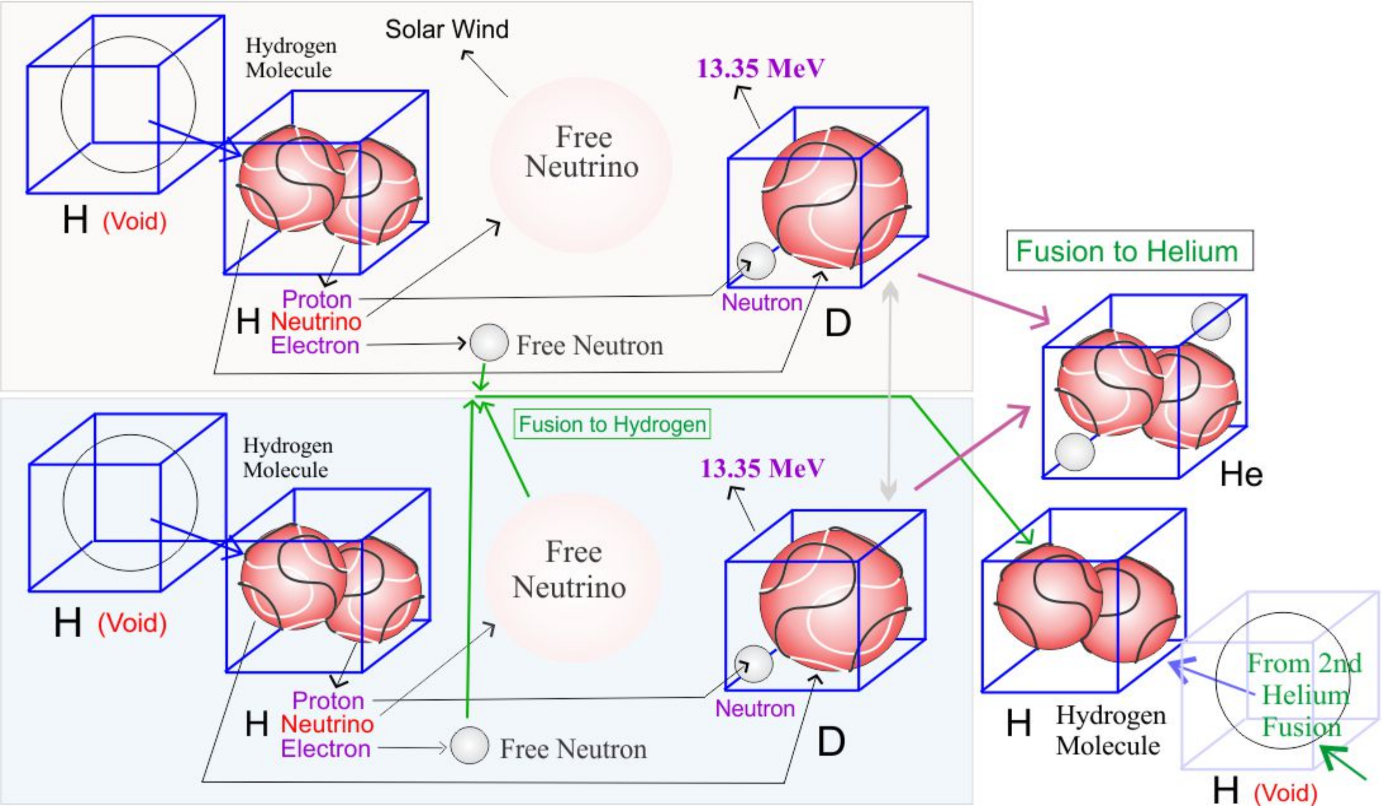
Fusion to Helium is a complex **2x2x2** process, as diagramed below:

Fusing a Helium atom requires 2 Hydrogen molecules (4 Hydrogen atoms), but in the process restores one Hydrogen atom, which must form a molecule, so a 2nd Helium fusion must occur simultaneously.

For each of 2 Helium atoms fused
Two Deuterium atoms are fused from the Hydrogen molecule and instantly fuse into the Helium atom
(releasing 2 x 13.35 = 26.7 Mega-electron-volts).

One of the 2 Hydrogen atoms (of each Hydrogen molecule) is decomposed into a Deuterium atom, plus a free Neutron and a free Neutrino (yielding 2 free Neutrons and 2 free Neutrinos).

- One of the 2 free Neutrinos flies off as solar wind
- The other free Neutrino and the 2 free Neutrons fuse into a Hydrogen atom.
    (The same Hydrogen fusion process as in Phase I)



The Hydrogen atoms produced from the 2 Helium fusions bond into a Hydrogen molecule.

Phase 3: Burning Helium

When the solar temperature reaches 100 million Kelvin, **10^8K,** the Helium begins to fuse in a chain (of single Helium's being compressing in), creating higher Elements up to Neon. The Helium has "burned away" into higher Elements (actually, the pressure has combined the space-unit contents).

(4)He(2)	(8)Be(4)	(12)C(6)	(16)O(8)
(4)He(2)	(4)He(2)	(4)He(2)	(4)He(2)
(8)Be(4)	(12)C(6)	(16)O(8)	(20)Ne(10)

Beryllium(4), Carbon(6), Oxygen(8), and Neon(10).

Phase 4: Fusing With Carbon and Oxygen

As the temperature reaches one billion Kelvin, **10^9K,** fusions with Carbon(6) and Oxygen(8) atoms occur, producing Elements up to Sulfur(16).

(12)C(6)	(12)C(6)	(16)O(8)
(12)C(6)	(16)O(8)	(16)O(8)
(24)Mg(12)	(28)Si(14)	(32)S(16)

Magnesium(12), Silicon(14), Sulfur(16)

Phase 5: The Decaying Fusions

At temperatures over ten Billion Kelvin, **10^{10}K,** the final phase of mainstream sun burning initiates, building from (20)Neon(10).

This phase of fusion is affected by a decay process that is due to the Isotope balance equation

$b = P^2/156$ (rounded) where P is number of Protons.

When the **n-value** (excess Neutrons) of a fused atom is less than the Element's excess Neutron **balance** number
($b = P^2/156$) by **more than 1**, the fused atom will eject a Hydrogen molecule.

When ejecting a Hydrogen molecule, the fused atom drops down 2 atomic numbers, or minus 2 Protons (-2P), but leaves the Neutron count unchanged, thus increasing the excess Neutron count by n=2 in the resultant Element.

For example (40)Calcium(20) → 2(1)H(1) + (38)Argon(18)
n=0 **b=3** n=2 **b=2**

This decay restores Isotope balance.

The following list shows the calculated **balance (b)** for the even-numbered Elements from Argon(18) up to Zinc(30),
Example: Argon(18) = **$P^2/156$** = 18x18/156 = 2.08 (rounds to 2)

Ar(18) b=2.08 b=2 Argon
Ca(20) b=2.56 b=3 Calcium
Ti (22) b=3.10 b=3 Titanium
Cr (24) b=3.69 b=4 Chromium
Fe(26) b=4.33 b=4 Iron
Ni (28) **b=5.03 b=5 Nickel**
Zn(30) b=5.77 b=6 Zinc

For the following fusions of the Elements the excess Neutrons (n-value) is shown as **n=** (in black) and the balance number is shown in red as **b=**

When the difference is **more than 1** a Hydrogen molecule (2H) is expelled (→) from the Nuclide and the resultant Element/Isotope is shown.

(20)Ne(10)
<u>(20)Ne(10)</u>
(40)Ca(20) n=0 **b=3**
→ 2H + **(38)Ar(18)** n =2 **b=2**

(20)Ne(10)
<u>(24)Mg(12)</u>
(44)Ti(22) n=0 **b=3**
→ 2H + **(42)Ca(20)** n=2 **b=3**

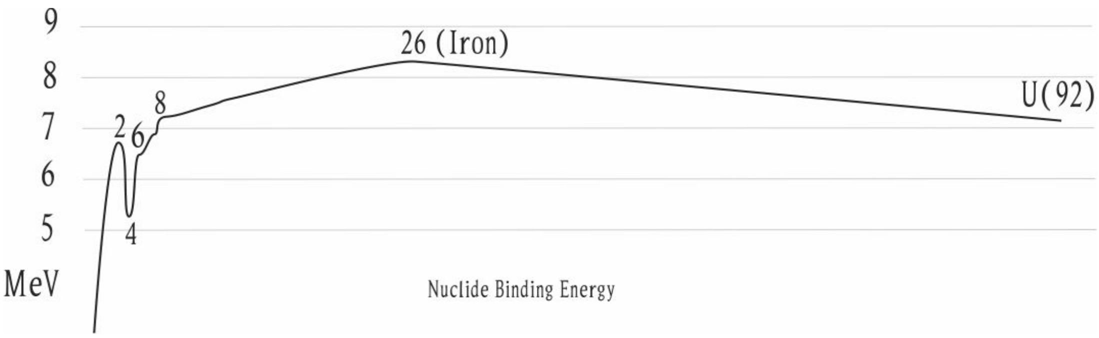
(24)Mg(12)
<u>(24)Mg(12)</u>
(48)Cr(24) n=0 **b=4**
→ 2H + **(46)Ti(22)**. n=2 **b=3** (most decay to Calcium)
→ 2H + **(44)Ca(20)** n=4 **b=3**

(24)Mg(12)
<u>(28)Si(14)</u>
(52)Fe(26) n=0 **b=4**
→ 2H + **(50)Cr(24)** n=2 **b=4**
→ 2H + **(48)Ti(22)** n=4 **b=3** (73% of Titanium is n=4)

(28)Si(14)
<u>(28)Si(14)</u>
(56)Ni(28) n=0 **b=5**
→ 2H + (54)Fe(26) n=2 **b=4**
→ 2H + **(52)Cr(24)** n=4 **b=4** (84% of Chromium is n=4)

(28)Si(14)
<u>(32)S(16)</u>
(60)Zn(30) n=0 **b=6**
→ 2H + (58)Ni(28) n=2 **b=5** (**68% of Nickel is** n=2)
→ 2H + **(56)Fe(26)** n=4 **b=4** (92% of Iron is n=4)

In the case of fusion to Zinc(30) which drops to Nickel, some of the **(58)Nickel(28)** does not reduce to (56)Iron(26), even though the **balance of 5** is +3 more than the n-value of 2. This resistance to decay is because Iron(26) is at the peak of binding energy (as charted below).



Even though a fusion of 2 Sulfur atoms would decay to a Nickel(28) which would be in balance (-1 off), the energy of a mainstream sun is not sufficient to fuel the fusion, as shown (faded out) below.

(32)S(16)
(32)S(16)
(64)Zn(32) n=0 **b=7**
→ 2H + **(62)Zn(30)** n=2 **b=6**
→ 2H + **(60)Ni(28)** n=4 **b=5**

Supernova Fusions

Mainstream solar bodies die out, but larger solar bodies end up exploding in a supernova. Elements heavier than Iron/Nickel are produced in supernova explosions. This means that the Elements beyond Iron/Nickel on Earth had to come from a prior supernova.

The Odd-Numbered Elements

Aside from Hydrogen(1), only even-numbered Elements are fused. The odd-numbered Elements from Lithium(3) upward are only created through Beta decays.

Alpha Decay

In alpha decay, an "Alpha particle" (2)Helium(2) is emitted from the atom. This is actually a Helium atom, not a particle (but academia still calls it a particle to preserve their early misconceptions).

Alpha decay spontaneously occurs at various rates for all the Elements from Lithium(3) upward. Decay is enhanced by various factors, but occurs regardless. Two Protons and two Neutrons are sent off and the atom reduces by 2 atomic numbers.

For example (40)Calcium(20): a→ (4)Helium(2) + (36)Argon(18)

The n-value of the transmuted Element is unchanged because 2 Protons and 2 Neutrons (being equal in number) are emitted, but Proton-count (atomic number) has dropped by 2.

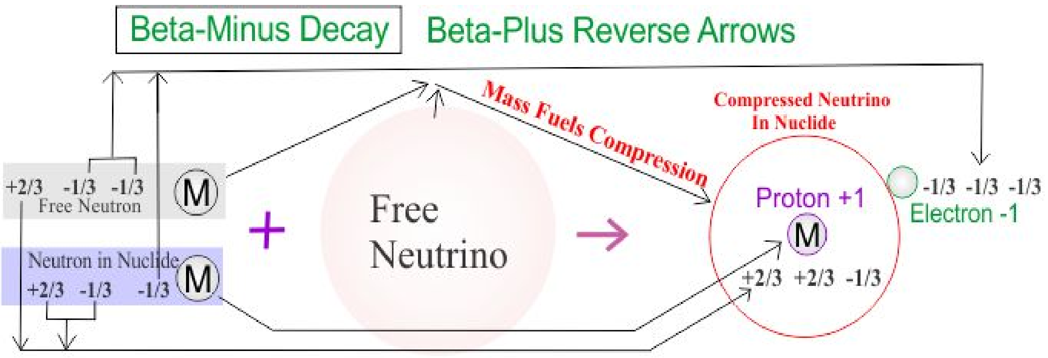
Beta Decay

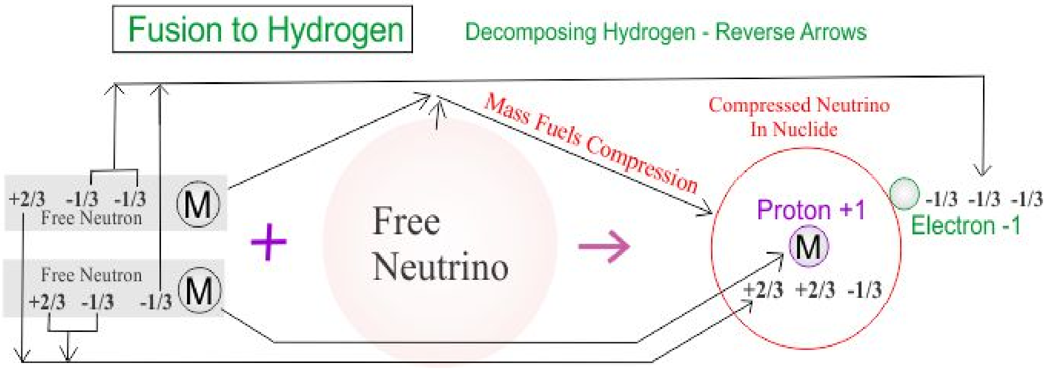
When the n-value is out of balance, that Isotope may transmute to move toward balance, by increasing or decreasing the Proton-count by 1, and this is called beta-decay.

The isotopic effect of a beta-decay on the atom is to either:
change a Neutron to a Proton (Beta-minus) or
change a Proton to a Neutron (Beta-plus).

In beta-decay the atomic-weight(Z=N+P) is unchanged. The adjustment to the n-value is:
Beta-minus +1P --> effect -2n
Beta-plus -1P --> effect +2n

The Beta-minus decay is nearly the same as the fusion to Hydrogen except that one of the Neutrons being transmuted is already incorporated in the atom (difference highlighted by a purple rectangle below).





Cycles of Fusion and Decay

Inexorable Alpha and Beta decay eventually reduces all the Elements back down to Hydrogen and Helium, releasing all the excess Neutrons, and these clouds of Hydrogen, Helium, and free Neutrons accrete into solar bodies that begin fusion. These repeated cycles of decay and fusion are behind the Hindu conception that the Cosmos is breathing.

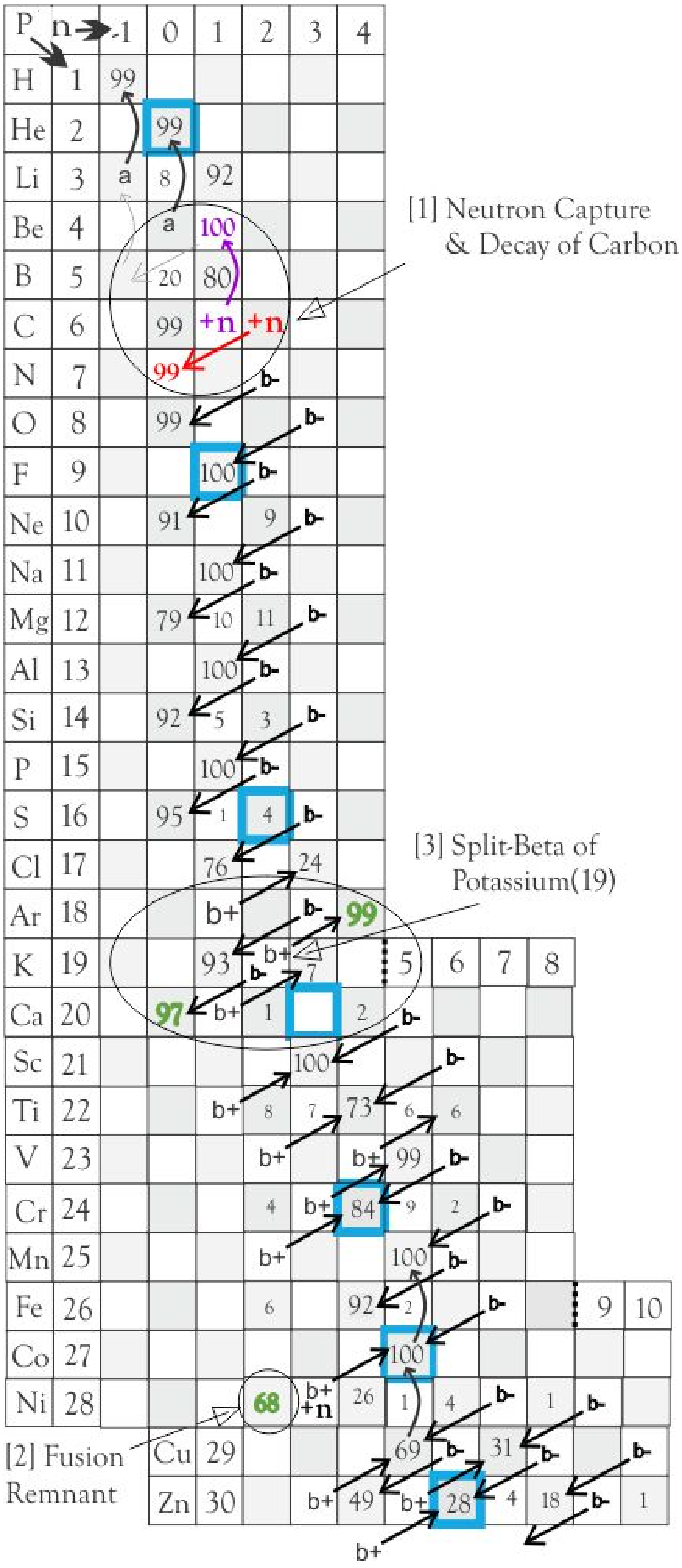
Isotope Abundance Charts (Showing Alpha and Beta Decays)

The **Isotope Abundance Charts** below show Isotope percentages for P (atomic number) by their n-value (excess Neutrons).

The **blue squares** mark the integer jumps of the b-value (balance).
The shaded squares are in parity.

Exceptions Color Coding:
Purple for Isotopes 100% in non-parity.
Red for beta-minus decay from parity to non-parity (only 3 total).
Green for out of balance but in-parity.

The deviations are circled on the chart.



[1] Neutron Capture & Decay of Carbon

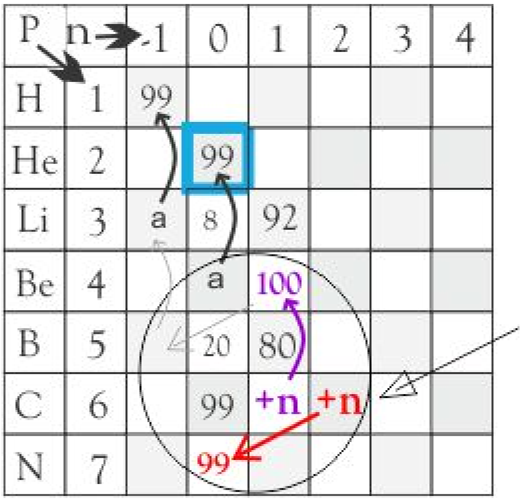
[3] Split-Beta of Potassium(19)

[2] Fusion Remnant

Fusion decay accounts for the deviation of (58)Nickel(28) n-2 **b=5**

The Neutron Capture Discrepancies

Some Elements will capture free-Neutrons, such as (12)Carbon(6) (see chart section below).

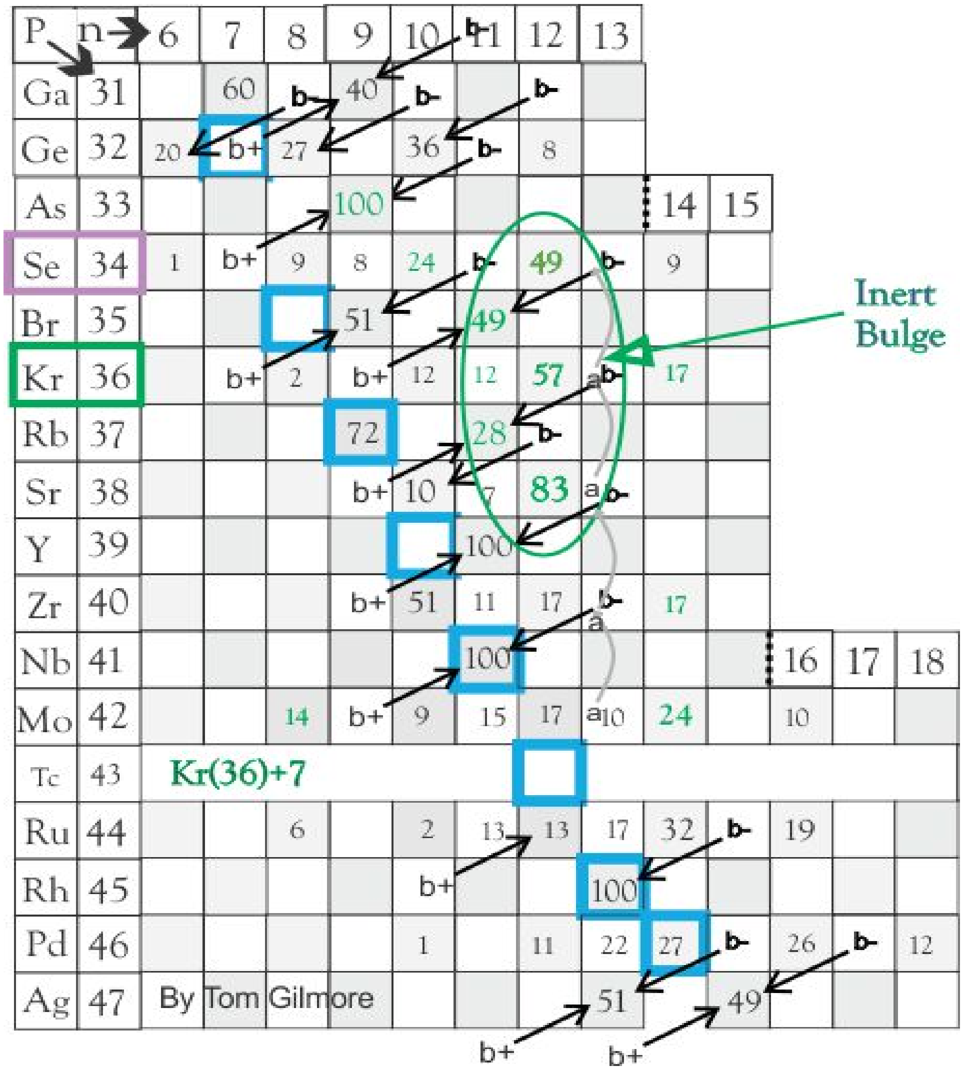


P	n	-1	0	1	2	3	4
H	1	99					
He	2		99				
Li	3	a	8	92			
Be	4		a	100			
B	5		20	80			
C	6		99	+n	+n		
N	7		99				

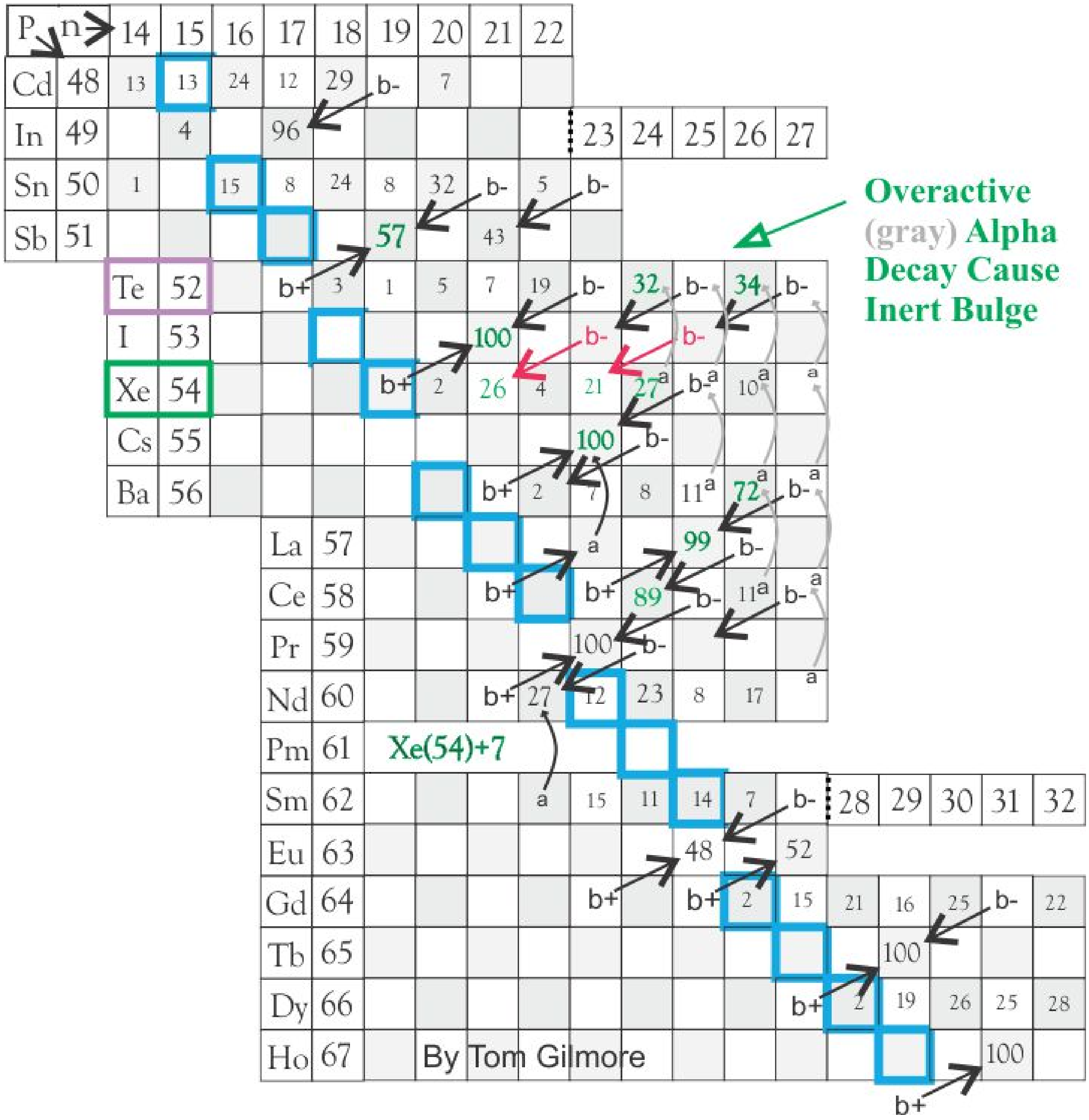
When Carbon captures 1 Neutron it becomes (**13**)Carbon(6), and may alpha-decay to (**9**)Beryllium(4).
If Carbon captures 2 Neutrons it becomes (14)Carbon(6), and will gradually beta-decay to (**14**)Nitrogen(7).

The "Inert Bulge" exceptions (following charts)

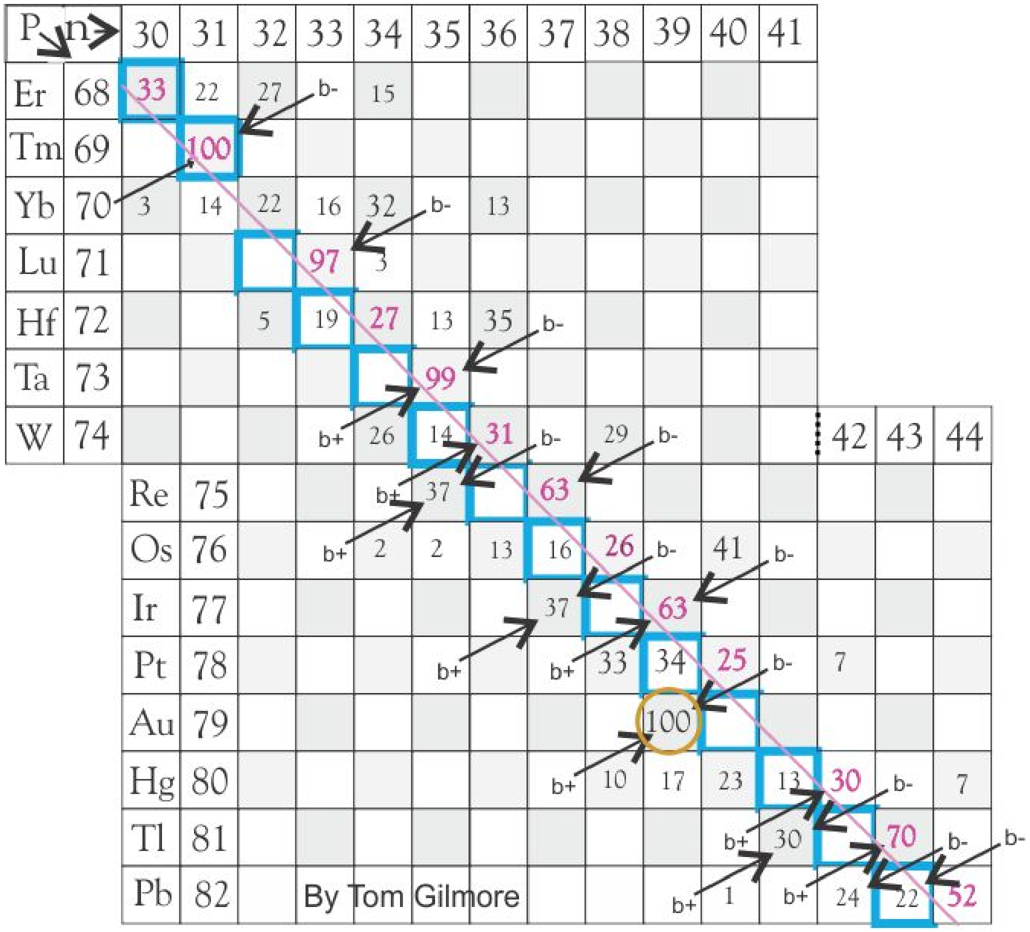
The Inert Bulge exceptions shown in the 2 charts below are caused by alpha decays that happen in succession without beta-decay acting to move the Isotope toward the balance. Both bulges have a similar pattern, that centers around the inert Elements Krypton(36) and Xenon(54), and for both bulges the 7th Element following the inert Element does not occur in nature.



P	n	6	7	8	9	10	11	12	13	14	15	16	17	18
Ga	31		60		40									
Ge	32	20		27		36		8						
As	33				100									
Se	34	1		9	8	24		49		9				
Br	35				51		49							
Kr	36			2		12	12	57		17				
Rb	37				72		28							
Sr	38					10	7	83						
Y	39						100							
Zr	40					51	11	17		17				
Nb	41						100							
Mo	42			14		9	15	17	10	24		10		
Tc	43	Kr(36)+7												
Ru	44			6		2	13	13	17	32		19		
Rh	45								100					
Pd	46					1		11	22	27		26		12
Ag	47	By Tom Gilmore							51		49			

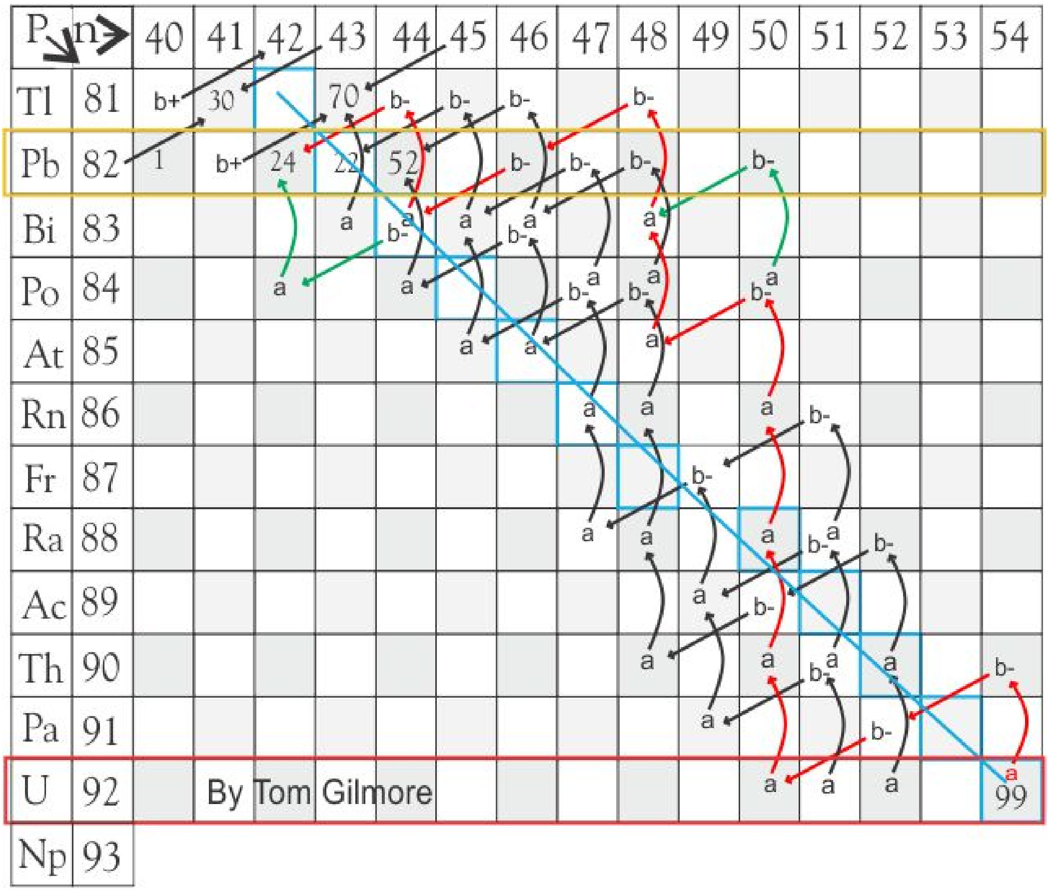


The flat-line 45 degree b-gradient off-1 Elements



Radioactive Decay Paths of Uranium

The Radioactive Elements between 83 and 92 decay by stepping down 2 atomic numbers (Protons) with an alpha decay, and stepping up 1 Proton with a beta decay. The radioactive decay path of Uranium(92) down to Lead(82) is shown below with **red arrows**. Two alternate deviations are shown with **green arrows**, but they end up at the same Isotope of Lead at n=42, or (206)Lead(82). The **black arrows** come from beyond Uranium(92).

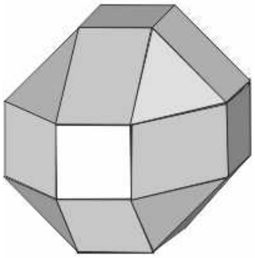


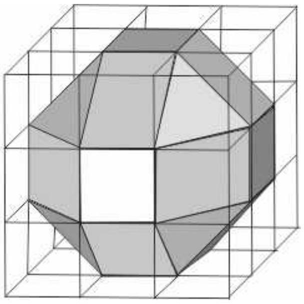
Part 2: The Structure of Matter

Chapter 5: Crystal Structure

Crystal Facets

The graphic below-left shows the external form of the 26 conventionally defined crystal facets, and to the right how the facets relate to boundaries of the 26 outer cubes of a 3x3x3 (27-cube) cube.



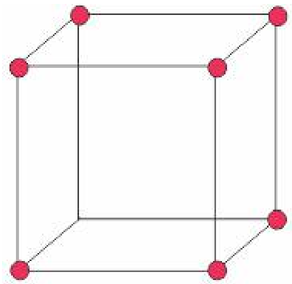


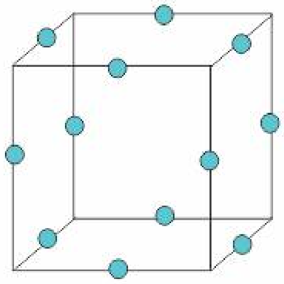
Crystal Lattices

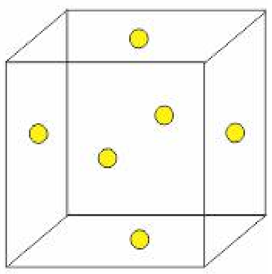
A crystal lattice is a repeating connected pattern. A "**unit-cell**" is the smallest number of atoms that display the basic lattice pattern. A given lattice type is assigned a "coordination number" (shown in parentheses after the name of the lattice), indicating the count of adjacent atoms to any given atom.

There is a correlation between the 3 main lattice coordination numbers and the aspects of a cube.

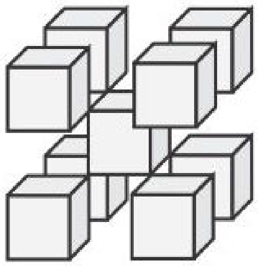
Lattice	Cube
Body Centered Cubic (8)	8 Corners
Face Centered Cubic (12)	12 Edges
Basic Cubic (6)	6 faces
	26

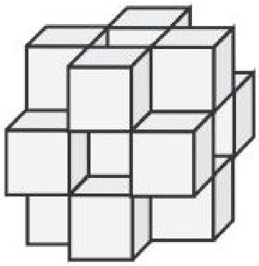

"Body Centered" (8)

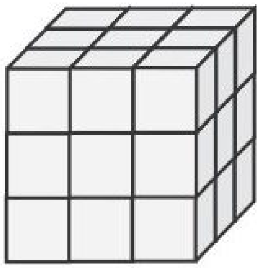

"Face Centered" (12)


Basic Cubic (6)

The 3 lattice types are shown above related to the cube, but their conventional labels are misleading.


Corner-Connected

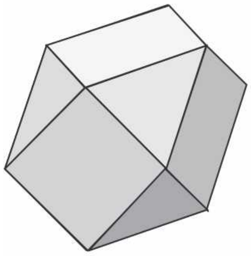

Edge-Connected

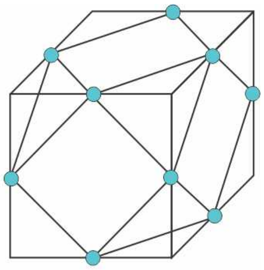

Face-Connected

The 3 lattice types are shown above as they relate to the Geocubic Matrix of unit-cubes, but they are **labeled** by the **connection-type**, which is self-explanatory.

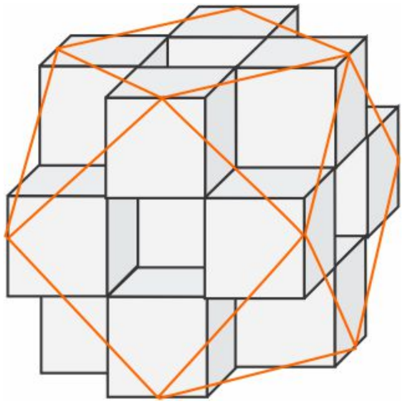
The "Face-Centered Cubic (12)" Lattice (Edge-Connected)

The “face-centered" (edge-connected) crystal is shown to the left below. To the right below, a cube is positioned over the outline of the crystal, showing (with the front 9 cube edges) how the 12 vertices occur at the midpoints of the 12 cube edges.


f.c.c. crystal


f.c.c. crystal inside cube

In the Geocubic Model, the f.c.c.(12) unit-cell is a central cube surrounded by 12 cubes attached to the 12 edges of the central cube. This is diagrammed below, with the outline of the f.c.c (12) crystal wrapped on the unit-cell.



Chapter 6: Atomic Bonding

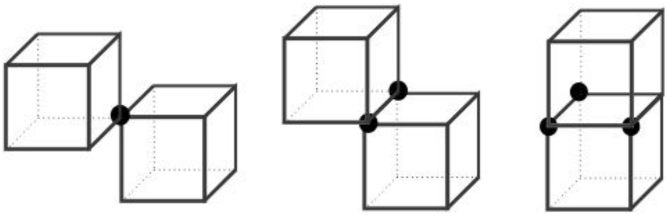
In transferring Spheres, the effective Atomic Number of the atoms change, but each atom retains its original identity. In a bonding transfer the internal Sphere arrangement of the atoms have changed, and the atoms **emulate** the characteristics of the Element of the resultant number of Spheres. Elements with no valid arrangement are required to loan out or borrow Spheres to reach a valid Element-form.

Cube-Corner Bonding Law

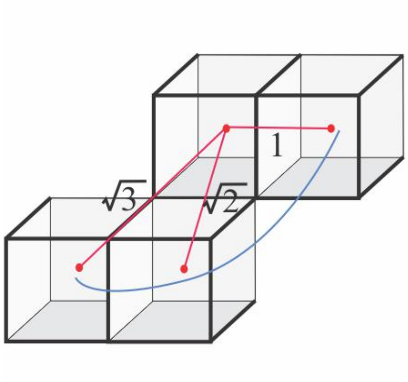
In the Geocubic Model, atomic bonds are transfers of Spheres through cube corners between atoms. Spheres can only transfer between adjacent atoms. All transfers involving a given atom must go in the same direction (out or in).

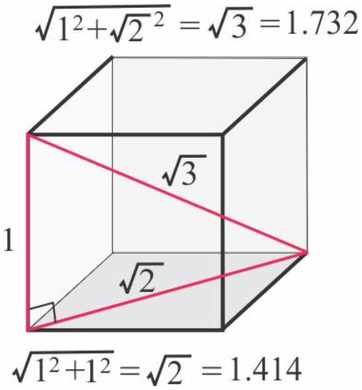
Multiple-Sphere Transfers

When 1 Sphere is transferred the two cubes involved link by cube corner.
When 2 Spheres are transferred the two cubes link by a cube edge (2 corners).
When 3 Spheres are transferred the two cubes link by a cube face (3 corners).



The bonded distance between atom-centers depends on the whether the link is with a corner, an edge, or a face, as illustrated below-left.



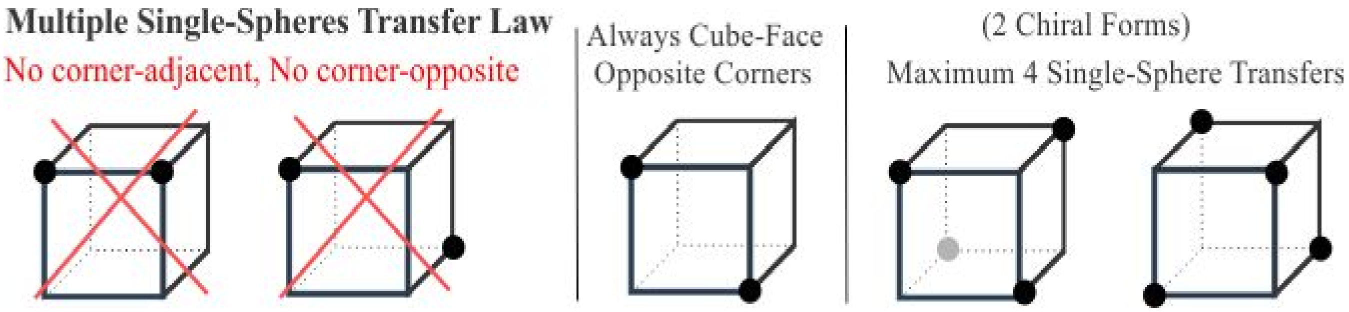


To the right-above the relative lengths are shown with their calculations.

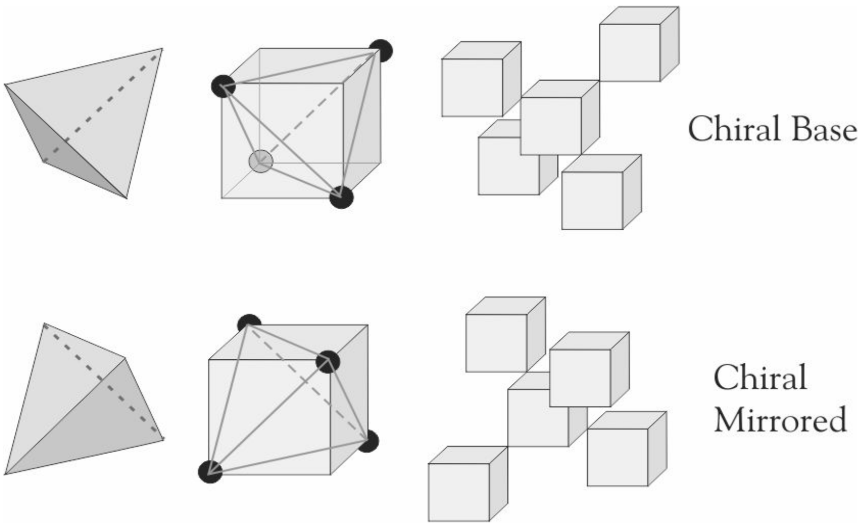
Multiple Single-Sphere Transfer Law

Multiple single-Sphere transfers in or out are excluded on cube-opposite corners, and on cube-adjacent corners.

Due to the single-sphere-transfer law, the maximum number of single-Sphere transfers to or from an atom is restricted to the 4 corners shown below-right in one of 2 chiral arrangements.



To illustrate the tetrahedral geometry of the Single-Spheres Transfer Law, in the graphic below, mirrored tetrahedrons are shown to the left, and to their right the edges of the tetrahedrons are shown inside a cube, with the 4 vertices marked with black dots. To the right, the Geocubic Model tetrahedral-bonding unit-cells are shown with cubes attached at the corners where the black dots are located.



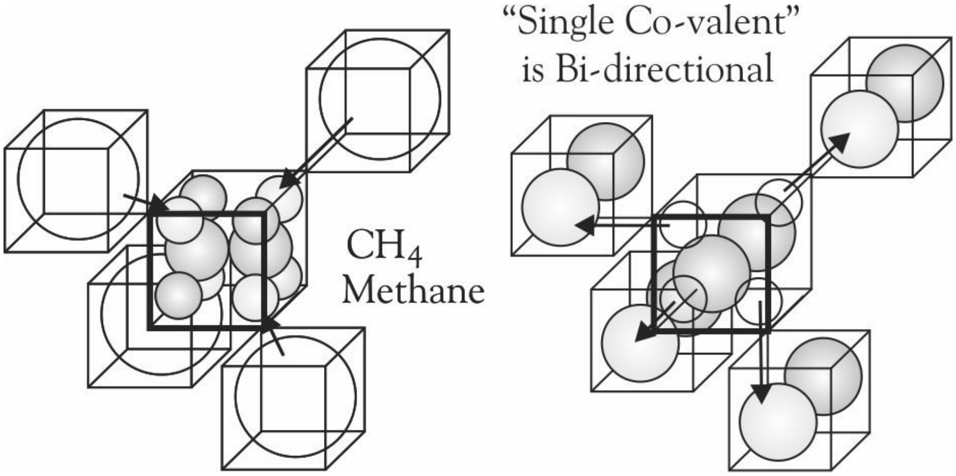
The Alkane Gas Series

An alkane gas consists of only **Carbon and Hydrogen** atoms. Methane is the simplest form of alkane gas, and is itself a unit-cell.

Methane

Methane (CH_4) consists of one Carbon(6) atom bonded to 4 Hydrogen(1) atoms in a tetrahedral arrangement in either of the 2 mirrored lattice forms. The chiral-base form is illustrated below.

In addition to having chiral forms, an alkane gas is conventionally considered to consist of tetrahedral "single-covalent" bonds. The “single covalent” is actually a **bi-directional** bond potential, where the direction of all the transfers can go in either direction, as illustrated below-right.



In the Geocubic Model’s illustrations of atomic bonding, the atomic bonds are indicated by transferred Spheres marked with black arrows. The sent Spheres are shown as clear circles, and the received Spheres are shown grayed. Obscured transfers (bonds) are sometimes indicated with gray arrows.

To the left above, there are 4 single transfers into the Carbon(6) atom, and to the right there are 4 single transfers out of the Carbon(6) atom.

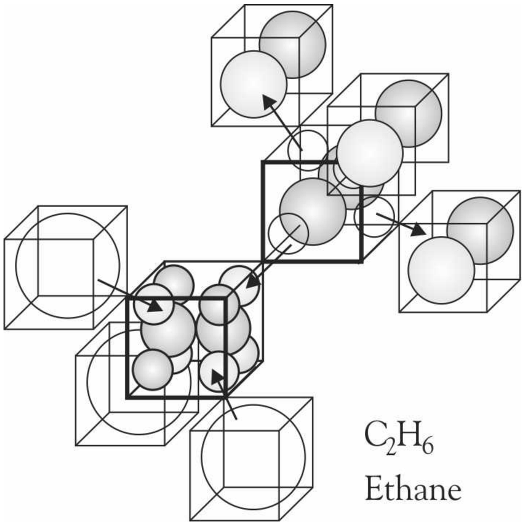
The alkane series builds from Methane (CH_4), adding an additional Carbon atom and 2 Hydrogen atoms, one set at a time. This is conventionally shown as C_nH_{2n+2}

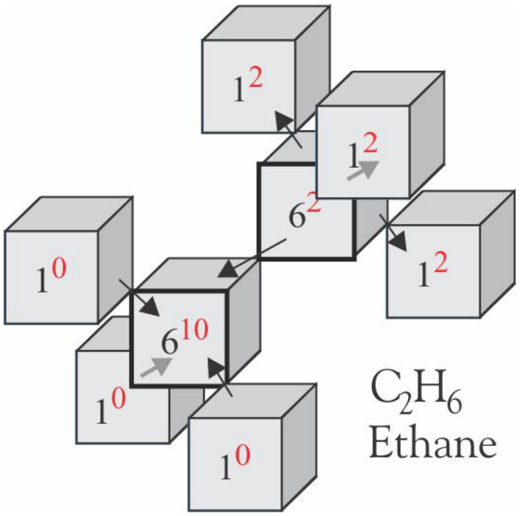
The Carbon atoms attach to each other by corners, forming a “zigzag” chain (potentially with side-chains).

The alkane gasses move all Carbon(6) atoms either to Helium-form(2) with –4, or Neon-form(10) with +4.

Ethane

The chemical formula of Ethane is C_2H_6 , but (H_3C-CH_3) matches better with the actual structure.

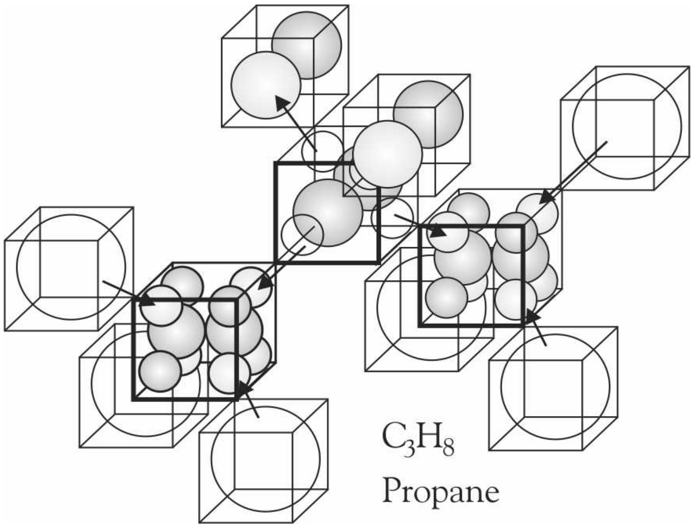




The alternate simplified illustration-form above-right shows Ethane with opaque cubes labeled with the atomic number of the Element, and the resultant Element-form shown as a superscript. The arrows in or out are Sphere transfers (notice that the arrows add or subtract to the atomic number to equal the increased or reduced superscript). Obscured transfers are shown with grayed arrows.

Propane

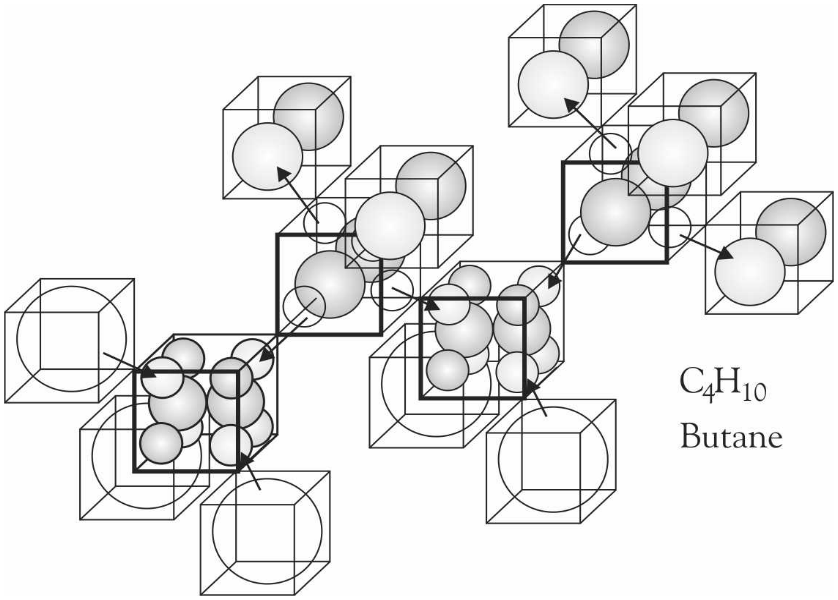
Propane consists of 3 Carbon atoms bonded with 8 Hydrogen atoms ($H_3C\text{-}CH_2\text{-}CH_3$). Notice that the linked Carbon atoms alternate between Neon-form(10) and Helium-form(2). This alternation of form between linked Carbon atoms is dictated by the necessity of sending 4 Spheres or receiving 4 Spheres.



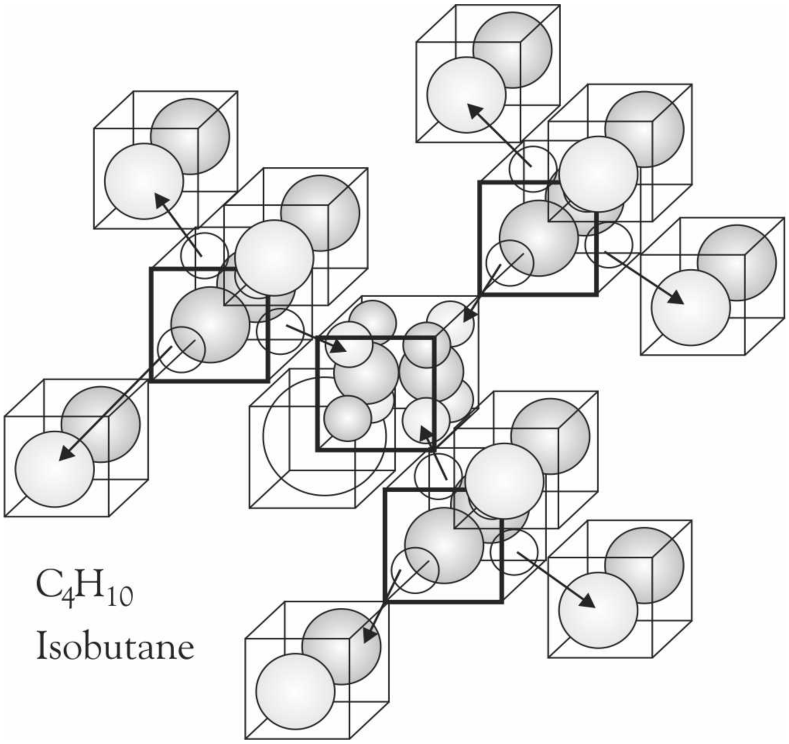
As the chain increases, the energy of the molecules decreases.

Butane

The linked Carbon chain is extended to 4 Carbon atoms in Butane (H_3C-CH_2-CH_2-CH_3)



Isomers: An **isomer** is an alternate arrangement of a molecule with the same mix of atoms. Methane (CH_4), Ethane (H_3C - CH_3), and Propane (H_3C - CH_2 - CH_3) have only one arrangement (no isomers). With 4 Carbon atoms it becomes possible to take on an alternate arrangement of corner connections. There is only one Butane isomer, called Isobutane (diagrammed below). Instead of forming a zig-zag Carbon chain (as shown above), the Carbon atoms clump together.



As the number of Carbon atoms increase the possible alternate Carbon linkages increase exponentially. Calculated counts from conventional sources state that with 5 Carbons there are 3 isomers, with 12 Carbons there are 355, and with 32 Carbons there are 27,711,253,769 isomers.

Chapter 7: Amino Acids and DNA

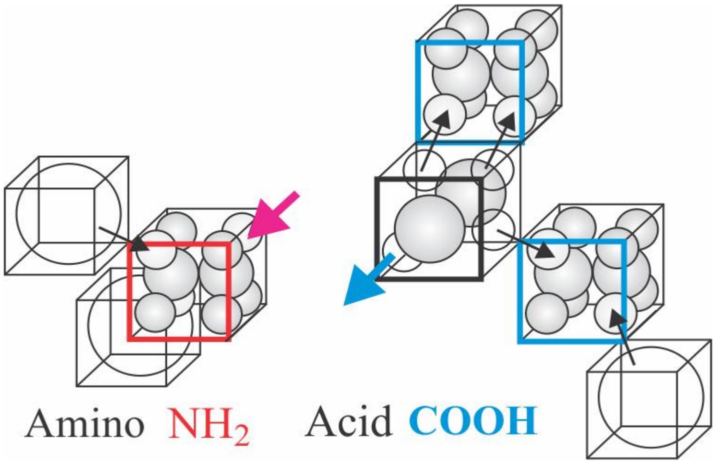
Multiple-Sphere Transfer Law

Edge (2-transfered) or face (3-transfered) transfers can mix in with the single-transfers, and only require open corners on an edge or face.

Amino Acids

The Amino acids are chains of Carbon(6), Nitrogen(7), and Hydrogen(1) atoms (similar to the Alkane Series). The Chains sometimes include Sulfur(16) and/or Oxygen(8).

Amino acids are conventionally considered to combine an amino (NH_2) with a carboxylic acid (COOH), potentially with a chain between them.

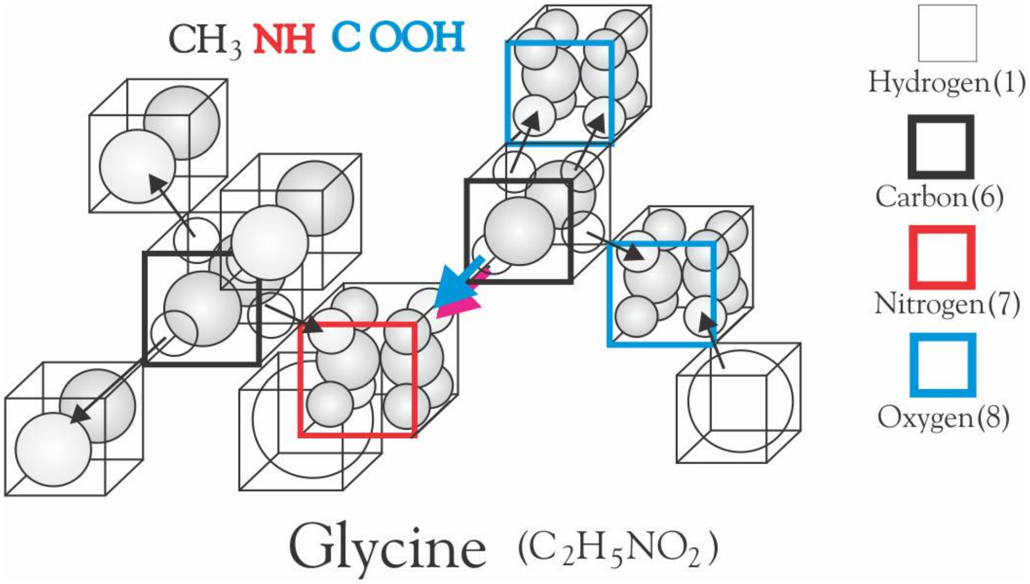


These components are diagrammed above. However this conventional description is wrong, in that the required Nitrogen(7) atom is not necessarily at the end of the chain (as seen in Glycine, Serine, and Cysteine below).

In the Geocubic diagrams each atomic Element is color-coded on the front square of the cube. The Elements involved in amino acids are coded with **bold** black front squares for **Carbon**(6) atoms, red for **Nitrogen**(7), blue for **Oxygen(**8), yellow for **Sulfur**(16), and plain cubes for Hydrogen(1).

In the amino acid illustrations, 2 ways of expressing the chemical formula are used. The conventional notation is to specify the counts of the constituent atoms**,** as with Glycene ($C_2H_5NO_2$). The preferable Geocubic Model notation is based on the tetrahedral Carbon/Nitrogen chain, sequenced and color-coded to match the illustration**.**

The "amino" NH_2 or NH is attached with a **red arrow**, and the carboxylic acid COOH is attached with a **blue arrow.** Glycine is the simplest amino-acid.



Glycine does not end with NH_2, instead has NH in the middle of the chain.
This is because Nitrogen(7) (in an amino acid) can only take Neon-form(10).

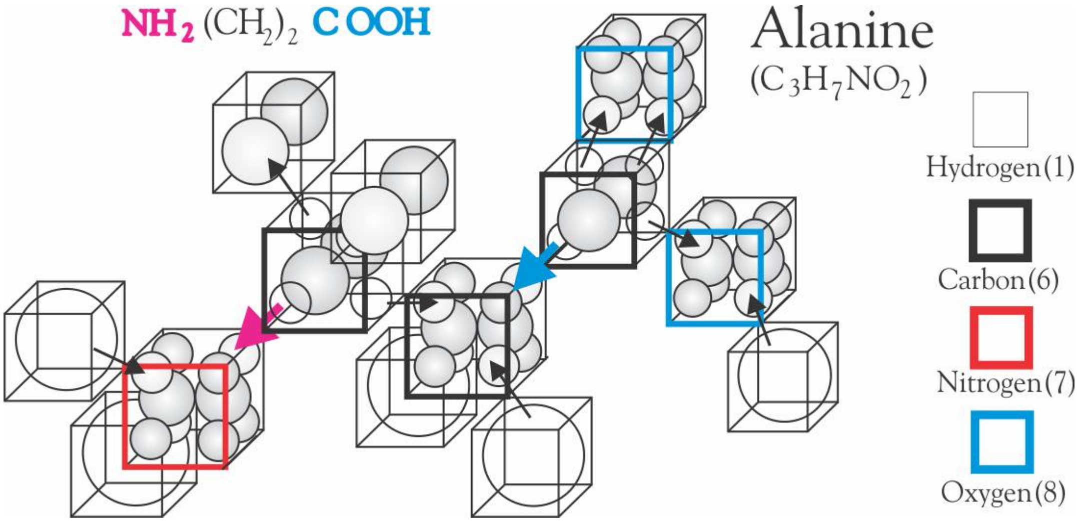
Carbon(6) + 4 → Neon-form(10)
Carbon(6) – 4 → Helium-form(2)
Nitrogen(7) +3 → Neon-form(10)

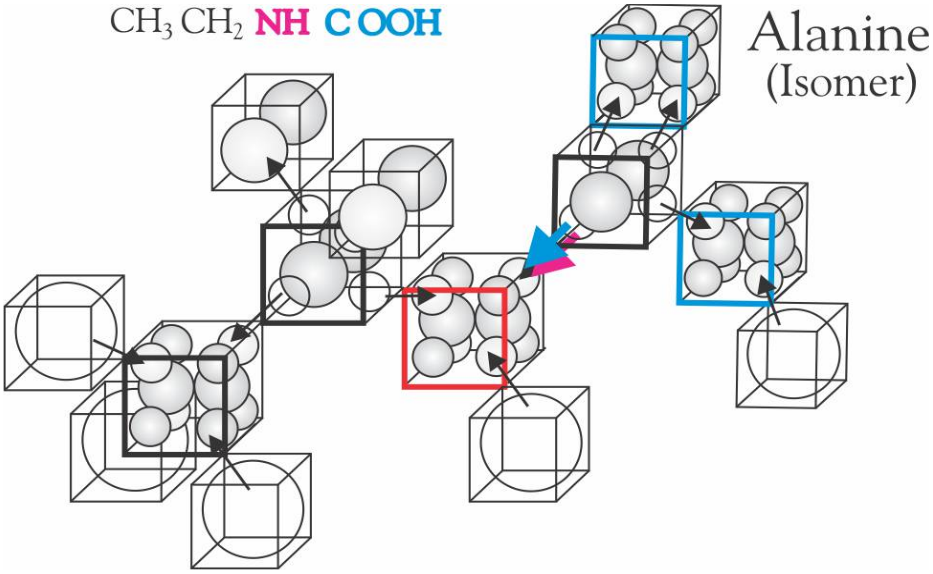
The Carbon(6) starting the chain from COOH is always in Helium-form(2).

If the 2nd atom in the Glycine chain were to be Carbon(6)Neon-form(10), the Nitrogen(7) could not attach because single-Sphere transfers are limited to 4 Spheres and 5 Spheres would have to be transferred out (7-5=2) to achieve Helium-form(2).

Isomers

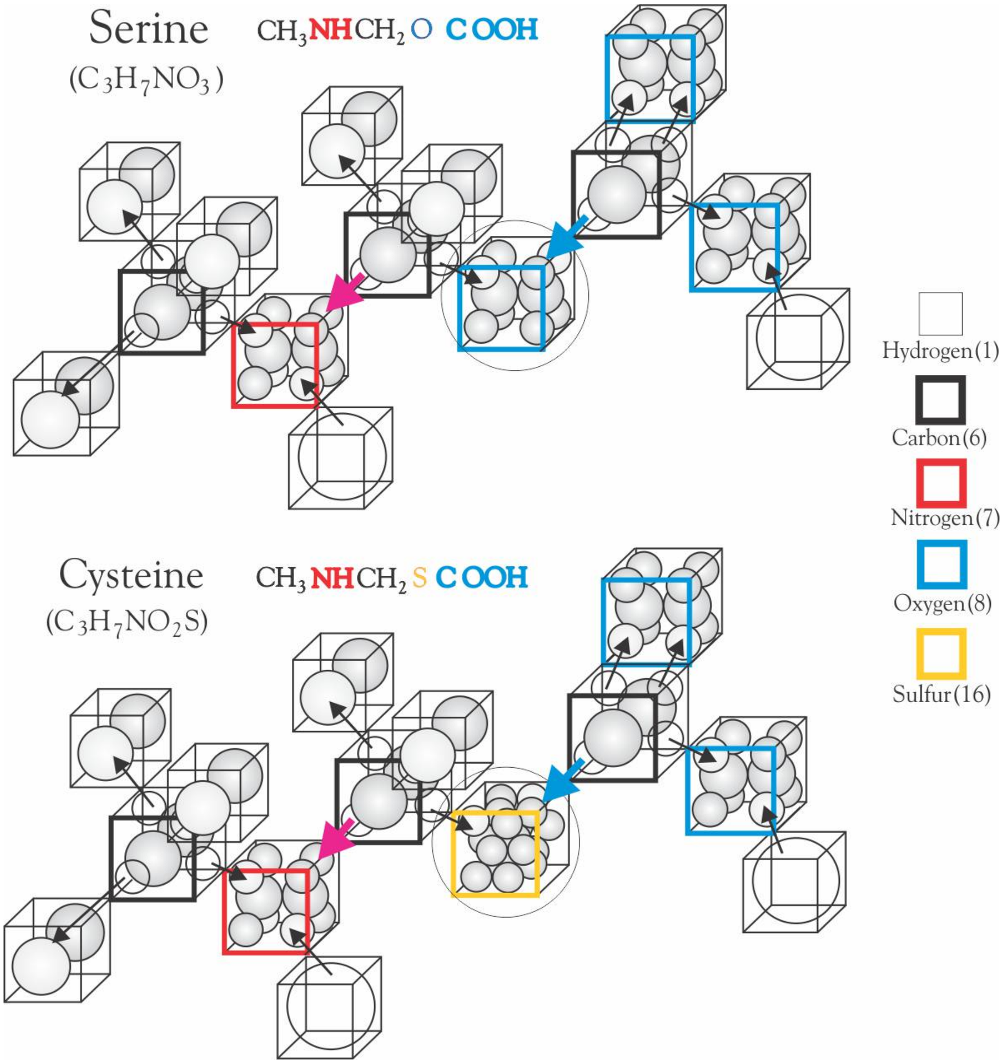
Amino-acid **isomers** are variants of a given amino-acid's chain structure.
In **Alanine**, the Nitrogen(7) can attach to the end of the chain, or in the middle.



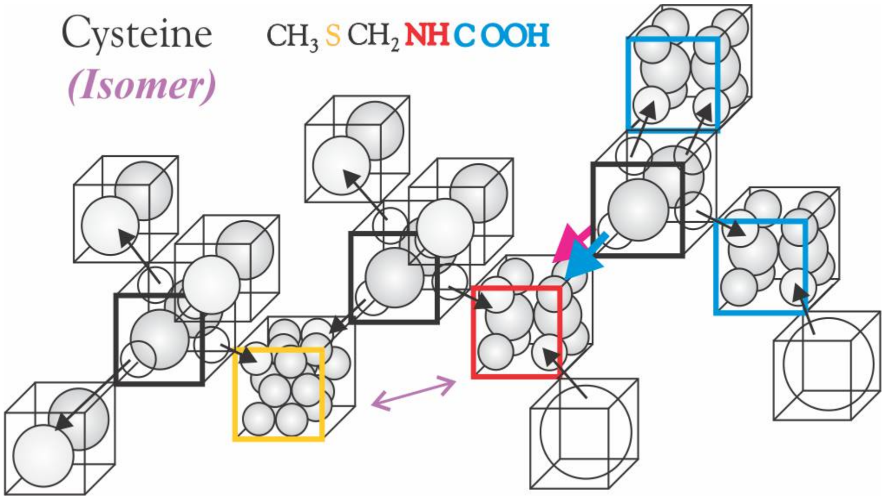


Element Differentiation

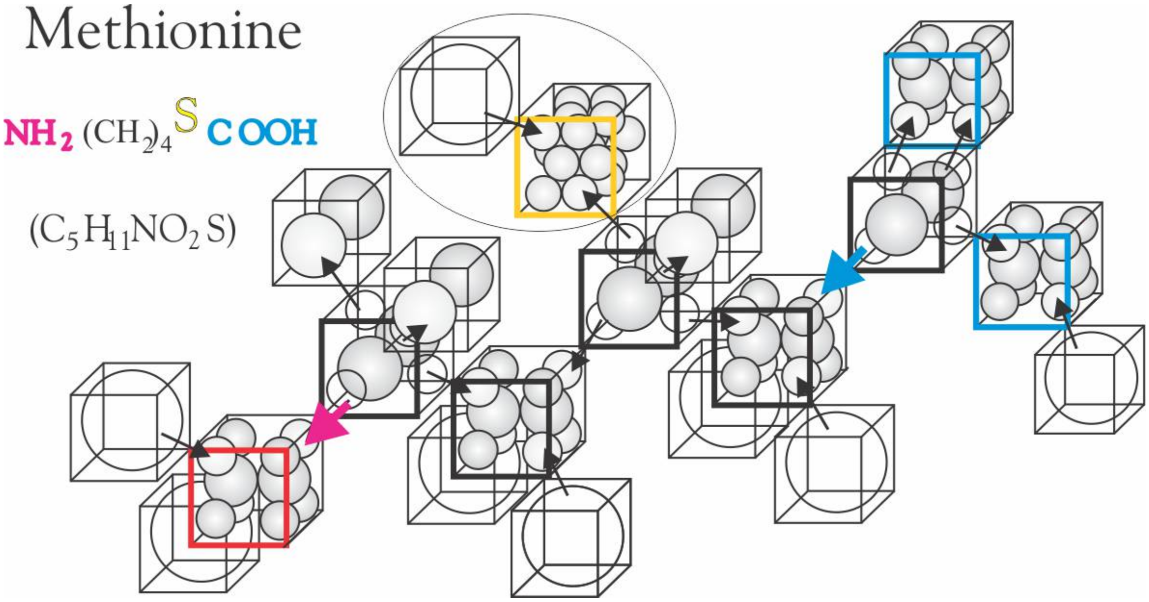
Serine and **Cysteine** are the same 6-chain structure, but Serine incorporates an Oxygen(8) atom in the chain, where Cysteine incorporates a Sulfur(16) atom. These 2 Elements are circled in the diagrams below.



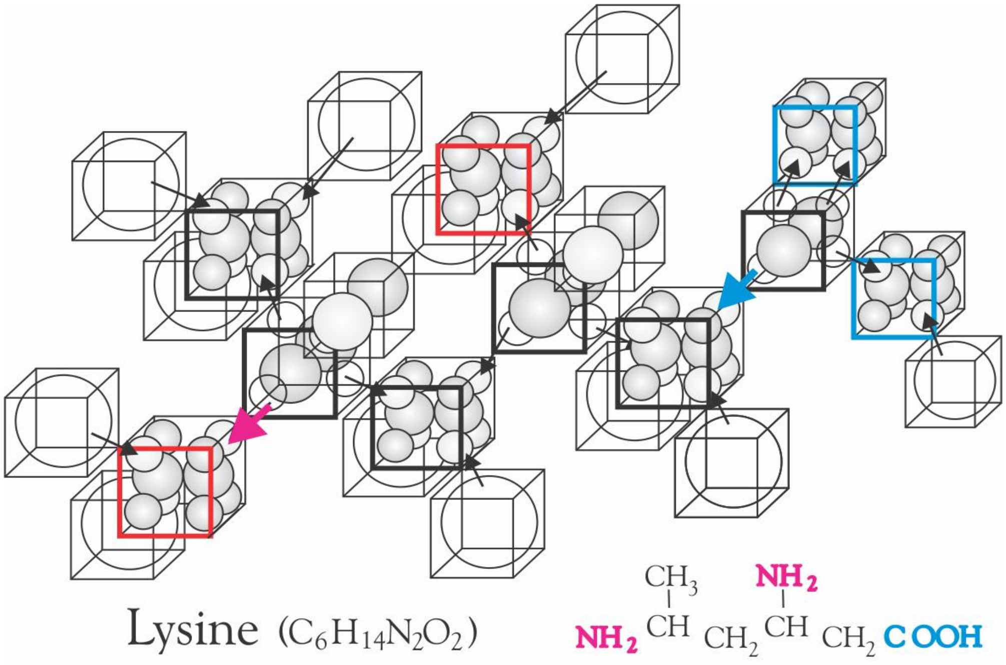
Both Serine and Cysteine each have one isomer. In the Cysteine Isomer (shown below) the Nitrogen(7) and Sulfur(16) positions are switched *(in the Serine Isomer the Oxygen and Nitrogen are switched)*.

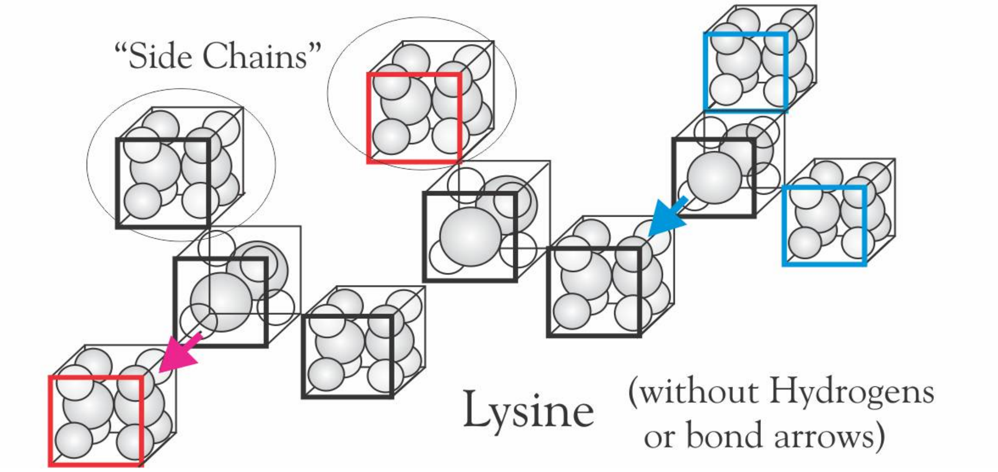


Methionine (Met.) has a chain of 6 and with a Sulfur(16) attached to the chain (circled).



Lysine (shown below) has a chain of 6 with a Nitrogen and a Carbon attached.



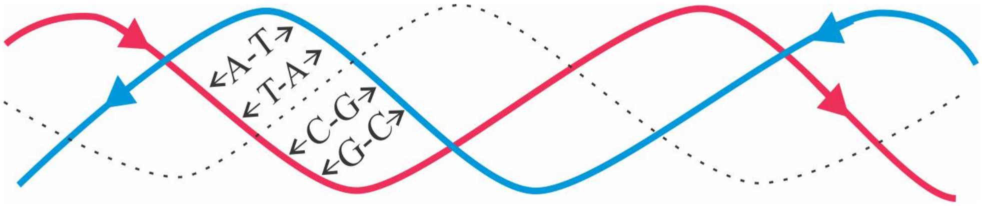


Lysine is shown above without the hydrogen atoms or bond arrows, to make the chain and attachment structure more evident.

Amino Acids serve as translation codes from DNA to the Proteins that operate the organism. The DNA coding controls the building of proteins as a disposable chemical analogue of the DNA by constructing a chain sequence of amino-acids.

DNA Strands and Nucleobases

DNA molecules are double-stranded helices, consisting of two long biopolymers made of alternating sugars and phosphate groups, with nucleobases attached to the sugars. The 2 strands run in opposite directions. Ideally the strands are spaced by thirds, but the strands can twist tighter or looser. The strands can bend at angles, form knots, intersections, and other complex structures.



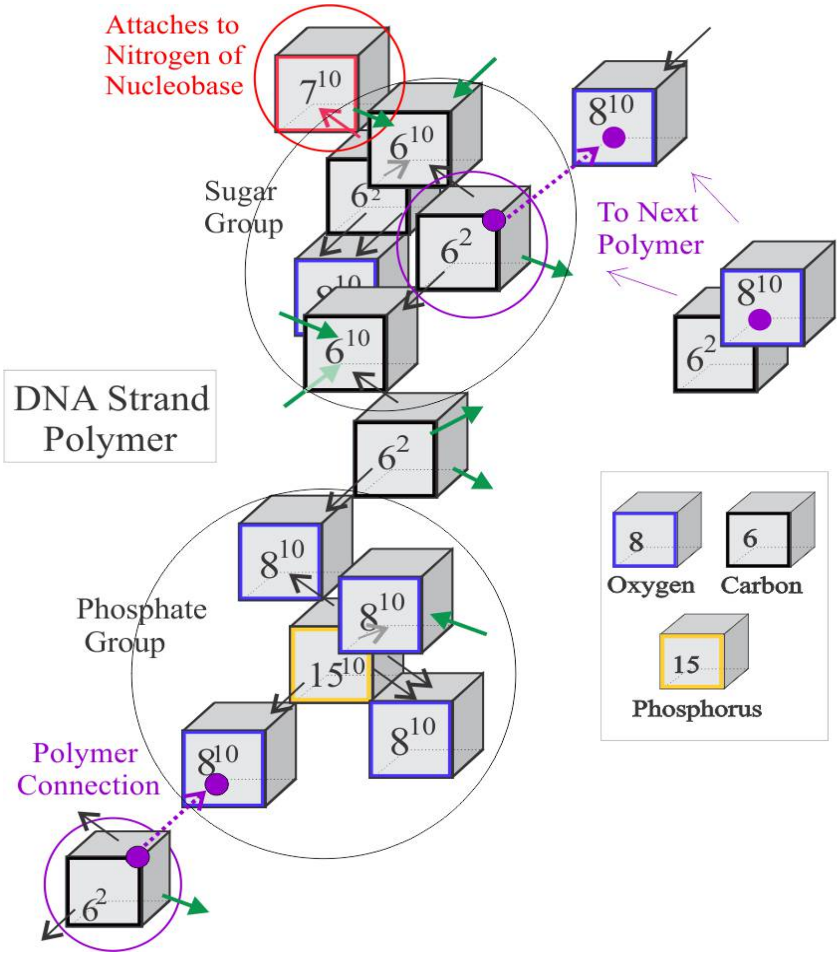
There are 4 nucleobases (Guanine, Cytosine, Adenine, and Thymine), represented by the letters G, C, A, T. The nucleobases are complementary, with A **always** paired to T, and C **always** paired to G.

G = ($C_5H_5N_5O$)
C = ($C_4H_5N_3O$)
A = ($C_5H_5N_5$)
T = ($C_5H_6N_2O_2$)

The DNA strand consists of joined segments (called polymers) of 18 atoms,
5 Carbon, 5 Oxygen and 8 Hydrogen.

The polymer is shown below. To avoid clutter, the 8 Hydrogen atoms are represented by **green** arrows pointing out or in at the bond corner. The polymers attach at the Carbon(6) circled in purple.

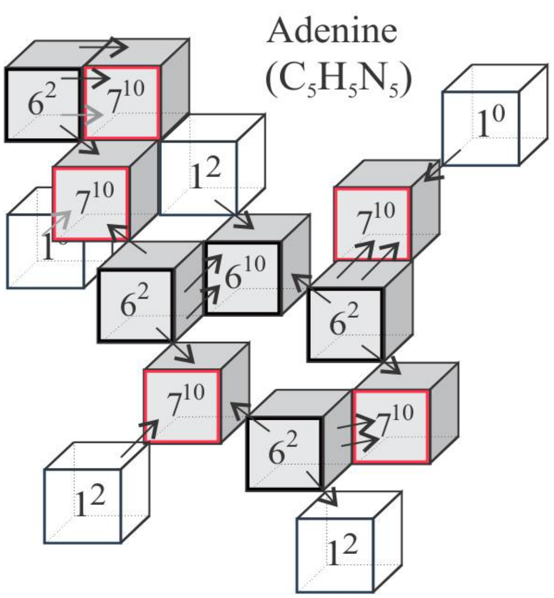
Not counting the Hydrogen atoms, the polymer is 2 groups of 5 atoms each, connected by a Carbon(6) atom.
The **"sugar" group** are the 5 upper atoms of the strand, 4 **Carbon(6)** atoms and 1 **Oxygen(8)** atom.
The **Phosphate group** is a **Phosphorus(15)** atom bonded to 4 **Oxygen(8)** atoms.

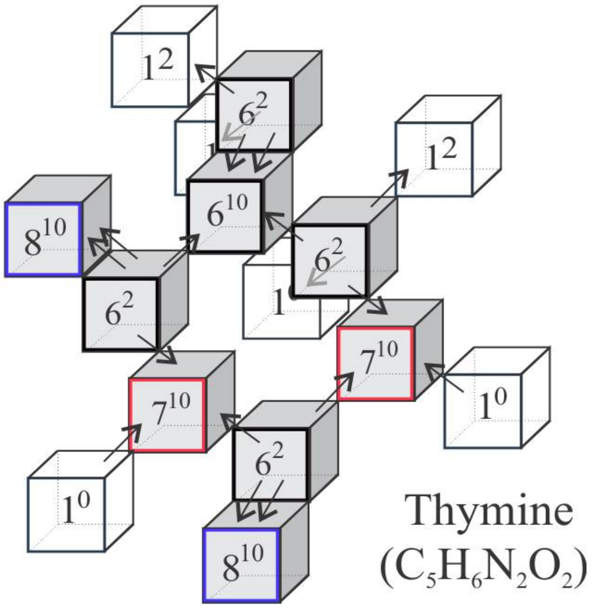


The nucleobases attach to the sugar groups at a Carbon(6) atom, always by a Nitrogen(7) atom of the nucleobase. One nucleobase attaches to each polymer Strand segment, and spans half-way across to the opposite Strand.

DNA Nucleobases

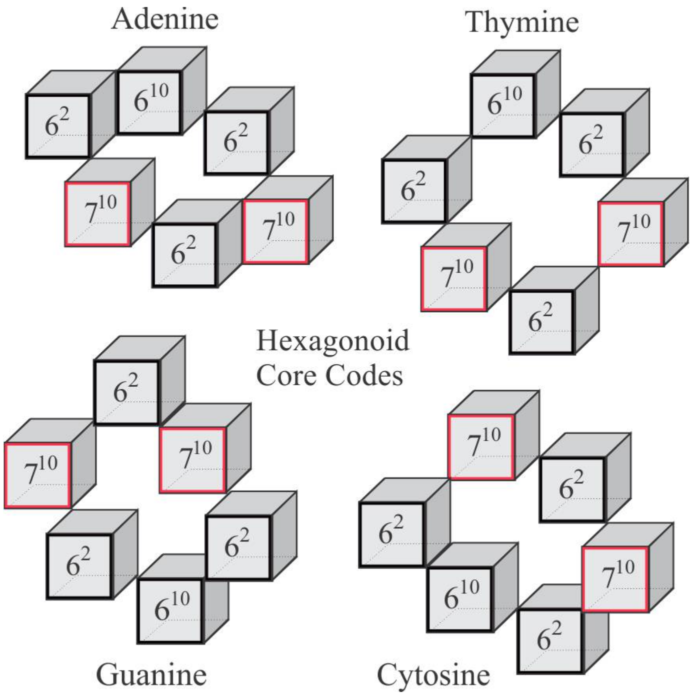
All 4 nucleobases of DNA incorporate a central hexagonoid ring. In the diagrams below, the Adenine and Thymine molecules are shown.





The Actual DNA Coding

Shown below are the hexagonoid Carbon/Nitrogen cores of the nucleobases. The remainder of the molecule is irrelevant to the coding, so variations of the molecule (since the hex-core remains the same) can occur without affecting the code.



One way the DNA controls the organic system is by building Proteins (chains of amino acids) as disposable DNA code sequences to send around the organism.

First the DNA code sequence is replicated, termed "replicated DNA" or RNA. Once the RNA passes through the Nucleus membrane of the cell, it is considered as "messenger RNA" (mRNA). Outside the Nucleus it is assumed structures termed "ribosomes" construct the protein (called "translation RNA" or tRNA). These vague labels show that it is still a mystery how the DNA coding is implemented in the organism.

Chapter 8: Growth Crystals

Once a growth crystal has seeded, when the appropriate chemicals are available, the crystal will grow.

Quartz bonds 2 Oxygen for each Silicon (2 to 1), but…
Each Oxygen receives one Sphere from two Silicon atoms, and each Silicon sends 1 Sphere to four Oxygen atoms.

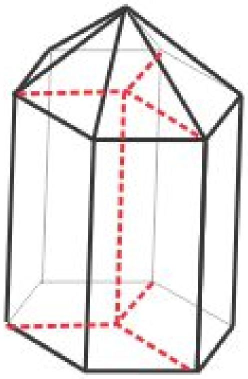
Quartz: A Growth Crystal

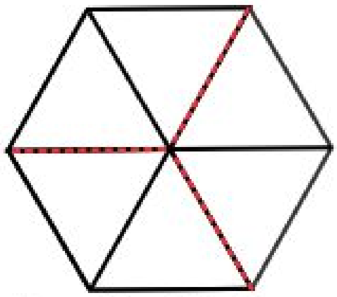
The Quartz Crystal

The ideal Quartz crystal is shown below-left (assuming the base is attached to a solid surface, otherwise both ends of the crystal would have a hexagonal cone).

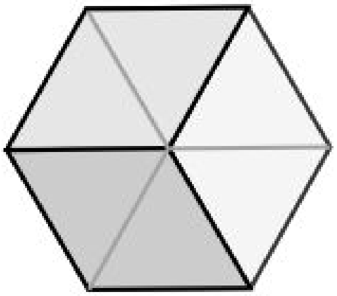
The red dotted lines represent an often-shown conventional segmentation of the crystal. This segmentation is illustrated below-right with a transparent cube viewed from a corner, where the 3 front faces are shaded translucent. The 3 front shaded faces of the cube at right match with the 3-segments in the top-down view of the Quartz crystal shown below-middle.

Quartz Crystal





Quartz Crystal Top Down



Transparent Cube
Viewed From Corner

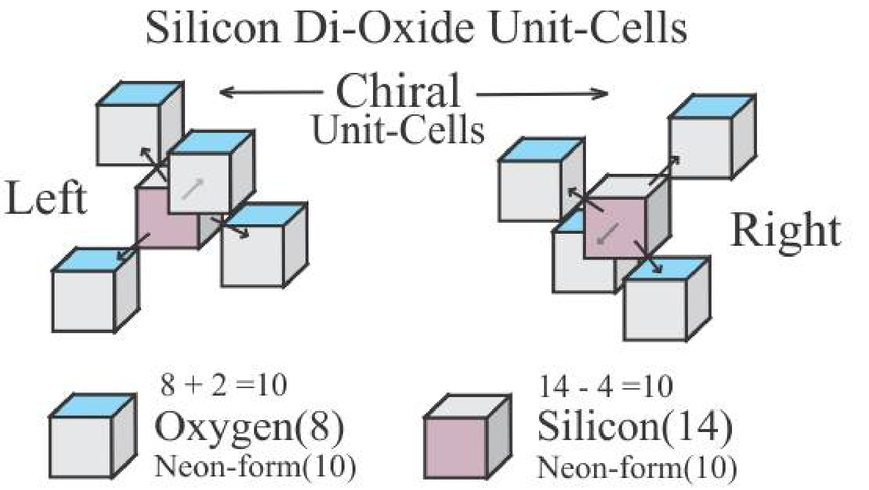
Quartz crystals merge as they grow.

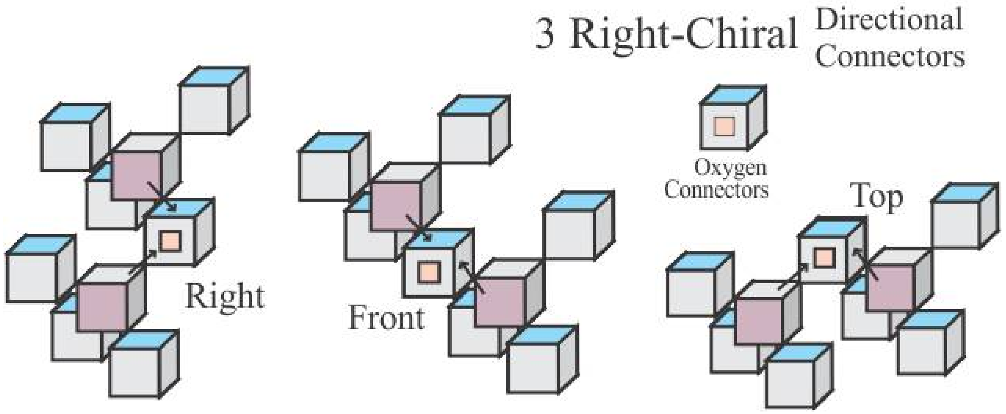
Glass is amorphous (non-crystalline) silicon dioxide that is produced by “quenching” (accelerated cooling of molten liquid). In effect the liquid state is frozen. Various compounds may be added to the silicon dioxide in molten state to give the quenched glass desired properties (such as color).

The Quartz Unit-Cell Linkages

The diagram below shows the 2 chiral (mirrored) tetrahedral unit-cells of the Quartz crystal, with arrows showing Proton transfers. An entire crystal will be all one chiral form.

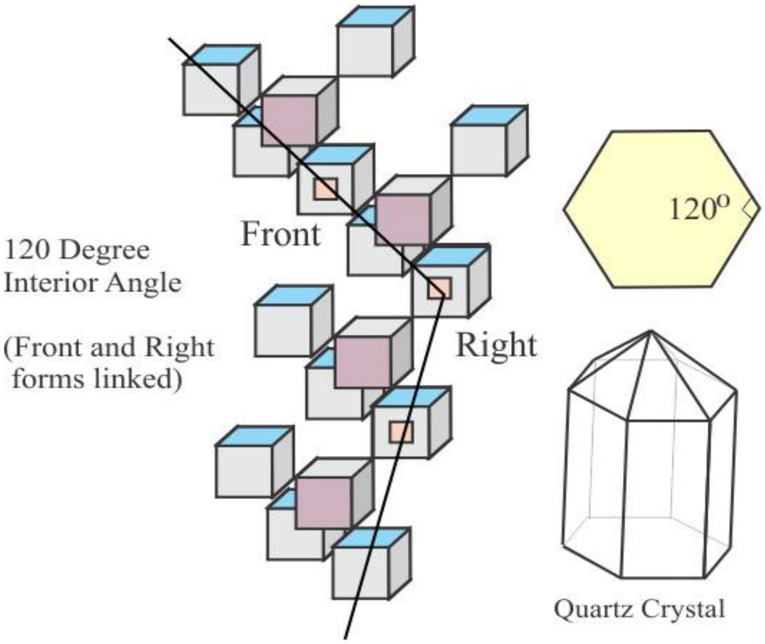
The unit-cells connect thru an Oxygen atom. There are 3 different directional connections (based on which corners of the cube are employed in connecting). The “right-chiral" form is used for the diagrams because it matches with the right-hand view of the cubes. The 3 right-chiral directional connectors have small orange squares inside, and are labeled by the 3-dimensional position of the Oxygen-connectors in relation to the 2 Silicon atoms being connected (on Top, in Front, or to the Right). *The view of the cubes is from the top, front, and right.*





Quartz (and glass) is transparent because both the Oxygen(8) and Silicon(14) atoms bond into the inert Neon-form(10), which has no internal Bias planes to reflect light.

Shown below is how a linkage shift creates an internal angle of 120^0, which is the internal angle of the hexagonal quartz crystal.



For any regular polygon (with equal sides) interior angle = (Sides – 2) / Sides) x 180
Thus for the hexagon (4/6) x180 = 120) degrees.

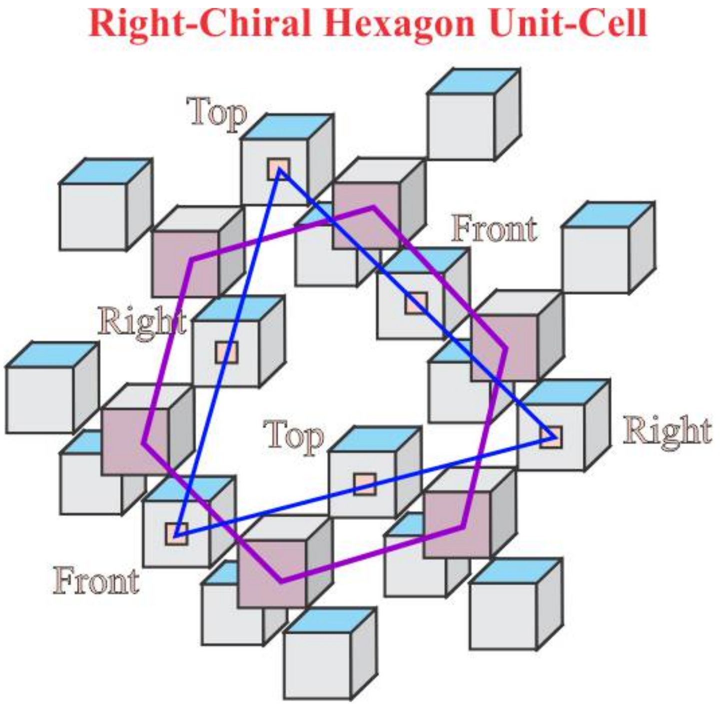
This form of crystal is termed alpha quartz.

Beta-Quartz

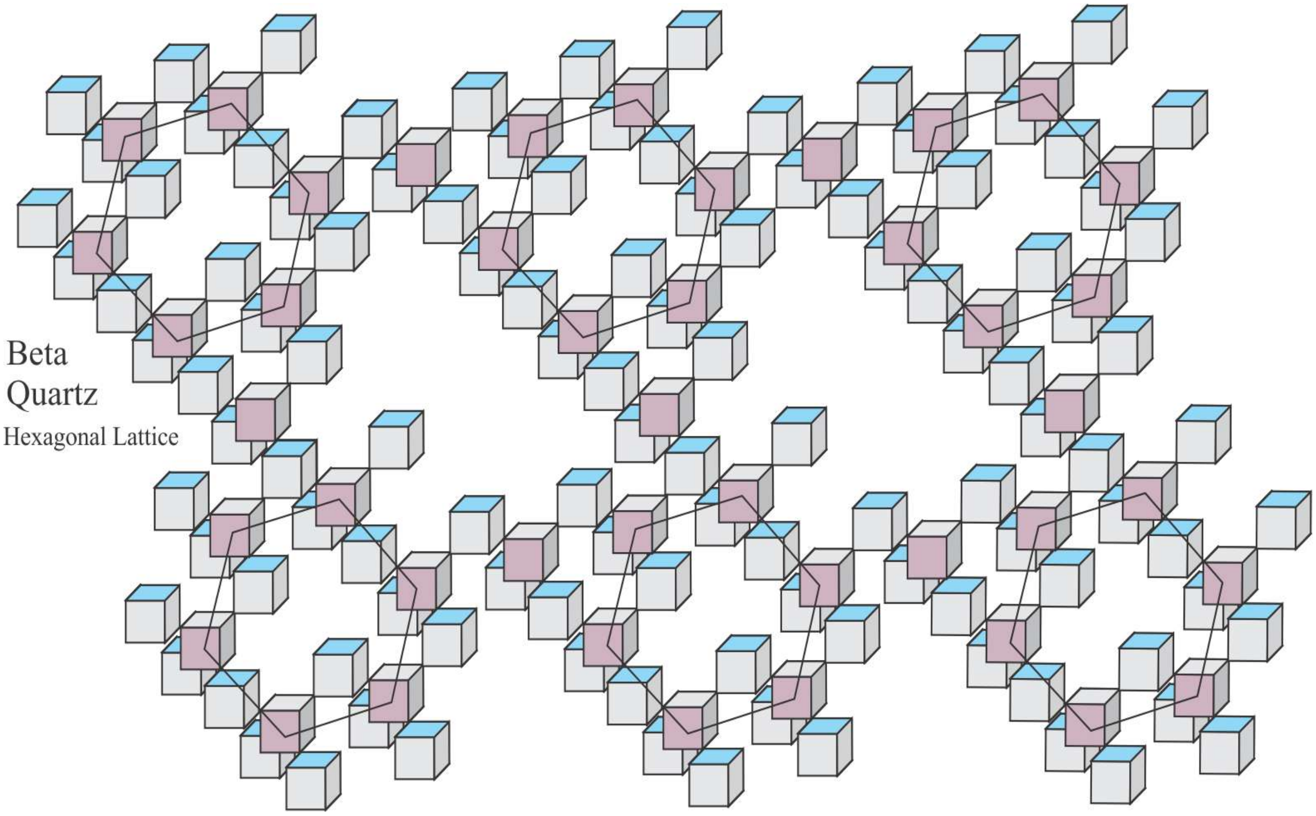
The Unit-Hexagon

Shown below is the right-chiral “unit-hexagon” of 6 unit-cells (with pink squares on the linked Oxygen).

The 6 Silicon atoms form a hexagon, and the 6 link-Oxygen atoms (those with pink squares) form a triangle (which is why the hexagonal Quartz lattice is termed both hexagonal and trigonal).



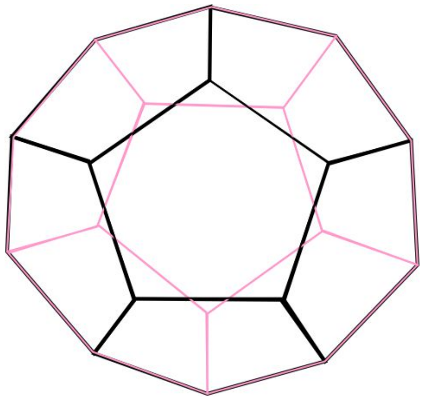
Suddenly at 1165^0 F the alpha-Quartz crystal of linked unit-cells converts to the beta-Quartz form of linked unit-hexagons. As can be seen in the diagram below, this adds empty areas to the crystal and increases the volume, which can cause the crystal to fracture.



Each unit-hexagon of 6 Silicon atoms is connected by one Silicon atom to each attached hexagon.

Pyrite

The dodecahedron is a spheroid with 12 pentagonal faces (depicted by the edges in the graphic below). The crystal-form is intra-chiral, meaning the back (pink) and front (black) are flipped to each other, and this is the case regardless of which pentagonal face is viewed as the front face.



Pyrite is Ferrous (Iron) Sulfide (chemical formula FeS_2). There are Dodecahedral and Cubic Pyrite forms.

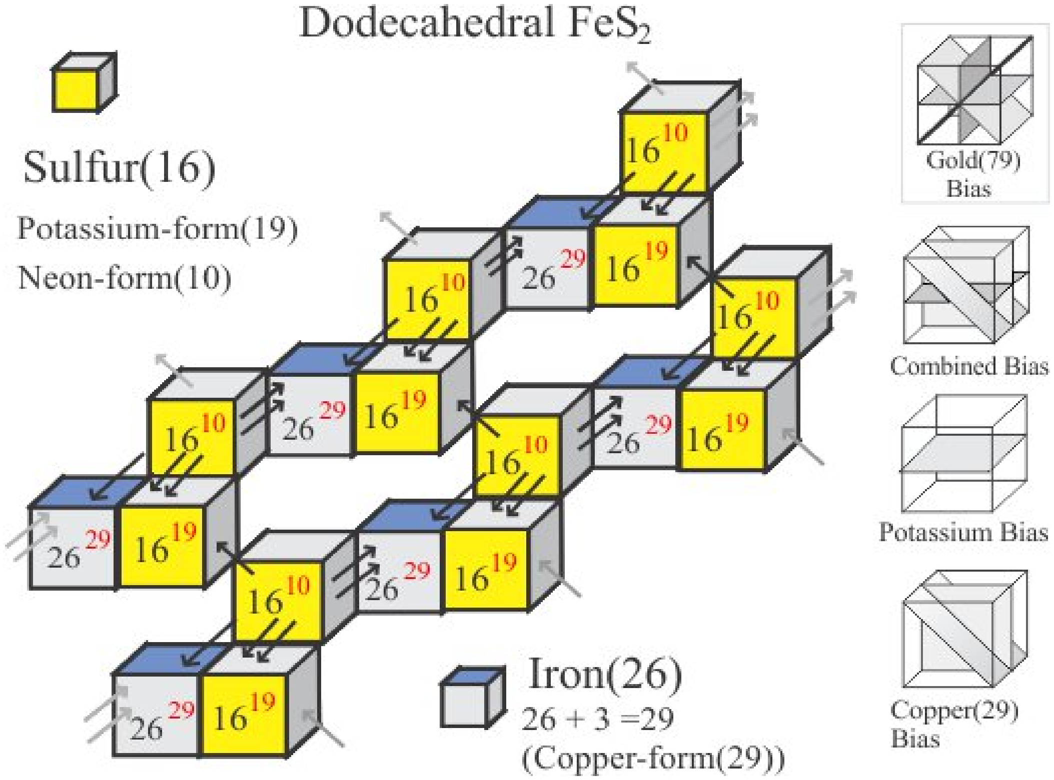
The dodecahedral pyrite crystals are naturally imperfect dodecahedrons, meaning the 12 faces are irregular pentagons.

The Dodecahedral Pyrite

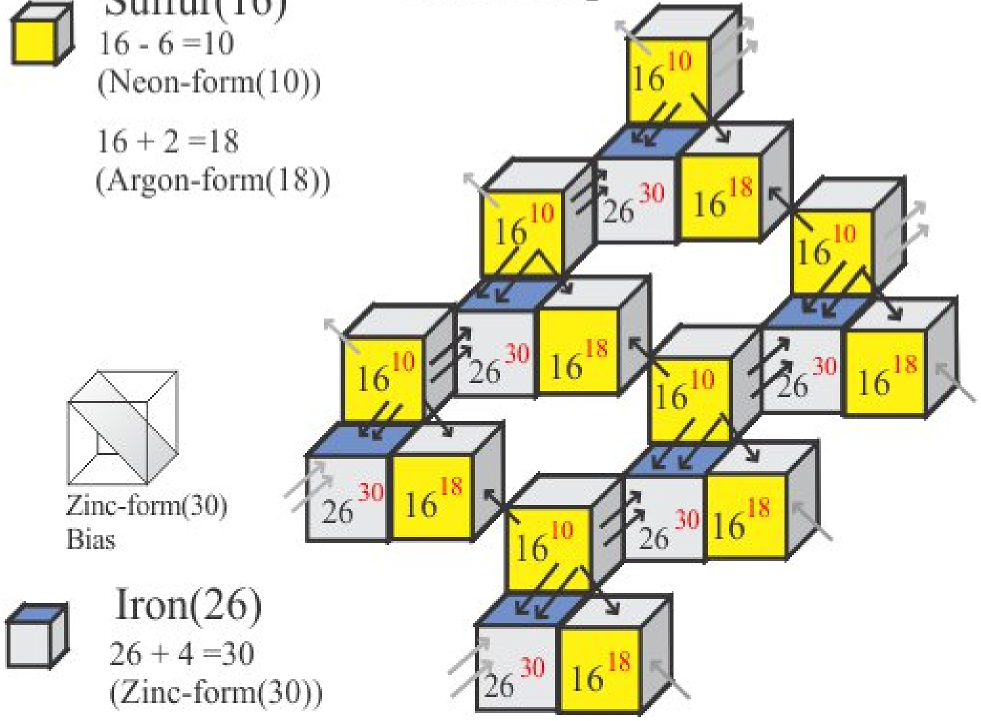
The Dodecahedral atomic structure is diagrammed below. There are 2 Sulfur(16) atoms for each Iron(26) atom. One of the 2 Sulfur atoms take on Potassium-form(19), and the other takes on Neon-form(10). The Iron atom is in Copper-form(29).

The separate grayed-cube diagrams below show how the Potassium-form(19)-Bias and the Copper-form(29)-Bias effectively produce a combined Bias nearly as “warm” (having multiple reflecting angles) as the Gold(79) Bias, which is why this form of Pyrite is called “Fools gold”.

Dodecahedral FeS_2



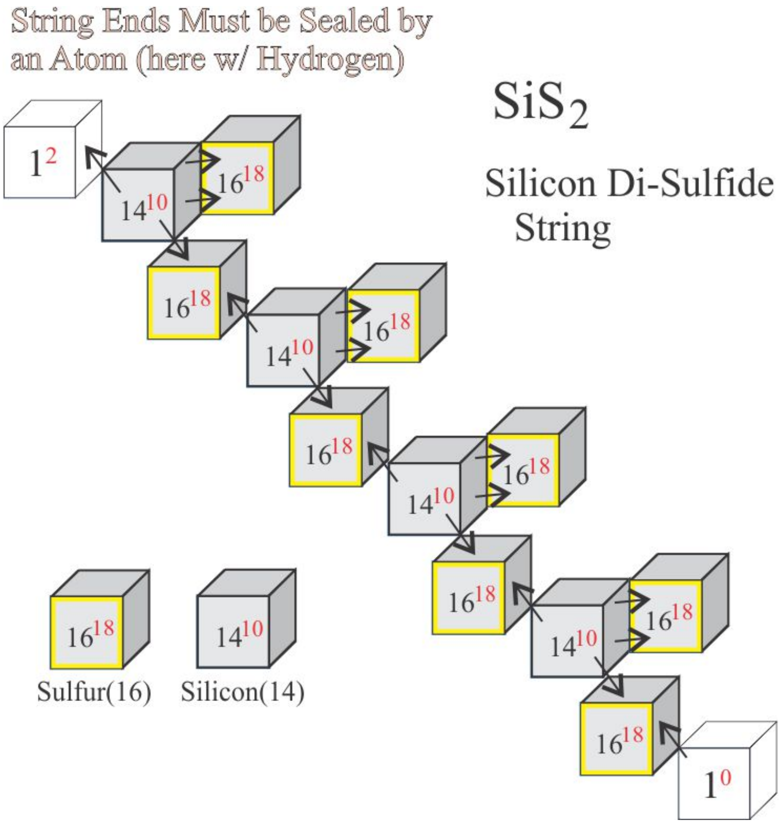
Cubic FeS_2



The Cubic form of Pyrite shifts the Neon-form(10) Sulfur to the left by 1 cube, and this changes the form of the 2nd Sulfur to Argon-form(18), and the form of the Iron atom to Zinc-form(30). The Zinc-form is a single Bias plane that reflects light uniformly from all the Iron atoms (a "silver" sheen).

Silicon Disulfide

Silicon disulfide forms independent strings (called needles) that nest together



Chapter 9: Ionic Attachment (Phantom Helium)

Reminder: Edge (2 corner) or face (3 corner) transfers can mix in with the single corner transfers.

Electronic Attachment

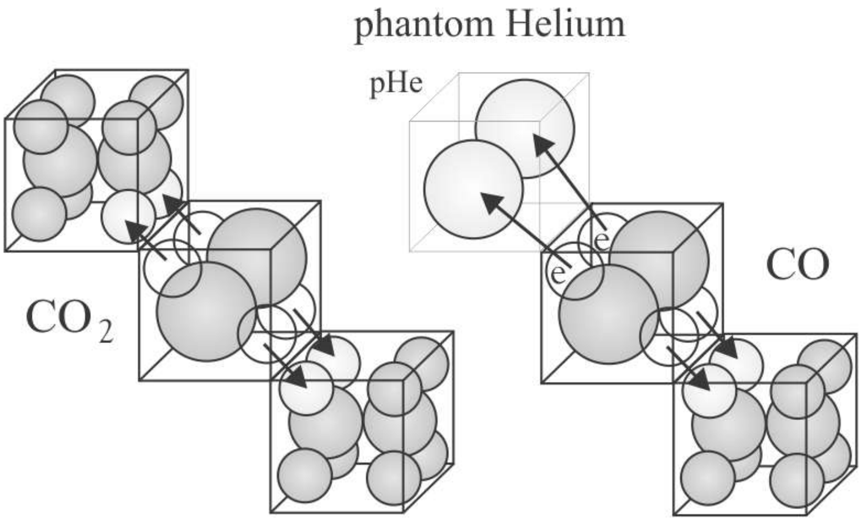
Electronic attachment is a transfer of 2 Spheres into an adjacent empty space-unit. The Sphere (Neutrino) transfers with its Proton inside, but leaving the Electron behind (shown with an e in the diagram below). The opposite attraction of the Protons to the Electrons left behind holds the phantom-Helium (pHe) in place.

The "**Law of Electronic Attachment**" is that in a molecule if symmetry law is unsatisfied, but can be satisfied by transferring 2 ionized Sphere/Protons into an adjacent empty space-unit (cube), that transfer will occur.

The empty space-unit "parking" the Spheres is not an atom and it has no nucleic binding force. It is held apart by the force of the symmetry law.

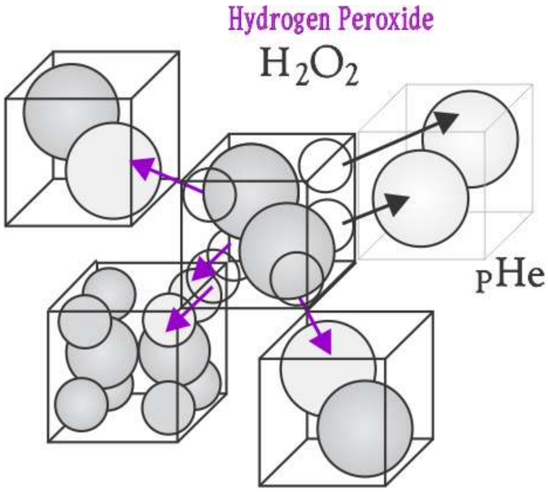
Molecules Employing Phanton-Helium

In combustion engines, incomplete burning of hydrocarbons due to insufficient oxygen produces Carbon Monoxide (illustrated below-right), which attaches a phantom Helium to satisfy the symmetry law. Below-left is shown Carbon Dioxide.



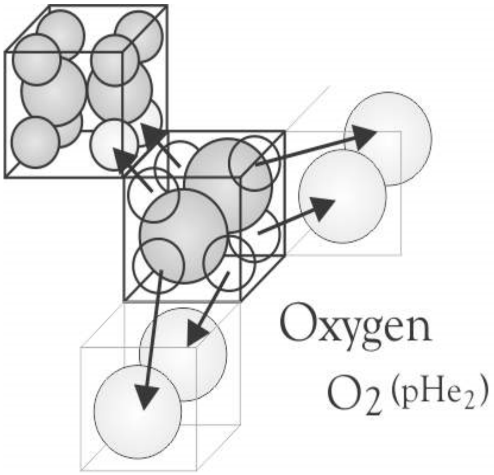
In the presence of Oxygen, Carbon Monoxide will incorporate Oxygen, to complete Carbon Dioxide and eliminate the phantom Helium.

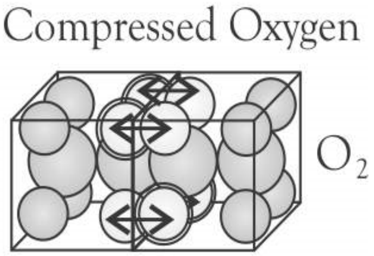
Hydrogen Peroxide is illustrated below, showing how a phantom Helium is attached.



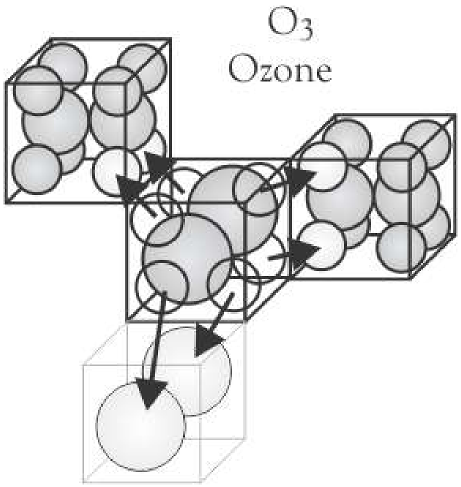
Ozone

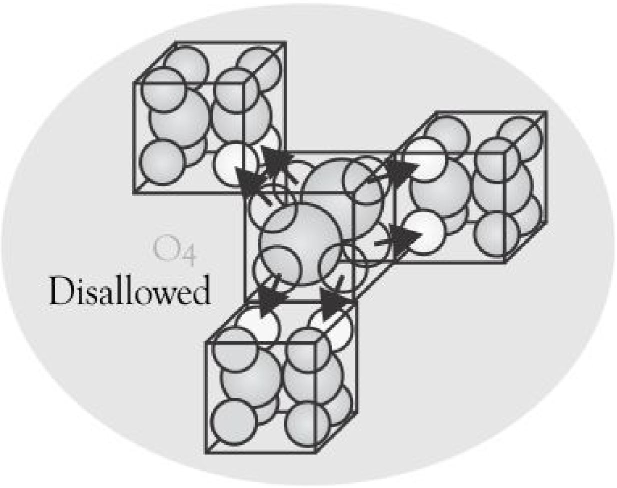
Oxygen(8) atoms will form a diatomic molecule with 2 attached phantom Helium cubes (shown below-left). When Oxygen is compressed, a double covalent bond is forced, compressing out the phantom Helium because empty space-cubes are not available.





High-energy rays from the Sun hitting the atmosphere energize Oxygen into Ozone (O_3), eliminating one of the 2 phantom Helium, as illustrated below, but in the presence of Oxygen, Ozone will decompose back into Oxygen, so a layer of Ozone is at the edge of the atmosphere, perpetually forming at the outer surface while decomposing at the inner surface. This absorbs harmful rays that would otherwise reach the Earth surface.





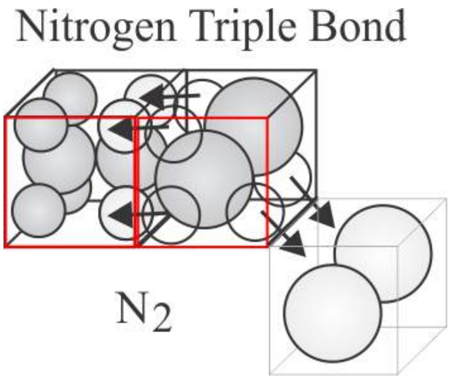
A molecule of four Oxygen atoms (O_4) would not need a phantom Helium, but O_4 has not been detected, suggesting that a maximum of 2 multiple-Sphere transfers from or to a single atom are allowed.

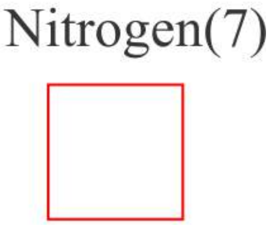
However, Nitrogen(7) may transfer out 5 Spheres.

Nitrogen

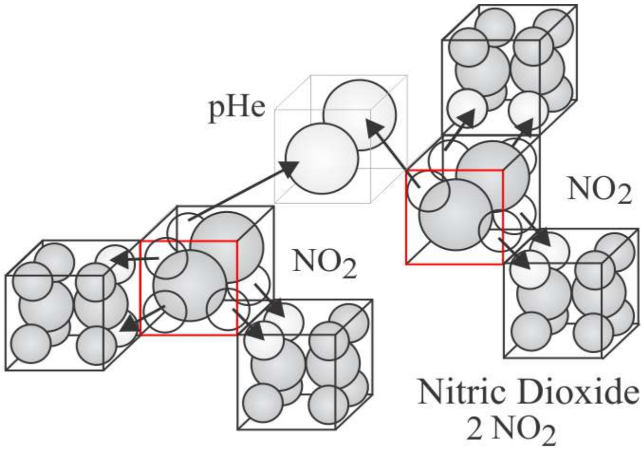
Nitrogen is cycled from the atmosphere through organic constructions to various organic compounds, and through decomposition, back into the atmosphere.

Nitrogen(7), as N_2 utilizes the “triple bond”, the strongest atomic bond, and also attaches a Phantom Helium.

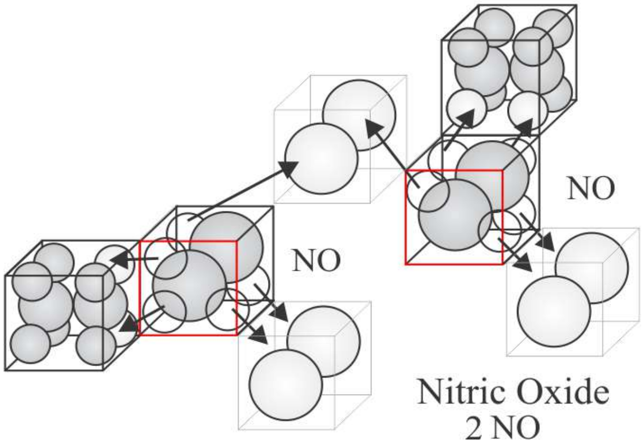




The Nitric Oxide and Dioxide molecules (illustrated below) are bound together in pairs by sharing a phantom Helium cube, but in the case of Nitric Oxide (NO) the 2 molecules attached to each other each need a phantom Helium.



Nitric Dioxide
2 NO_2



Nitric Oxide
2 NO

Chapter 10: Bias Crystallization

Bias Planes

The requirement of 2-dimensional symmetry is forcing order, overriding the optimal filling of the internal space of the cube. Order dictates uniform (but possibly multiple) sizes of the Spheres.

When the centers of the Spheres (where the Proton is located) align on a common plane (internal to the cube), some of the energy of the Protons are drawn into filling the internal planes with energy. These are termed Bias planes.

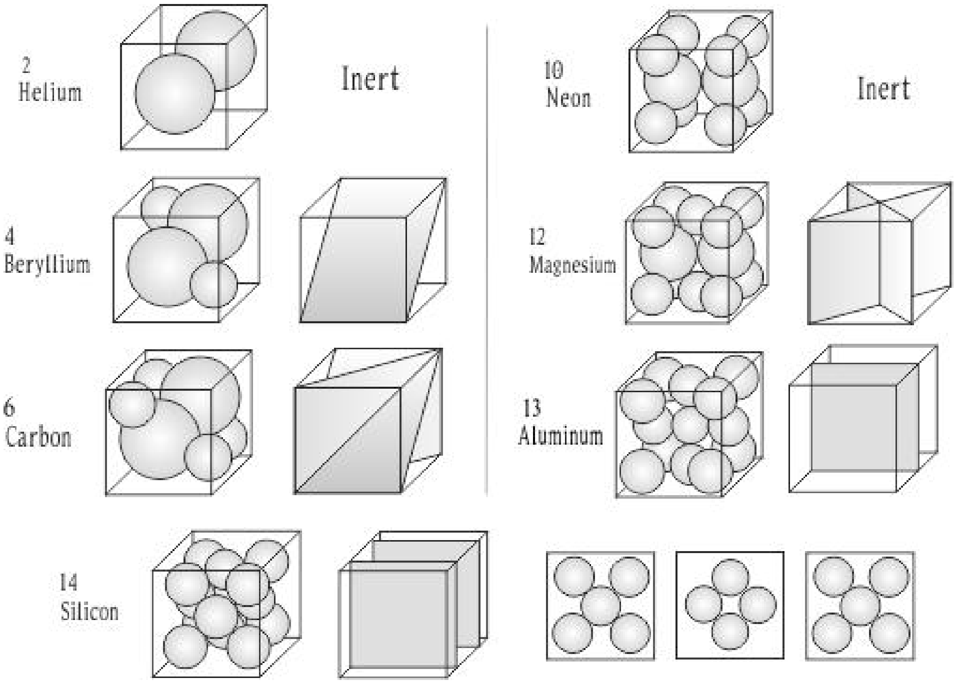
Bias-planes will form where the largest number of grouped Spheres are located, and may prevent other lesser alignments from forming planes, depending on the internal geometry. The Bias energy is proportional to the area of the Bias planes and potentially on the number of Spheres involved. The configuration of all Bias Planes in an Element is called the **Bias** of the Element. The inert Elements have zero internal Bias energy.

The law of lesser Bias energy:

Molecular formation will default to the least total Bias energy.

The First 2 Octaves

Elements not shown have no valid arrangement, and must bond. But non-inert Elements with valid arrangements may bond, emulating other Elements with valid arrangements, if lesser Bias energy results.



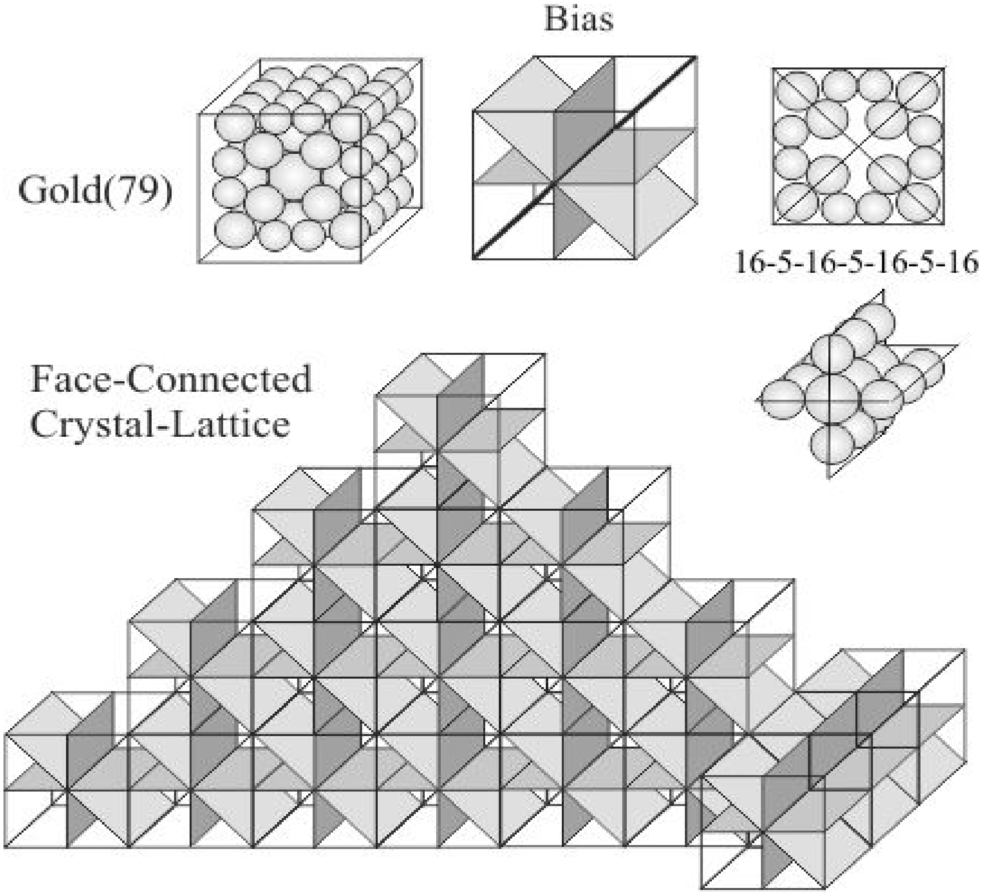
Refer to the Bias diagrams of the all the Elements

When the Bias planes between adjacent atoms align, the atoms are held in place by the common energy field. This is Bias-crystallization, not the crystals that result from atomic bonding.

The Basic-Cubic(6) Bias-Lattice of Gold

The Bias-planes of Gold(79) are diagrammed below. The Bias Planes of Gold are such that in crystallizing, every Space-Unit is filled, however the stronger diagonal planes dominate and result in Gold crystals that terminate with triangular faces,

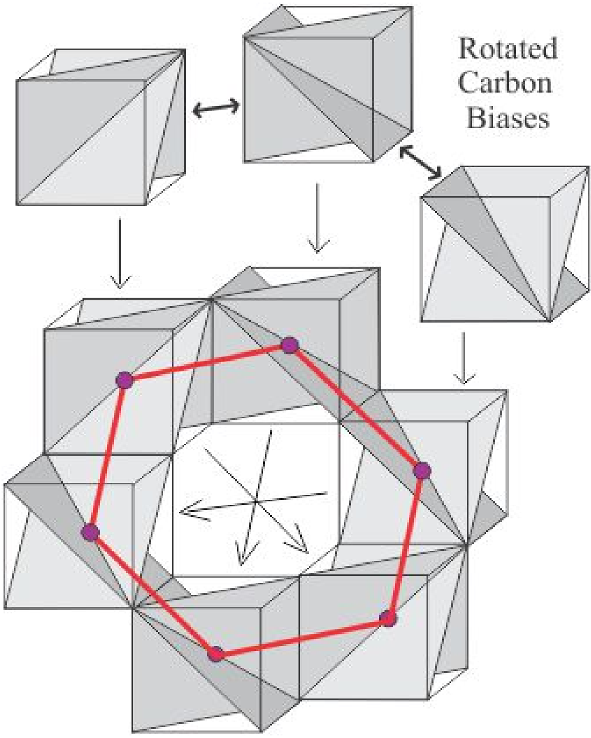
The triangular face-connected Bias-plane alignment of Gold is illustrated below.



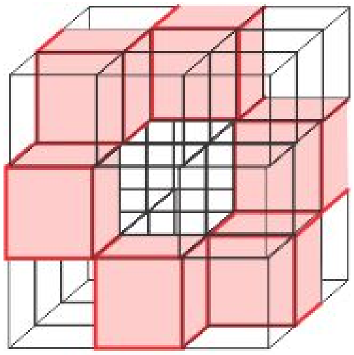
The Hexagonal Carbon Ring

The orientation of Biases can quantum-rotate inside the cube, and will do so to align their Bias planes (the Spheres shift, keeping their arrangement order).

The Carbon(6) Bias has 2 crossing planes that intersect along the cube-diagonal, as shown quantum-rotated in the diagram below. A Carbon Ring forms by aligning the Bias planes of 3 quantum-rotated orientations (each used twice), as illustrated below.



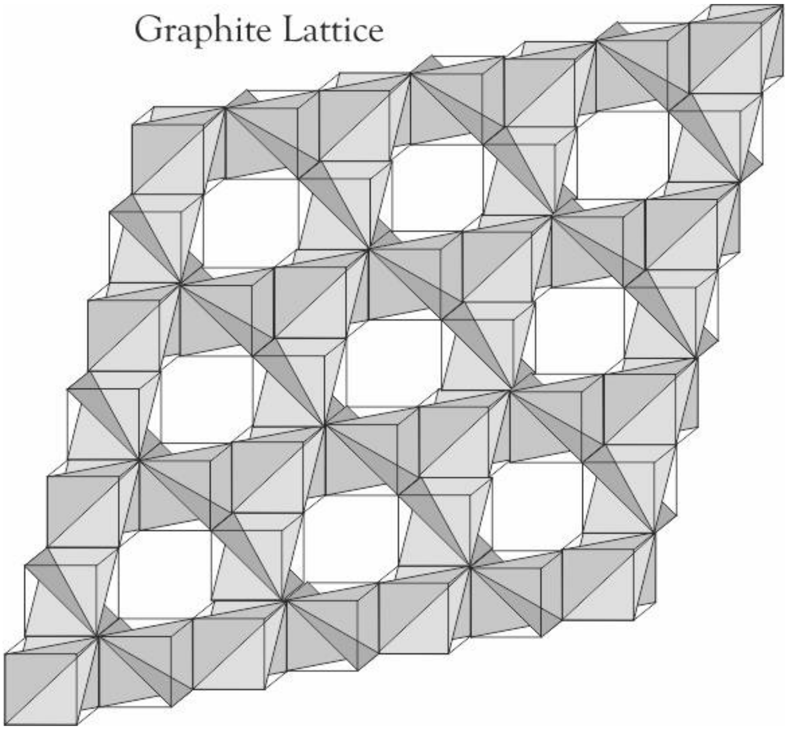
Carbon Ring



3x3x3

Graphite

The Carbon Ring is the unit-cell of the graphite lattice, which extends diagonally across the cubic matrix of space.



In graphite, multiple layers of lattice planes lay side by side, only held together by static forces, so they can slide on each other, making graphite an excellent dry lubricant. In conventional terminology the layers always offset to one of 3 different orientations called "A, B, and C". Recognizing that the hexagonal lattice is cubic makes it clear the 3 offsets are along the 3-dimensional axis of X (right/left), Y (up/down), or Z (front/back).

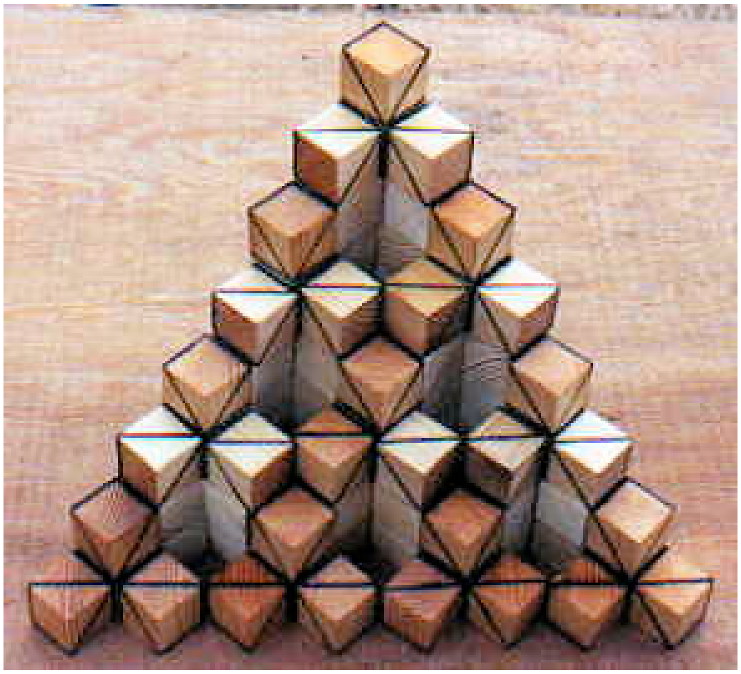


Photo of wood-blocks by Tom Gilmore, with Carbon Bias-plane edges marked in black.

Photosynthesis

Lesser Bias Energy Law

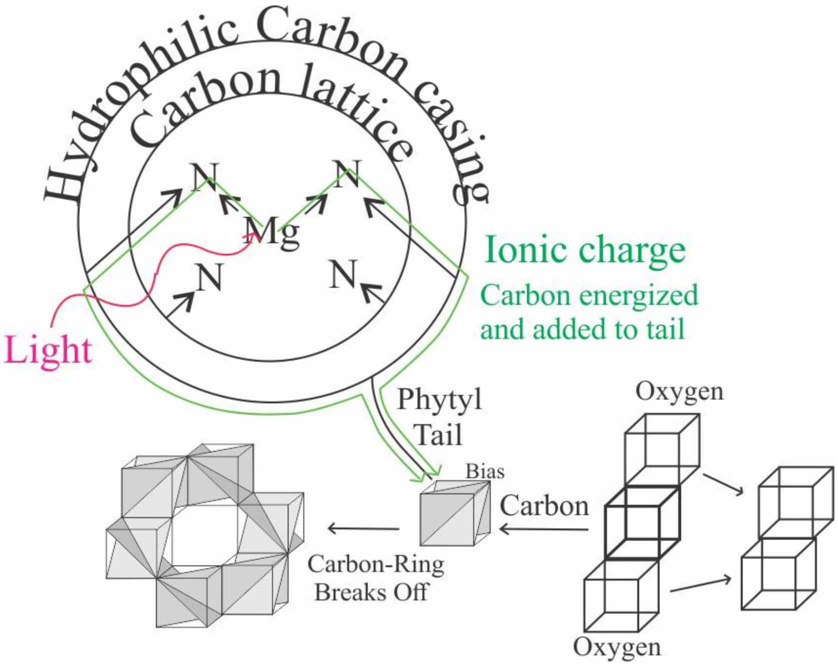
When various molecules come in contact, atomic bonds will rearrange if the resultant molecules have lesser total Bias energy than before bonding. This is a “chemical reaction”.

The sugar crystal produced by photosynthesis is a combination of Bias crystallization and rearranged atomic bonding induced by the Lesser Bias Energy Law.

The Chlorophyll Molecule

The most common form of chlorophyll is $C_{55}H_{72}MgN_4O_5$. There are a number of variations, but in each at the core is a single atom of Magnesium(Mg), and the outer shell is a hydrophilic (water absorbing) carbocyclic casing.

Sunlight stimulates the chlorophyll to absorb Photons, and the Magnesium converts the absorbed light energy to an ionic charge that is transmitted to a lipophilic phytyl tail (a string of Carbon and Hydrogen atoms dangling from the casing). The Carbon atom in the Carbon Dioxide contacting the chlorophyll receives the ionic charge, and the Bias-planes of the Carbon atom are energized, separating the Carbon atom from the Oxygen atoms, releasing a molecule of Oxygen.

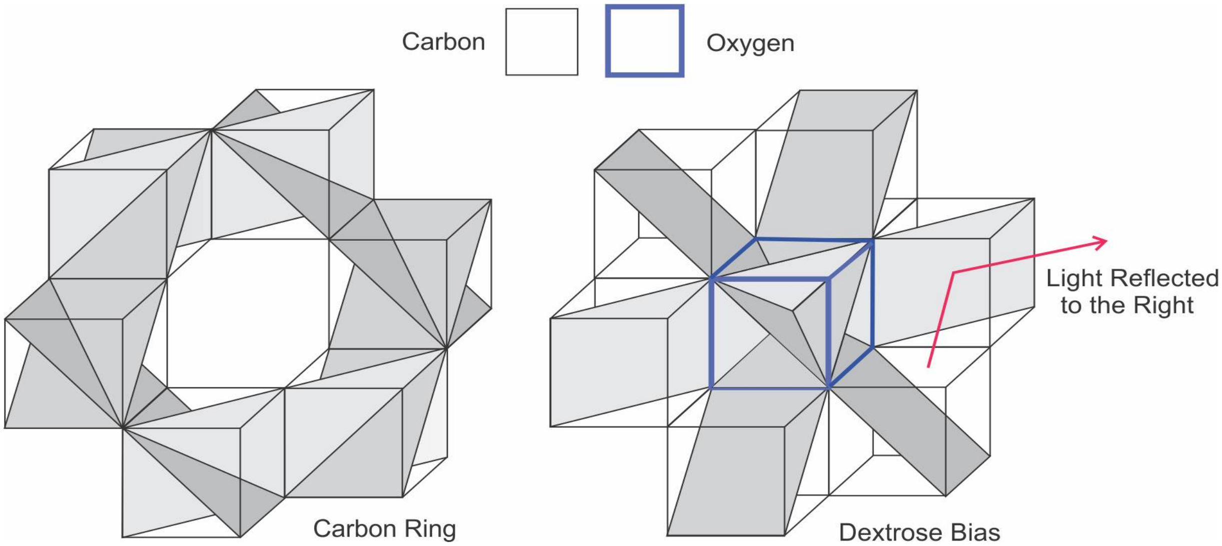


The separated Carbon atoms are added to the pyhtyl tail until a ring of 6 Carbon atoms breaks off. Water stored in the carbocyclic casing triggers a chemical reaction with the

Carbon-Ring, creating the sugar, and replacement water is drawn in by the hydrophilic property. *(The hydrophilic casing attracts water but repels oil, so when the sugar is produced it is ejected).*

The Dextrose Bias

The Carbon-Ring is shown below-left to compare with the crystal core of the dextrose sugar crystal shown below-right. Dextrose Bias has the same hexagonal arrangement of Carbon atoms as in the Carbon Ring, but the Carbon atoms have a single Bias-plane, and an Oxygen atom is clathrated (trapped) at the center, with 3 crossing diagonal Bias planes that unify the crystal.



The chlorophyll molecule has two mirrored (chiral) forms, and they produce mirrored sugar molecules known as dextrose and laevulose, named for the reflection of light to the right or left.

Each diagonal Bias-plane contains the energy of 56 kcal.

Carbon Ring – 12 planes of 56 kcal = 672 kcal
Sugar Crystal – 9 planes of 56 kcal = 504 kcal

The Chemistry of the Carbon Cycle

The following conventional formula for the formation of sugar hides a multi-step process.

Conventional: $6(CO_2) + 6(H_2O) + 672 \text{ kcal} = C_6H_{12}O_6 + 6O_2$.

The multiple-step process is numbered in brackets [x] in the following text (and in the diagram below).

[1]. The chlorophyll molecule uses the Magnesium/Nitrogen core to convert sunlight into the internal Bias-plane energy that, **[2]** eliminates the atomic bonds binding the Carbon atom to the Oxygen atoms, casting off the two Oxygen atoms as a molecule of oxygen.

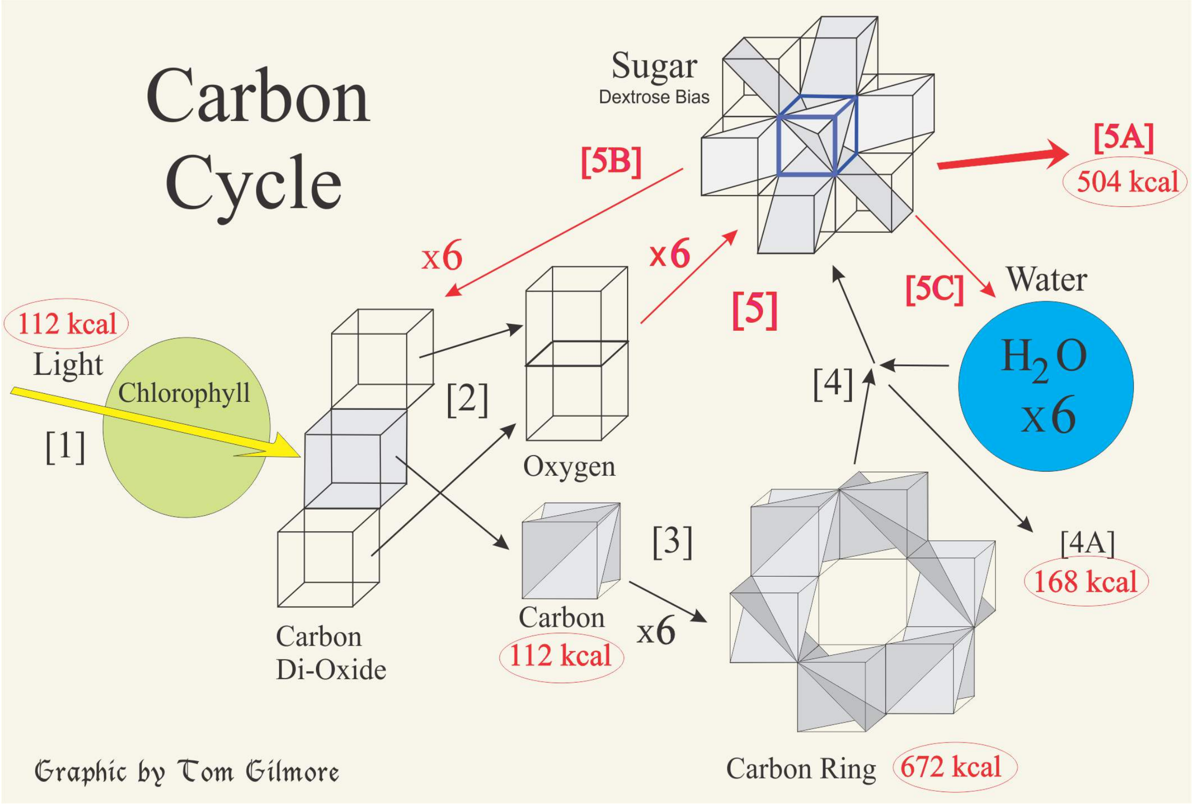
$$(CO_2) + 112\ \text{kcal} = (C) + (O_2)$$

[3]. The Carbon atom split from the carbon-dioxide is attracted by the crystallization force to attach to the end of the phytyl tail of the chlorophyll molecule (it does not bond to it). When 6 Carbon atoms have attached, a 672 kcal Carbon Ring breaks off.

$$6(CO_2) + 672\ \text{kcal} = 6(C) + 6(O_2)$$

[4]. The carbon ring reacts with water stored in the carbocyclic casing to produce 6 carbohydrates that link by the crystal force into a sugar crystal, burning 3 Bias planes of energy **[4A]**.

$$6(C) + 6(H_2O) = C_6H_{12}O_6 + 168\ \text{kcal}$$



Graphic by Tom Gilmore

In completing the carbon cycle, the animal ingests the sugar (and breathes oxygen) in order to [5] burn off the 504 kcal of Bias-plane energy in the sugar.

$$C_6H_{12}O_6 + 6O_2 = 6(CO_2) + 6(H_2O) + 504\ \text{kcal}.$$

The Oxygen atoms bond with the Carbon atoms, converting the 9 Bias-planes to energy [5A], and releasing 6 molecules of carbon-dioxide [5B], and 6 molecules of water [5C].

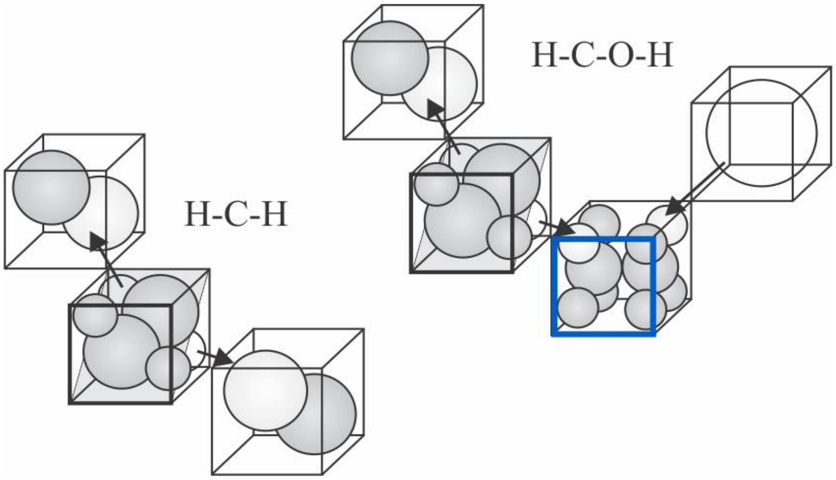
Conservation of Energy

 672 kcal -- Carbon ring (12 x 56 kcal)
-168 kcal -- Energy released in sugar reaction (3 x 56 kcal)
----
 504 kcal -- Sugar Crystal (9 x 56 kcal)

The Carbohydrate

The molecule of sugar is based on 6 carbohydrate strings. Five of the 6 carbohydrate strings incorporate an Oxygen atom (HCOH). One string is (HCH), and this is because the 6th Oxygen atom is clathrated at the center of the crystal.

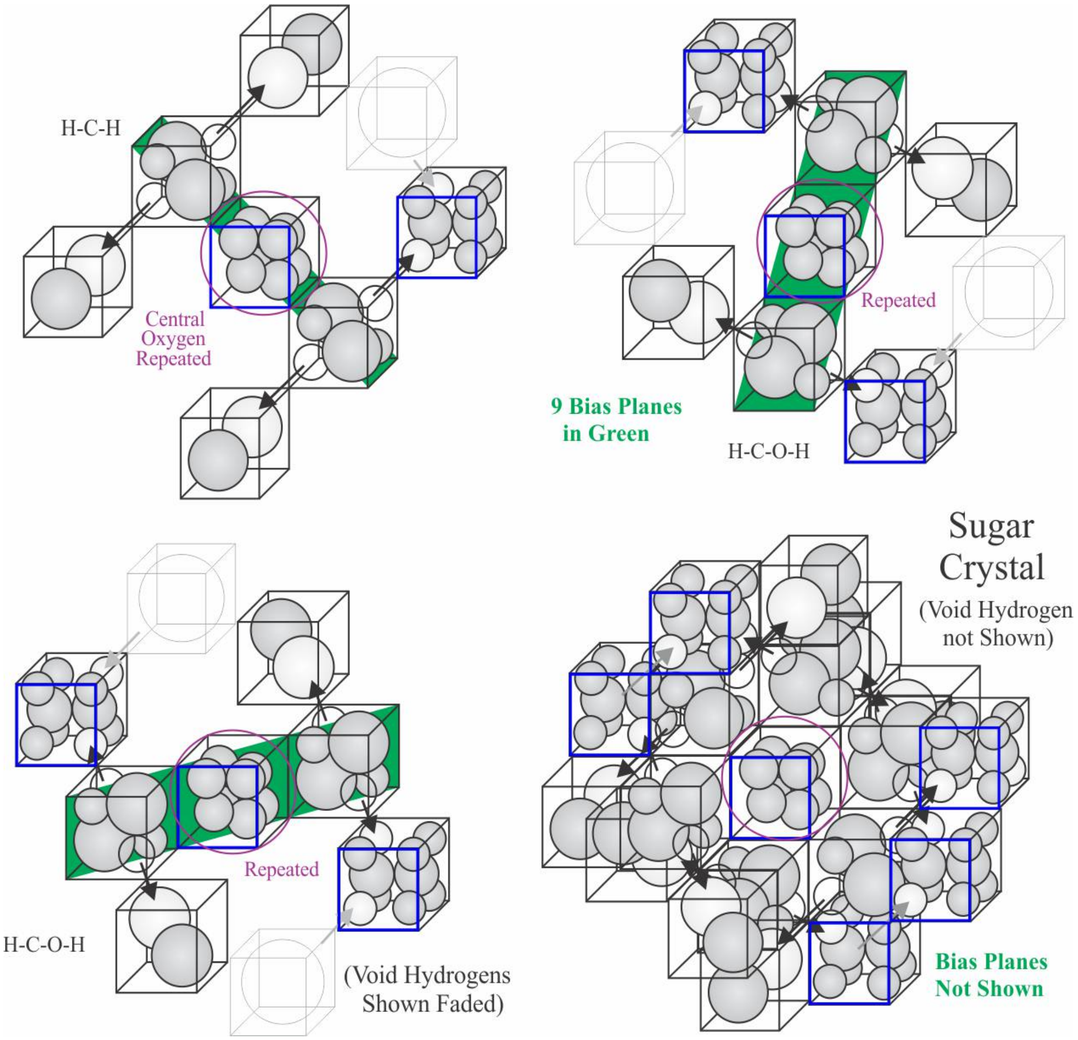
The energy of a carbohydrate is in the single Bias plane in the Carbon atom (56 kcal).



The Sugar Crystal of Carbohydrates

The diagrams below show how the carbohydrates are connected in 3 pairs by the Bias plane crystal alignments. The pair shown upper left has the single H-C-H string, but this can locate in any of the 6 crystal positions. The 5 Void (empty) Hydrogen atoms are shown in faint gray. The Oxygen atoms have a blue front **(the center Oxygen atom is repeated in the 3 pairs)**.

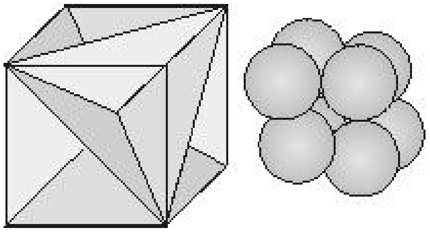
The combined molecule ($C_6H_{12}O_6$) is shown lower-right without the crystal Bias planes. Notice the arrangement of 6 pairs of crossing arrows.



The 24 atoms of the sugar crystal form a roughly spheroid ball that is 5 cubes wide (X-axis), 5 cubes tall (Y-axis), and 5 cubes deep (Z-axis).

The Clathrated Oxygen Atom

These six carbohydrates are separate molecules, interconnected by the crystal linking force passing through the central clathrated Oxygen atom.

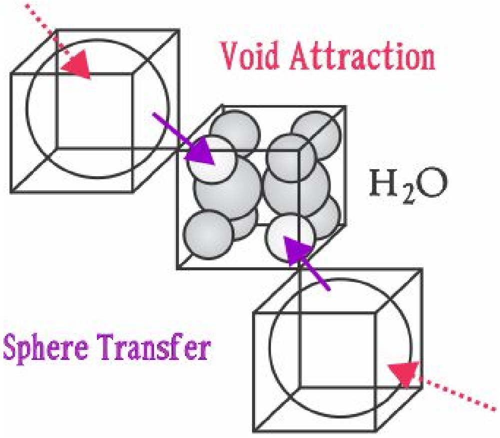


Normally an un-bonded Oxygen atom is precluded by having perfect symmetry in 3 dimensions, but when clathrated by the intersecting Bias planes, the 8 Spheres are skewed by 3 of the 4 possible cube diagonal-planes, as depicted above, and thus no longer violates excluded 3-dimensional symmetry.

Chapter 11: Acids and Explosives

Void Hydrogen Attraction

When Hydrogen transfers out its only Sphere, it is called Void, and it projects what is conventionally termed a weak "intermolecular attraction" (shown with ***red dotted arrows)****.*



The Void attraction is general, not specific to any cube corner.

Acids

The conventional definition of an acid is "an aqueous solution of a molecule that (in solution) has the ability to react with certain other metals, or specific molecules called bases".

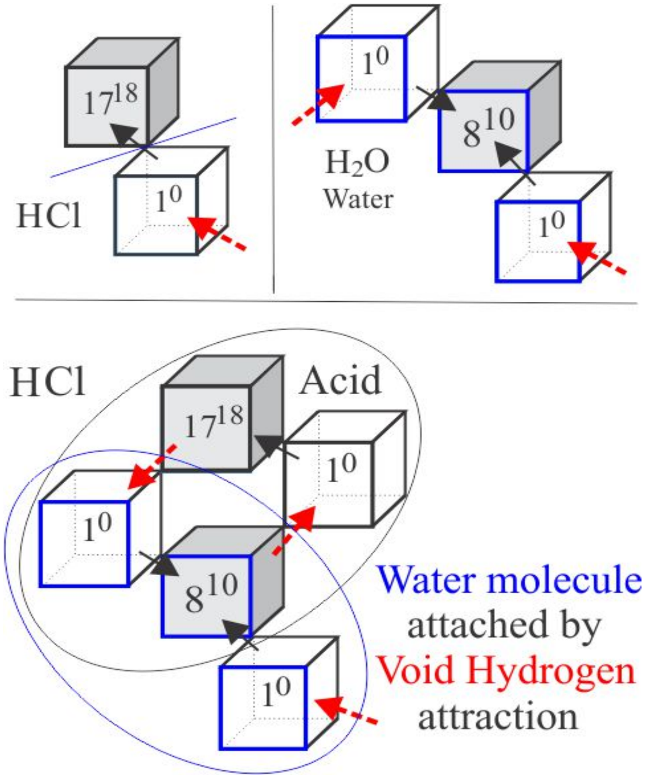
"Hydronium"

Not realizing that the intermolecular attraction is involved in the formation of acids, it was conventionally incorrectly thought that a Hydrogen atom from the acidic compound is transferred to the water molecule and forms "Hydronium" (H_3O).

Despite this mistaken assumption, the logarithmic measure of "percent Hydronium" (or pH) is a usable measure, merely because it digitalizes the strength of an acid solution (partly due to the percent of the acidic compound related to the volume of water).

Acidic Molecules

In the diagram of hydrochloric acid below, Hydrochloride (HCl) and Water (H_2O) are shown separately. The Hydrochloric Acid (shown below-bottom) is HCl in aqueous solution. The incorporated water molecule is denoted by **blue front squares** on their cubes, and circled in blue.



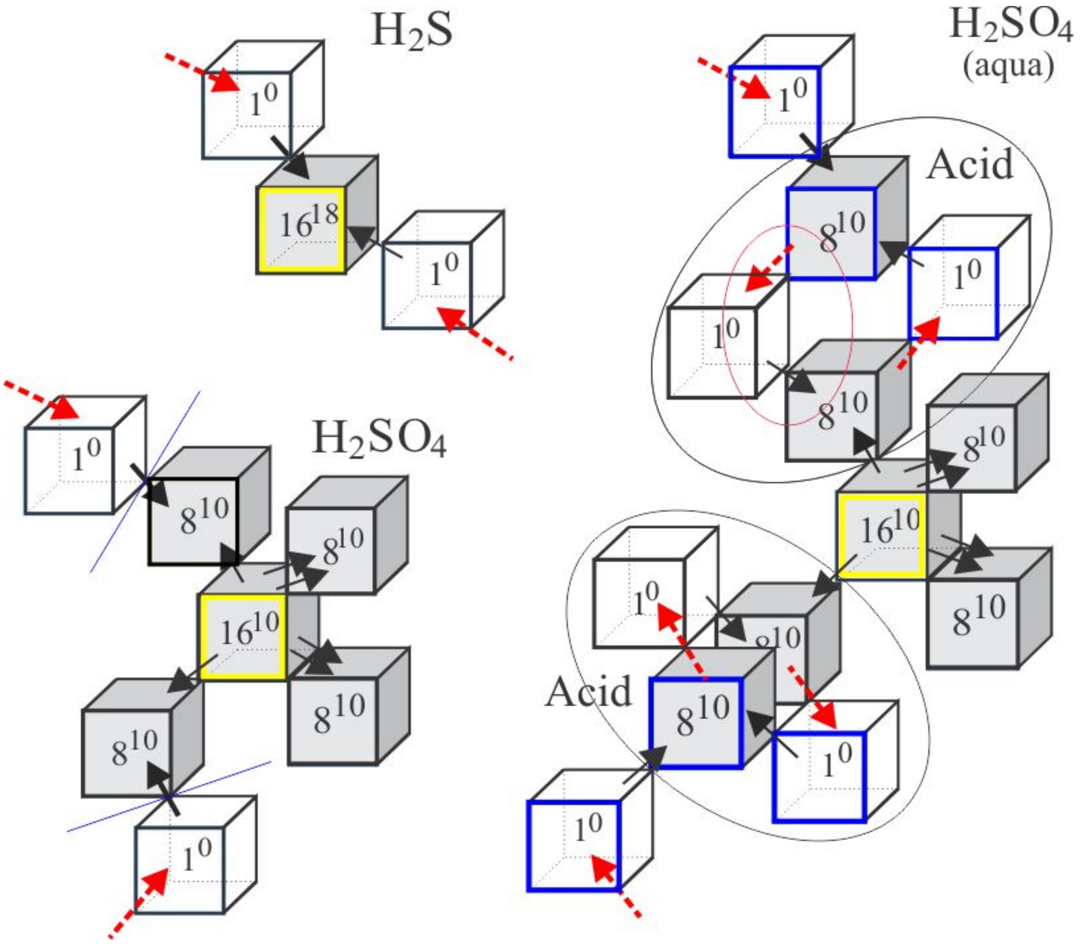
Circled above in black is the acidic dual intermolecular linkage (2 Void attractions and 2 atomic bonds).

Only certain active Elements are subject to the intermolecular attraction, among them, Nitrogen(7), Oxygen(8), Fluorine(9), and Chlorine(17)
(All of these have no valid internal Sphere arrangement)

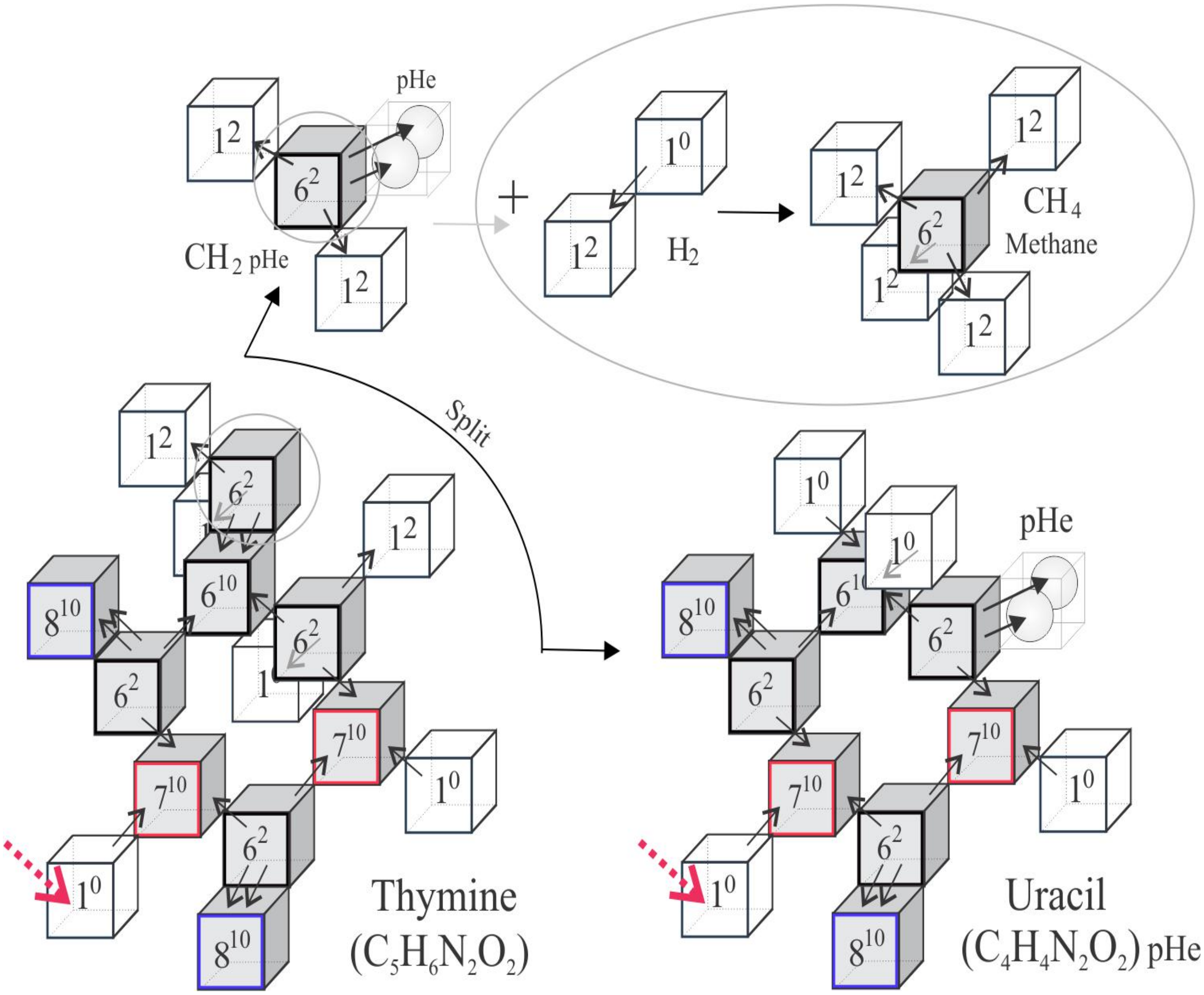
Sulfur(16) is immune to the intermolecular attraction. Hydrogen Sulfide (H_2S) in solution does not form acids. However when 4 Oxygen(8) atoms are incorporated in the molecule (making H_2SO_4) then in solution it forms acids. This verifies that the acid requires an Element susceptible to the intermolecular attraction (in this case Sulfur(16) is not, but Oxygen(8) is).

In solution $H_2SO_{4\,(aqua)}$ will incorporate 2 water molecules in forming 2 acidic linkages (circled below). A blue line is placed at the point in the H_2SO_4 molecule where the water molecule is inserted.

Note that the intermolecular attraction is not a bond transfer and thus is not restricted to corner-bonding law, and thus can join on empty corners adjacent to bonded corners (example circled in red below).



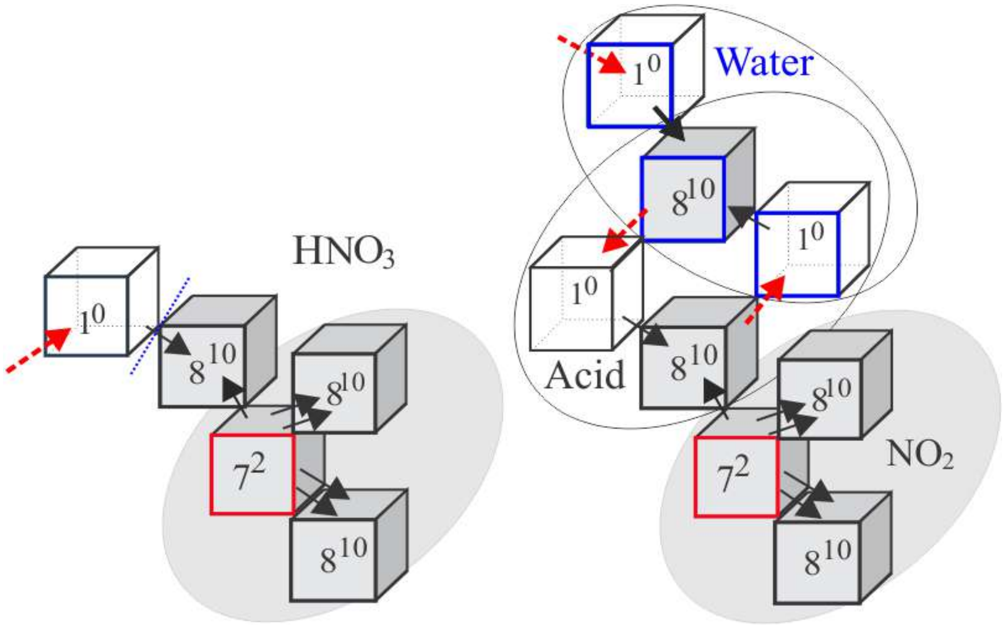
In a similar fashion as with Sulfur(16), Phosphorus(15) is immune to the intermolecular attraction. Hydrogen Phosphate (H_3P) in solution does not form acids. However when 4 Oxygen(8) atoms are incorporated in the molecule H_3PO_4 then in solution it forms acids.



In Phosphorous Acid there are 3 water molecule insertion points.

Nitric Acid

Nitric Acid (HNO_3) has a Nitric Oxide (NO_2) group of atoms (solid gray oval below).

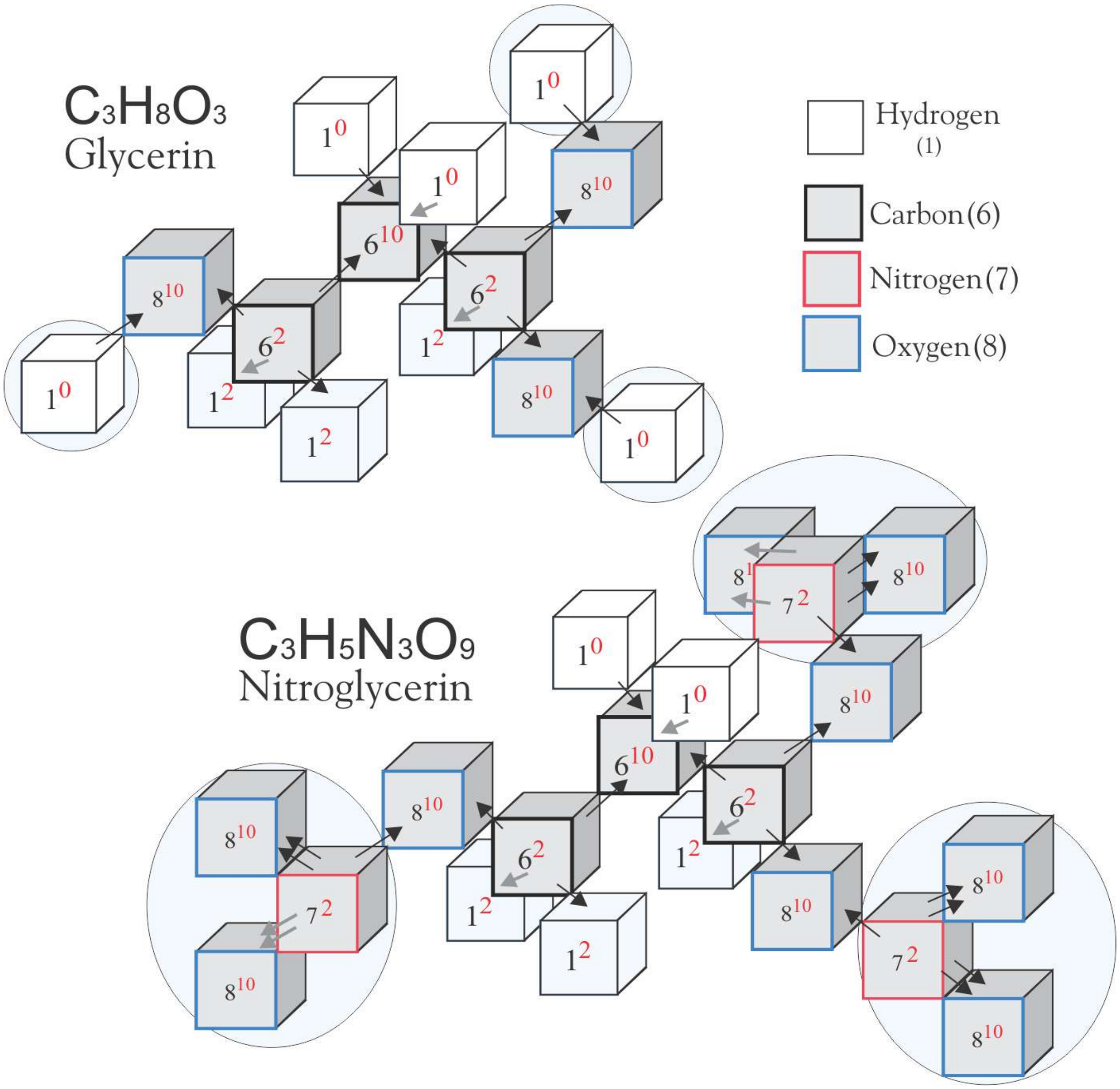


The Nitric Oxide group (NO_2) in Nitric Acid is utilized in the making of Dynamite.

Explosives

Nitroglycerine

Glycerin is a compound built on a 3-Carbon chain.



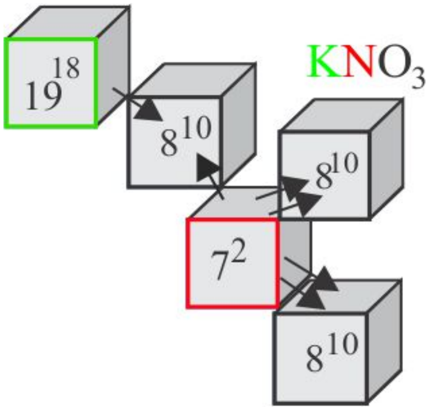
In the process of producing Nitroglycerin, basically, Nitric Acid, Sulfuric Acid, and Glycerin are (carefully) mixed. The Sulfuric Acid is added to neutralize any Nitric Acid not incorporated into the Glycerin.

As illustrated above with blue-gray ovals, the outer Hydrogen atoms attached to the Oxygen atoms of Glycerin are replaced with a Nitrous Oxide group (NO_2), making it Nitroglycerin.

Nitroglycerin is unstable because the Nitrogen(7) atoms are reduced by 5 spheres to Helium-form(2), and the preferred bonding is for Nitrogen(7) to be increased by 3 spheres to Neon-form(10). Shock (vibrations) will dislodge the unstable arrangement and the Nitrogen will rearrange such that it bonds in the preferred form. The heat produced causes the gasses to expand rapidly (an explosion).

Gunpowder

As shown below, Potassium Nitrate (KNO_3), also called saltpeter, has the same arrangement of Nitric Oxide as Nitroglycerin (taking Nitrogen(7) down to Helium-form(2)). In making gunpowder from saltpeter, Sulfur and charcoal are mixed with the saltpeter to serve as fuel for an explosion (of rapidly expanding hot gasses).



Chapter 12: States of Matter (by Temperature)

There are 3 common forms (states) of Matter, known as solid, liquid, and gaseous.

In Greek mythology, the 3 states of Matter are represented by the 3 brothers Zeus, Poseidon, and Hades, where Zeus lives in the clouds (gas) sending down lightening bolts, Poseidon lives in the sea (liquid) sending dolphins around with messages, and Hades lives in the underworld (solid) sending souls of the buried dead to their just rewards.

There are 2 additional states of Matter (relating to Electrons).

Electrons are created in conjunction with the Protons that Matter is composed of, but are not indelibly tied to the atoms. An atom is "ionized" when it has fewer Electrons than Protons.

Heat causes Electrons to exit the atoms, and when hot enough, all the Electrons are emptied out of the atoms, and this state is called “**plasma**".

Lack of heat binds Electrons to the atoms, and when cold enough the atoms become “**super-conductive**", meaning that, in Matter, excess Electrons are passed between atoms perpetually.

Piezoelectricity

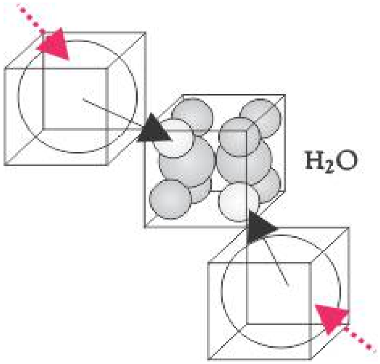
Pressure increases heat, which in turn forces Electrons out of atoms. In Quartz, the Electrons ejected from Silicon atoms by pressure is conducted in the crystal in what is termed the piezoelectric-effect, and the crystal can be made to oscillate at a constant rate that, for example, is used to regulate time measurement in quartz clocks.

Solid-Liquid-Gas Transitions

The liquid and gaseous states differ in that a gas can be compressed and a liquid essentially cannot be compressed. The solid state is characterized by crystal lattices of repeating patterns, but many substances have multiple lattice structures depending on temperature, such as ice, which is conventionally considered to have fifteen different crystal lattices. Some substances will transition (sublime) from solid directly to gas. Each substance has its own freezing, melting, and evaporating temperature points.

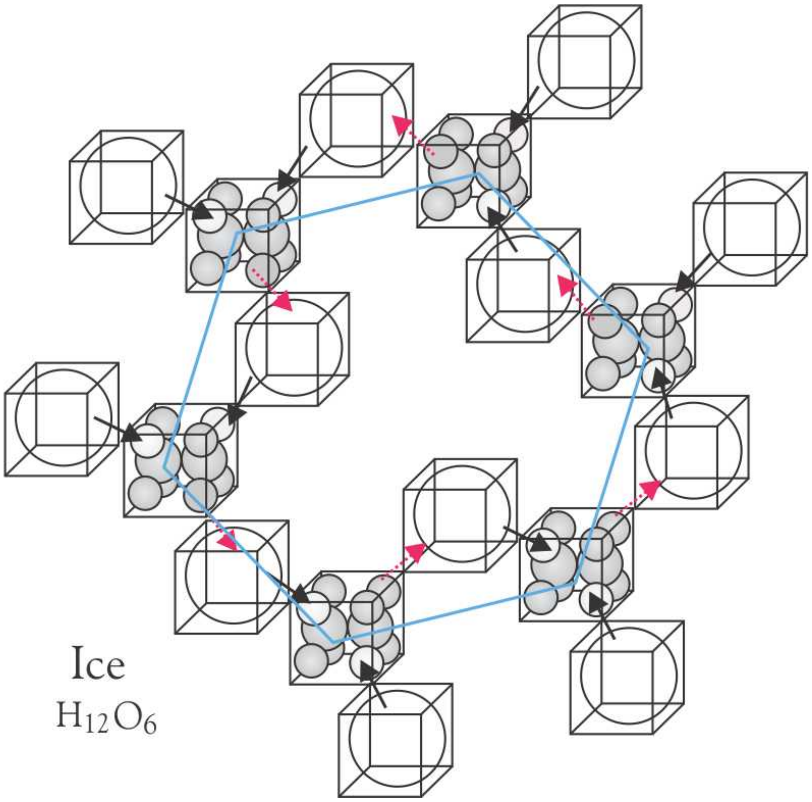
Void Attraction Hexagonal Ice Lattice

The Water molecule (H_2O) is illustrated below. Above boiling temperature the intermolecular attraction is too weak to hold the water molecules together. Above freezing temperature the intermolecular attraction links the water molecules, but the agitation shifts the linkages (making it liquid).



When water freezes the lower vibrational energy reduces the resistance to the intermolecular attraction of Void Hydrogen such that rigid crystal structures form.

The ice unit-cell is illustrated below. Six water molecules are linked together in a hexagonal ring by the intermolecular attraction.

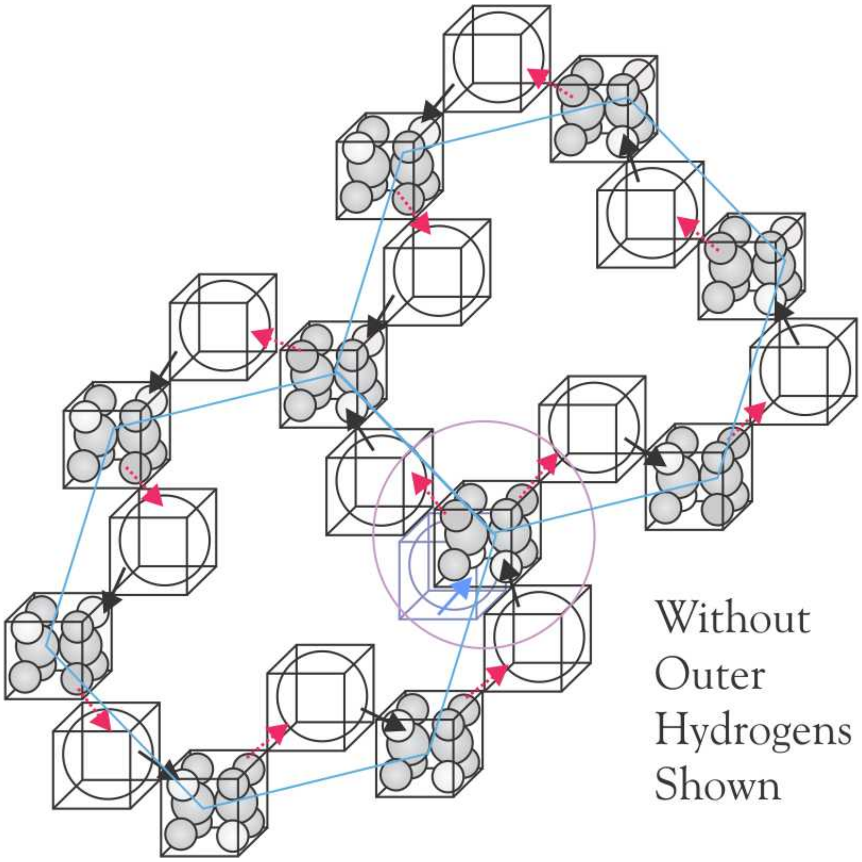


Notice that the hexagonal linkage direction is counter-clockwise (follow the alternating black and red arrows along the blue ring).

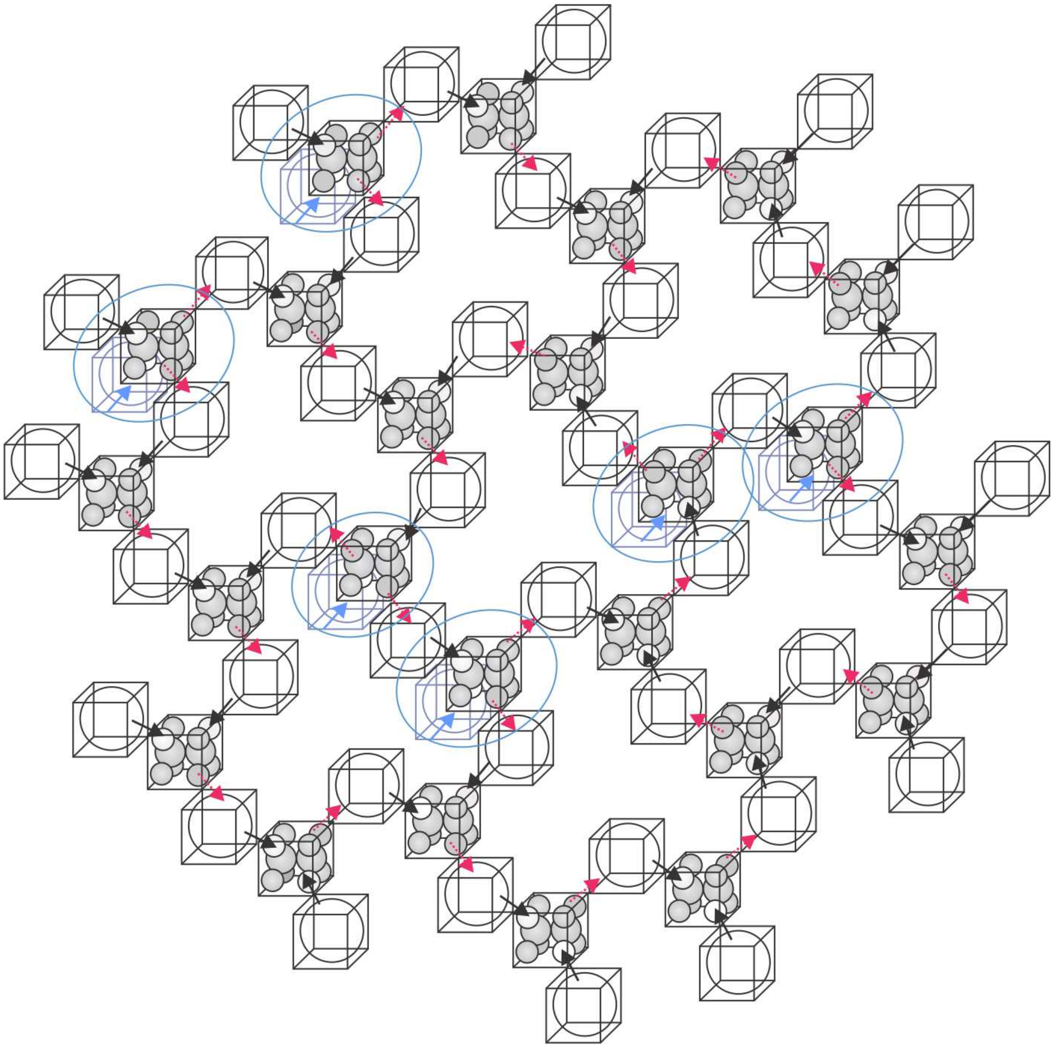
The lattice unit-cells of the hexagonal lattice merge on the 6 edges of the hexagons (in the same way as in bee-hive honey-combs).

As illustrated below, when the unit cells join, each joining reverses the hexagonal linkage direction, and this involves an Oxygen atom being linked by 2 Void-attraction attachments (as circled below).

The circled Oxygen atom (with 2 Void attractions) forces one Hydrogen atom to bond on the backside of the Oxygen atom (the blue arrow), and this "offset" Hydrogen atom seeds a parallel layer of Ice hexagons, producing a 3-dimensional solid.



Due to the alternating direction of the hexagon linkages, one double Void-attraction Oxygen atom is required for each joined hexagon. In the diagram below of 7 hexagons, there are 6 double-Void-attraction Oxygen atoms. The locations of these Oxygen atoms depend on the sequence of hexagonal joining as the ice crystal grows, and thus can vary (are not rigidly dictated locations). The random order of freezing results in random ice crystal configurations.



The freezing ice builds a 3-dimensional solid, connecting layers at the double-Void junction (attaching to the Hydrogen behind the Oxygen (blue arrow in at circled junction)

The Void-attraction linkages can be broken, meaning the ice is brittle and can shatter.

Pressure Bonding

Diamond (Carbon Formed Under Pressure)

The form of the Diamond lattice is:
Interlaced Tetrahedral Bonding of Carbon

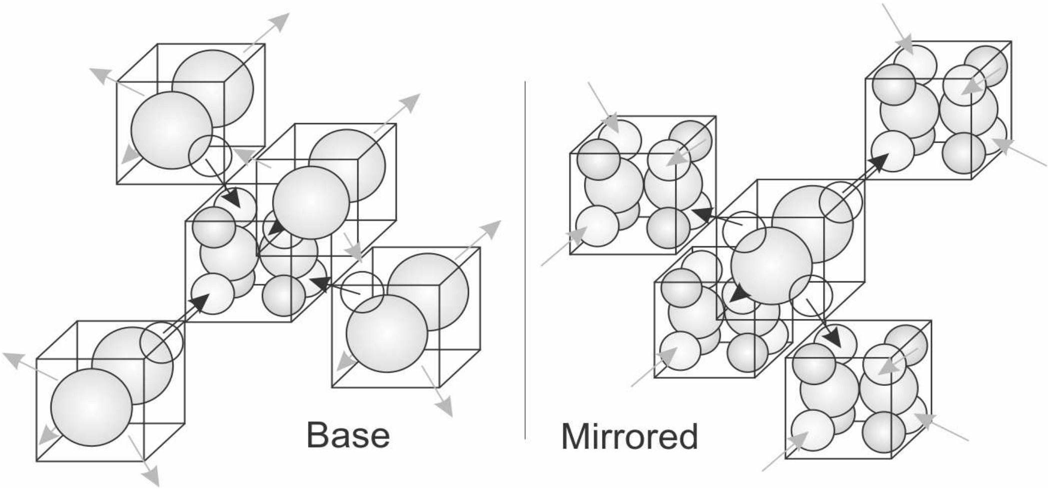
The Mirrored Diamond Unit-Cells

Diamond has 2 interpenetrating tetrahedral lattices formed simultaneously. Both lattices have the same structure.

There are 2 chiral (mirrored) unit-cells in the Diamond lattice that alternate between each adjacent atom of the lattice.

The designation of base and mirrored is arbitrary and only serves to label the forms.

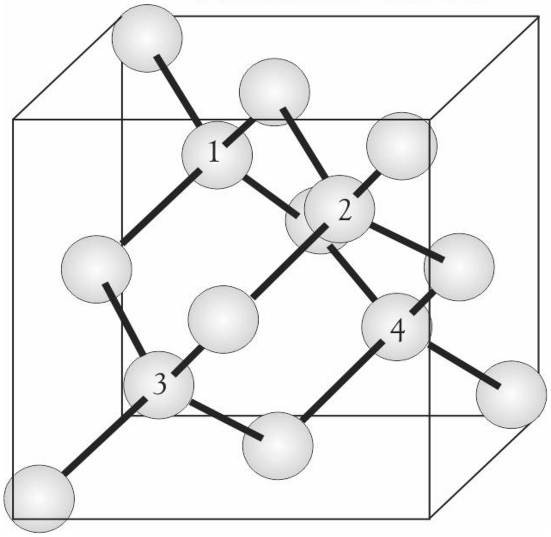
Each Carbon(6) that takes Neon-form(10) receives 1 Sphere from each of the 4 Carbon(6) atoms surrounding it (Base form shown below), and the adjacent Carbon atoms take Helium-form(2) by lending 1 Sphere to each of the 4 Carbon atoms around it (Mirrored form shown below).



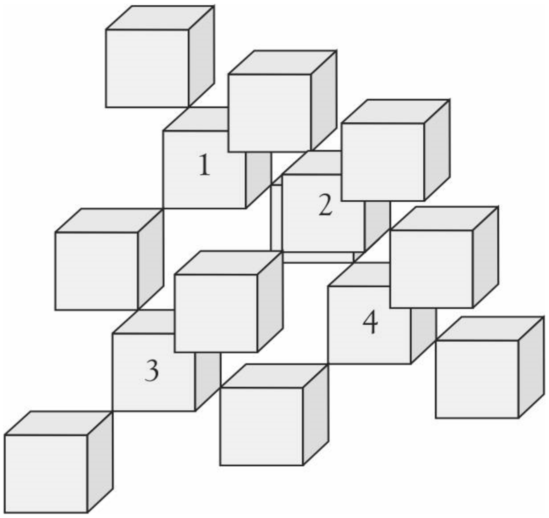
In the diagrams above, gray arrows indicate unit-cell transfers to atoms not shown.

The Conventional Diamond "Unit-Cell"

The conventional Diamond "unit-cell" is shown below-left, actually being 4 base unit-cells linked together. The numbers 1 to 4 are added to the conventional diagram to identify the center atoms of the 4 interconnected base unit-cells. No mirrored unit-cells are complete in the conventional "unit-cell"

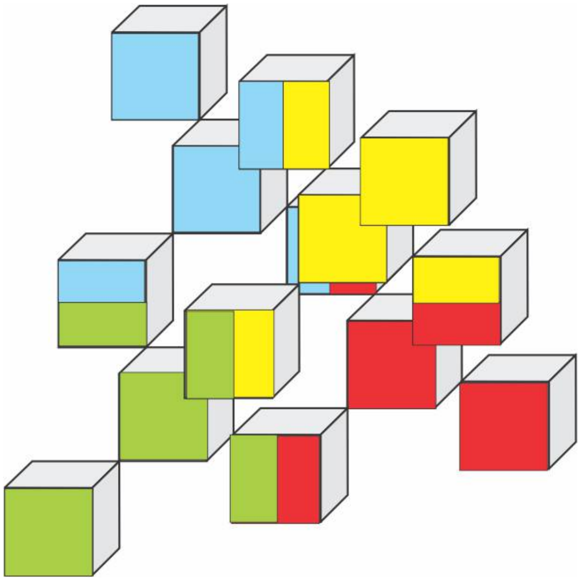


Conventional “Unit-Cell”



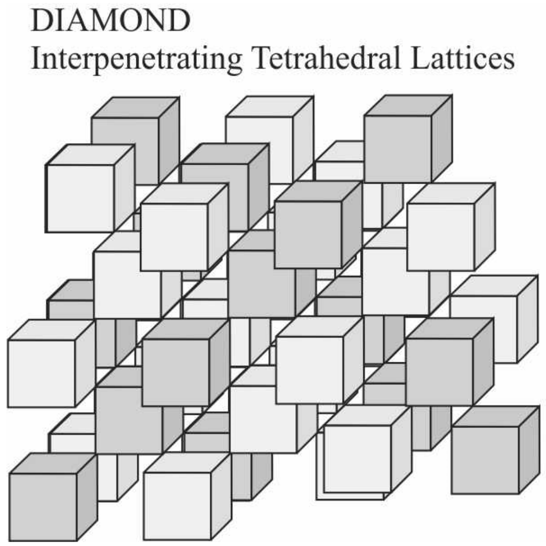
The Geocubic Model shown above-right is exactly the same arrangement as the conventional representation above-left, substituting corner-connected cubes for the spheres connected by rods.

The same diagram is shown below with colored cubes to aid visualizing the joined unit-cells.

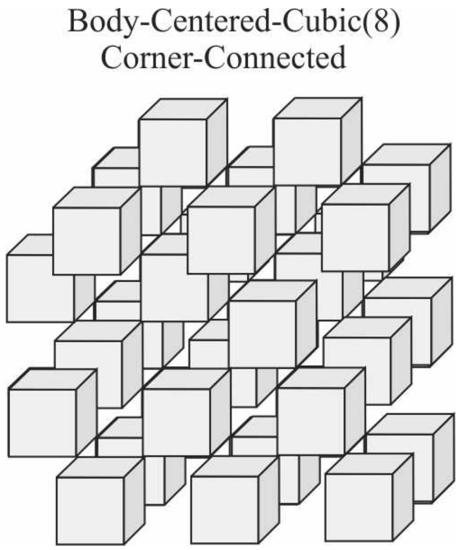


The Interpenetrating Lattices

The diagram below-left shows the 2 interpenetrating tetrahedral Carbon lattices, with one of the lattices darkened. The Diamond lattice is termed (4-4) because although all 8 corners touch (as in the b.c.c.(8) lattice shown below-right), the bonds are only between the 4 surrounding Carbon of the 2 tetrahedral lattices.



DIAMOND
Interpenetrating Tetrahedral Lattices



Body-Centered-Cubic(8)
Corner-Connected

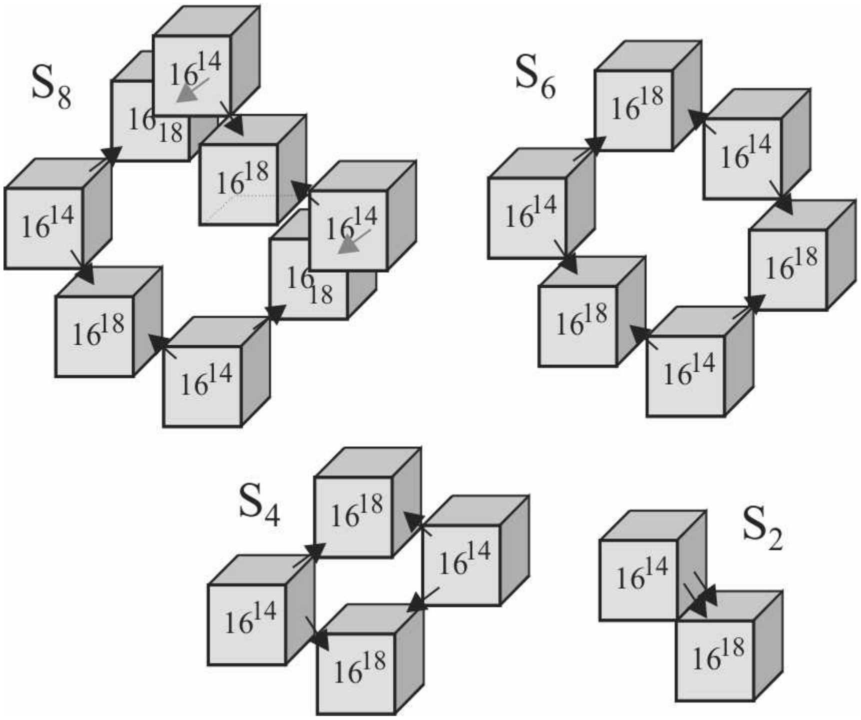
Diamond only forms under pressure, allowing the 2 lattices to form simultaneously, thus interlocking.

Lapis Lazuli (Sulfur Under Pressure)

The formation of Lapis Lazuli involves the concept of Bias Planes in the Geocubic Model.

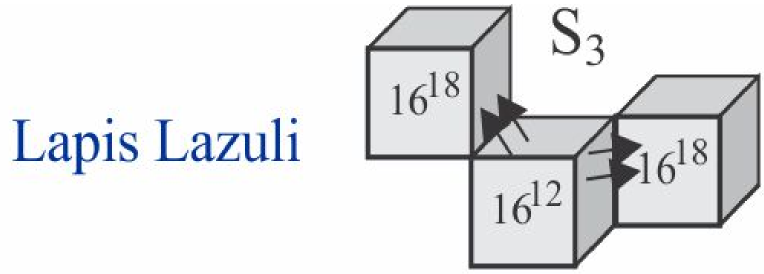
Sulfur(16)

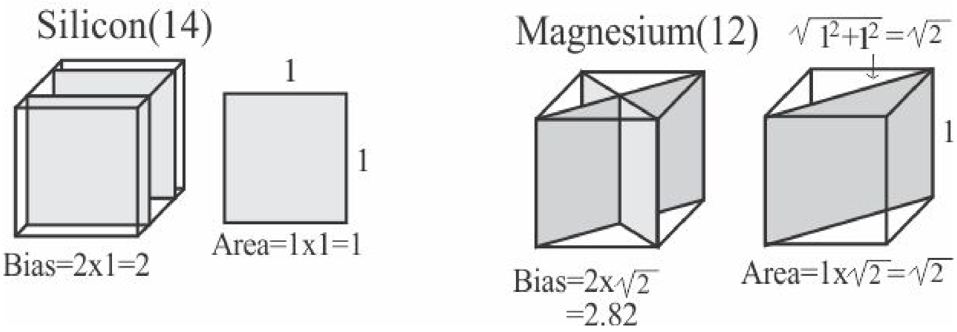
Sulfur must bond. The usual form of Sulfur(16) is to bond in closed chains that alternate between Sulfur in inert Argon-form(18) and Sulfur in Silicon-form(14). Sulfur usually occurs as S_8, but also can form S_6, S_4, and S_2, as shown below.



Due to the **law of lesser energy**, potential bonds will default to bonds with lowest total Bias, and as shown below, Silicon(14) has a Bias area of 2.0 while Magnesium(12) has a Bias area of 2.82, so the Sulfur bond will default to Silicon-form(14)

S_3 shown below involves one Sulfur(16) taking Magnesium-form(12), and this can only occur under pressure, where the energy to support the stronger Magnesium-Bias is supplied.





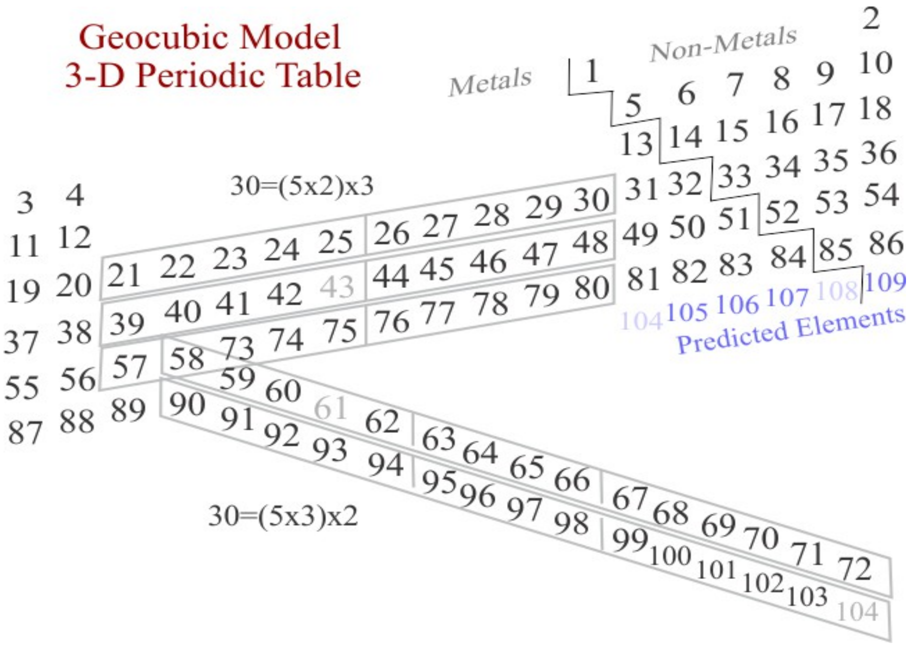
Once S_3 (Lapis Lazuli) has formed, it is stable because the energy is included and does not require pressure to persist.

*The **ultramarine** color of Lapis Lazuli was beloved by the Goddess Gaia (Mother Earth).*

Appendix: Diagrams of the Elements

The inert Elements have arrangements of Spheres that satisfy both symmetry and layer-order, but do not energize any internal planes.

The Geocubic Periodic Table differs from a conventional periodic table, due to the Geocubic Model showing that the Lanthanide Elements range from 58 to 72 (not from 57 to 71 as conventionally thought).



The Elements (By Atomic Number - the number of Protons)

1	Hydrogen
2	Helium
3	Lithium
4	Beryllium
5	Boron
6	Carbon
7	Nitrogen
8	Oxygen
9	Fluorine
10	Neon
11	Sodium
12	Magnesium
13	Aluminum
14	Silicon
15	Phosphorus
16	Sulfur
17	Chlorine
18	Argon
19	Potassium
20	Calcium
21	Scandium
22	Titanium
23	Vanadium
24	Chromium
25	Manganese
26	Iron
27	Cobalt
28	Nickel
29	Copper
30	Zinc
31	Gallium
32	Germanium
33	Arsenic
34	Selenium
35	Bromine
36	Krypton
37	Rubidium
38	Strontium
39	Yttrium
40	Zirconium
41	Niobium
42	Molybdenum
43	Technetium
44	Ruthenium
45	Rhodium
46	Palladium
47	Silver
48	Cadmium
49	Indium
50	Tin
51	Antimony
52	Tellurium
53	Iodine
54	Xenon
55	Cesium
56	Barium
57	Lanthanum
58	Cerium
59	Praseodymium
60	Neodymium
61	Promethium
62	Samarium
63	Europium
64	Gadolinium
65	Terbium
66	Dysprosium
67	Holmium
68	Erbium
69	Thulium
70	Ytterbium
71	Lutetium
72	Hafnium
73	Tantalum
74	Tungsten
75	Rhenium
76	Osmium
77	Iridium
78	Platinum
79	Gold
80	Mercury
81	Thallium
82	Lead
82	Bismuth
84	Polonium
85	Astatine
86	Radon
87	Francium
88	Radium
89	Actinium
90	Thorium
91	Protactinium
92	Uranium
93	Neptunium
94	Plutonium
95	Americium
96	Californium
97	Berkelium
98	Curium
99	Einsteinium
100	Fermium
101	Mendelevium
102	Nobelium
103	Lawrencium

The Elements

(Alphabetically with Symbol and atomic number)

Actinium	Ac	89
Aluminum	Al	13
Americium	Am	95
Antimony	Sb	51
Argon	Ar	18
Arsenic	As	33
Astatine	At	85
Barium	Ba	56
Berkelium	Bk	97
Beryllium	Be	4
Bismuth	Bi	83
Boron	B	5
Bromine	Br	35
Cadmium	Cd	48
Calcium	Ca	20
Californium	Cf	98
Carbon	C	6
Cerium	Ce	58
Cesium	Cs	55
Chlorine	Cl	17
Chromium	Cr	24
Cobalt	Co	27
Copper	Cu	29
Curium	Cm	96
Dysprosium	Dy	66
Einsteinium	Es	99
Erbium	Er	68
Europium	Eu	63
Fermium	Fm	100
Fluorine	F	9
Francium	Fr	87
Gadolinium	Gd	64
Gallium	Ga	31
Germanium	Ge	32
Gold	Au	79
Hafnium	Hf	72
Helium	He	2
Holmium	Ho	67
Hydrogen	H	1
Indium	In	49
Iodine	I	53
Iridium	Ir	77
Iron	Fe	26
Krypton	Kr	36
Lanthanum	La	57
Lawrencium	Lr	103
Lead	Pb	82
Lithium	Li	3
Lutetium	Lu	71
Magnesium	Mg	12
Manganese	Mn	25
Mendelevium	Md	101
Mercury	Hg	80
Molybdenum	Mo	42
Neodymium	Nd	60
Neon	Ne	10
Neptunium	Np	93
Nickel	Ni	28
Niobium	Nb	41
Nitrogen	N	7
Nobelium	No	102
Osmium	Os	76
Oxygen	0	8
Palladium	Pd	46
Phosphorus	P	15
Platinum	Pt	78
Plutonium	Pu	94
Polonium	Po	84
Potassium	K	19
Praseodymium	Pr	59
Promethium	Pm	61
Protactinium	Pa	91
Radium	Ra	88
Radon	Rn	86
Rhenium	Re	75
Rhodium	Rh	45
Rubidium	Rb	37
Ruthenium	Ru	44
Samarium	Sm	62
Scandium	Sc	21
Selenium	Se	34
Silicon	Si	14
Silver	Ag	47
Sodium	Na	11
Strontium	Sr	38
Sulfur	S	16
Tantalum	Ta	73
Technetium	Tc	43
Tellurium	Te	52
Terbium	Tb	65
Thallium	Tl	81
Thorium	Th	90
Thulium	Tm	69
Tin	Sn	50
Titanium	Ti	22
Tungsten	W	74
Uranium	U	92
Vanadium	V	23
Xenon	Xe	54
Ytterbium	Yb	70
Yttrium	Y	39
Zinc	Zn	30
Zirconium	Zr	40

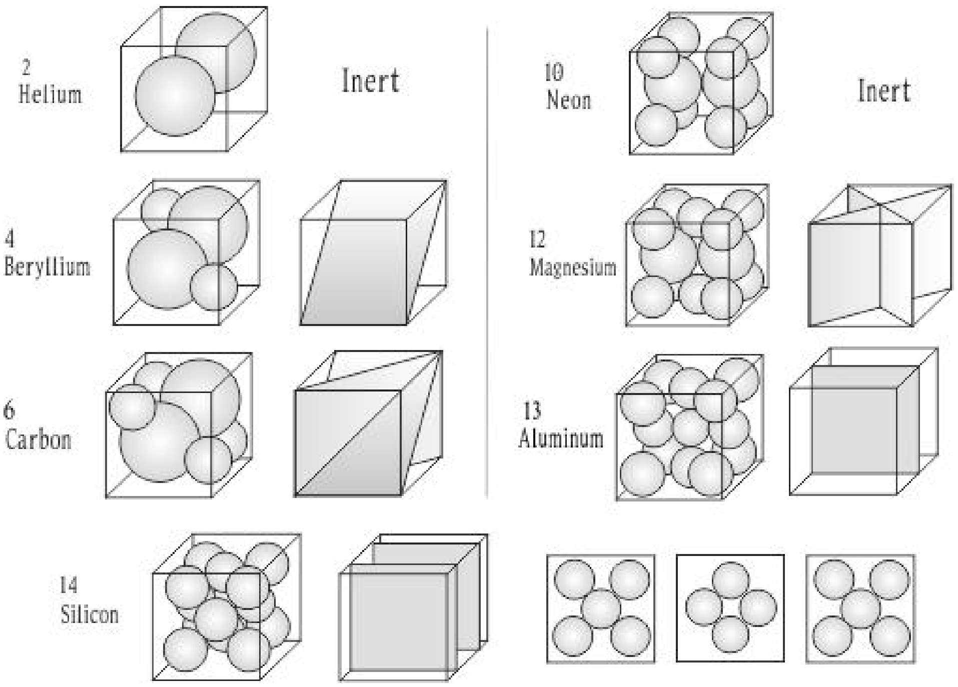
Element Diagrams

Sphere Arrangements and Bias Planes

The following diagrams show Sphere arrangements and resultant Bias planes, deduced from cubic geometry, symmetry law, and the known properties of the Elements. They do not purport to be entirely correct or complete.

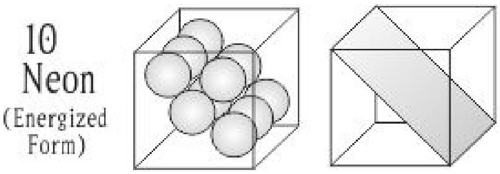
The outside view of the Sphere arrangements are shown to the left, with the Bias diagram alongside, and followed by any supplemental diagrams to detail the structure, such as showing layers (as in Silicon(14) shown below).

The First 2 Octaves



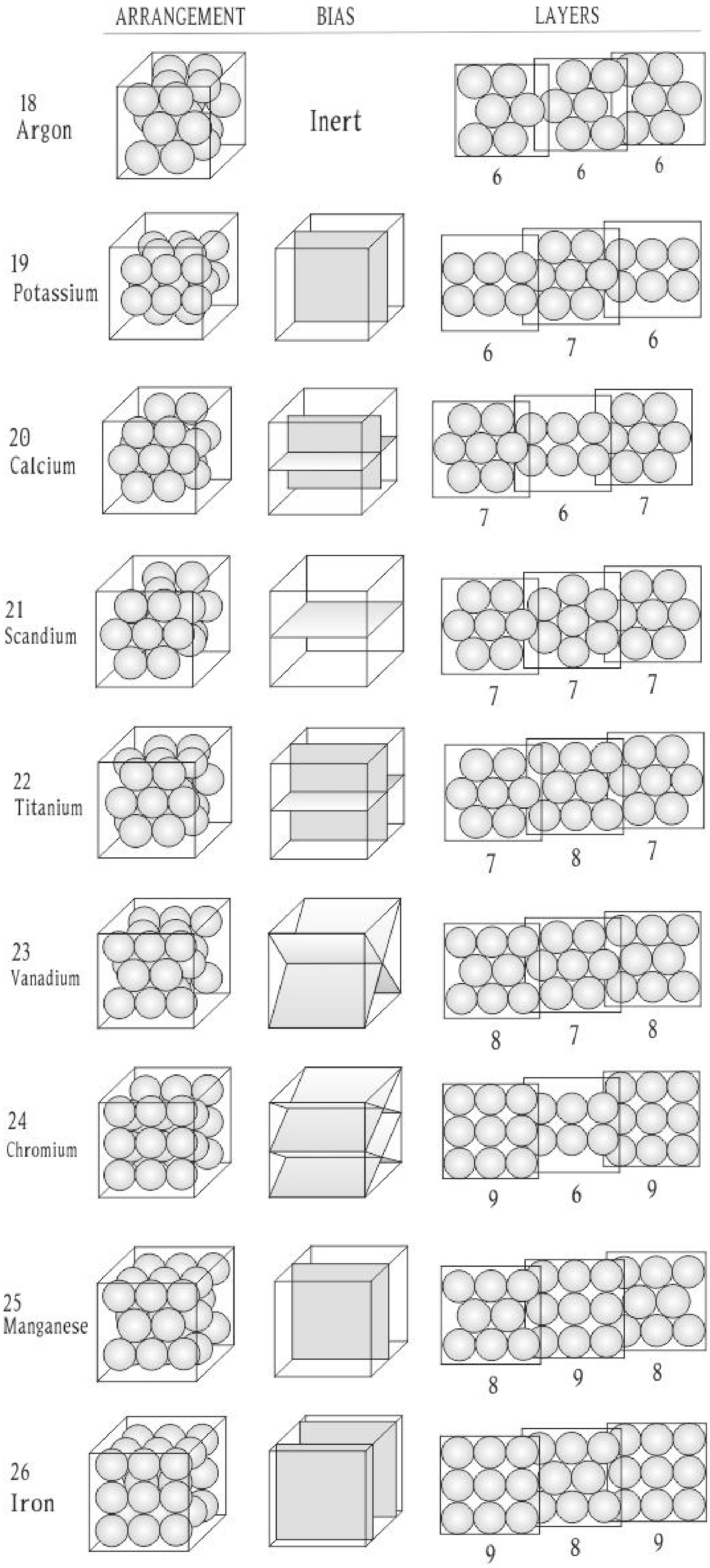
An "allotrope" of an Element has atoms with different properties than the predominant properties. The Geocubic Model makes clear that an allotrope is a different valid Sphere arrangement.

Neon(10) is shown below in energized form. This explains how a neon light works, by electricity energizing the atoms to form a diagonal Bias of 6 Spheres. By switching off the electricity, the Neon reverts to the inert form and the Bias energy is released as light. The electricity is switched on and off rapidly such that the flickering effect is smoothed out.



3-Layer Elements

Illustrated below, starting with Argon(18), and extending to Iron(26), every Element has a valid arrangement. The law of symmetry and order dictates that the Spheres take on 3 layers.

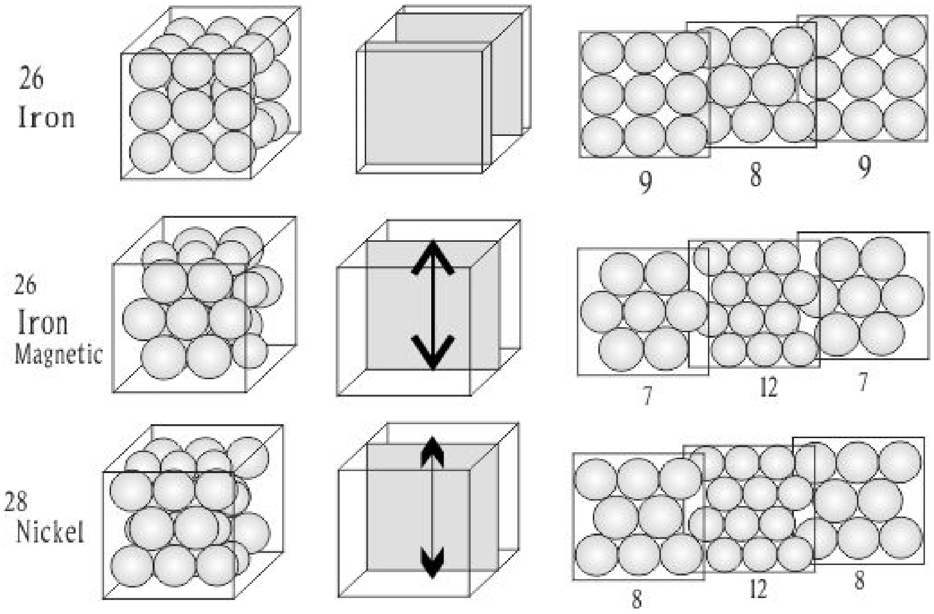

ARRANGEMENT
BIAS
LAYERS
18
Argon
Inert
6
6
6
19
Potassium
6
7
6
20
Calcium
7
6
7
21
Scandium
7
7
7
22
Titanium
7
8
7
23
Vanadium
8
7
8
24
Chromium
9
6
9
25
Manganese
8
9
8
26
Iron
9
8
9

Cobalt(27), with layers of (9,9,9), or cubic fill of (3x3x3), violates the 3-dimensinal symmetry exclusion.

A layer is not stable after 9 spheres until 12 spheres can be supported.

Magnetism is associated with layering where Bias planes have numbers of Spheres out of proportion to the non-Bias Spheres. This imbalance distorts the 3-dimensional gravity of the atom upon a 2-dimensional plane.

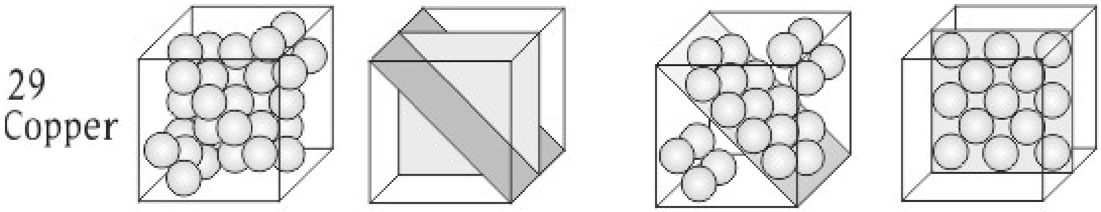
Iron(26) normally has a stable 3-layer (9,8,9) arrangement, but it can be energized to take on a strong magnetic layering of 7-12-7. Magnetic Iron(16) will gradually magnetize un-magnetized Iron in contact by converting it to the magnetic allotrope. Applied electricity has a temporary magnetizing effect on Iron. The strength of the magnetism is proportional to the percent of magnetized Iron atoms in a magnet.

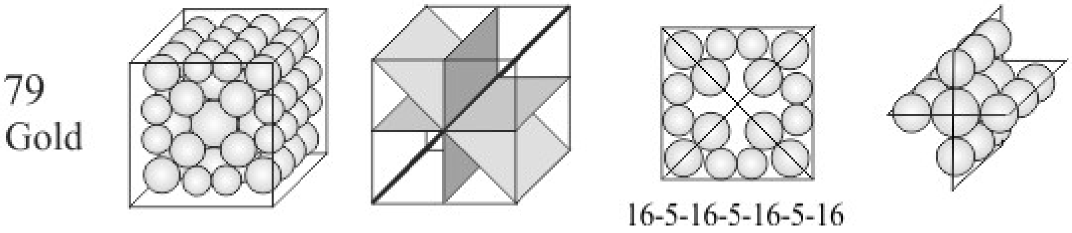


Nickel(28) has layers of 8-12-8 (12/8 =3/2 =1.5), which makes it magnetic.

Combination Biases

Copper(29) has a perpendicular Bias and a diagonal Bias, producing a warm color in reflected light (unlike the silvery color of most other metals). The compound Bias also makes it malleable because the crystal alignments along Bias planes can shift between the 2 Bias types *(all Bias planes of the Elements can quantum-rotate in the interior of the cube).*

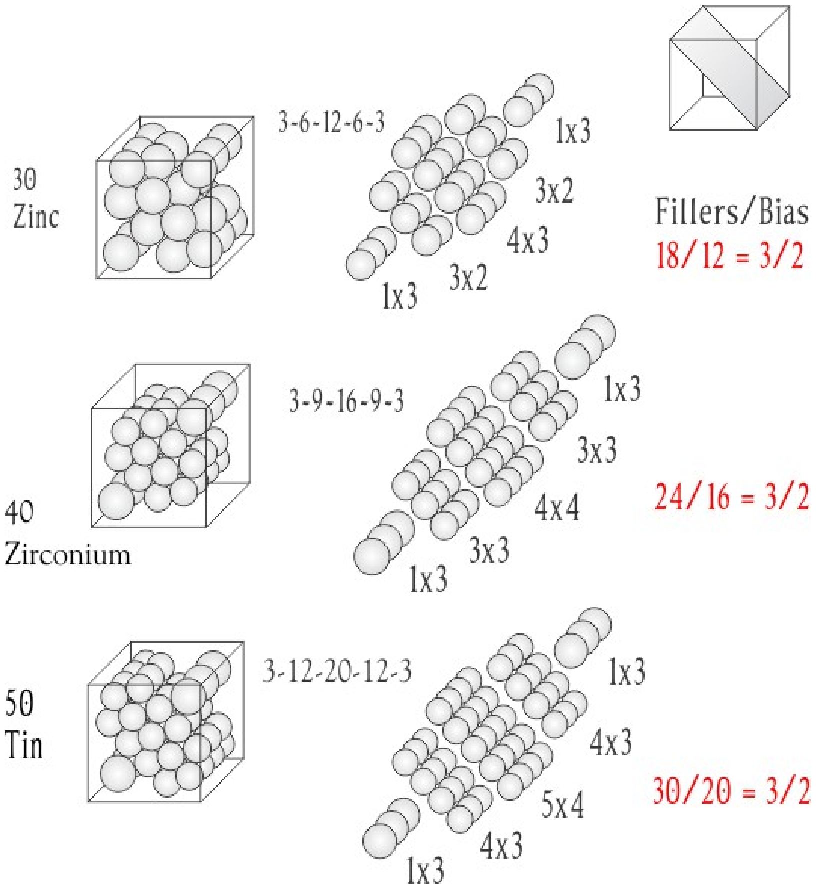




Gold(79) also has a unique Bias similar to Copper(29), but even more malleable and warmer in color due to twice the number of perpendicular and diagonal Bias planes.

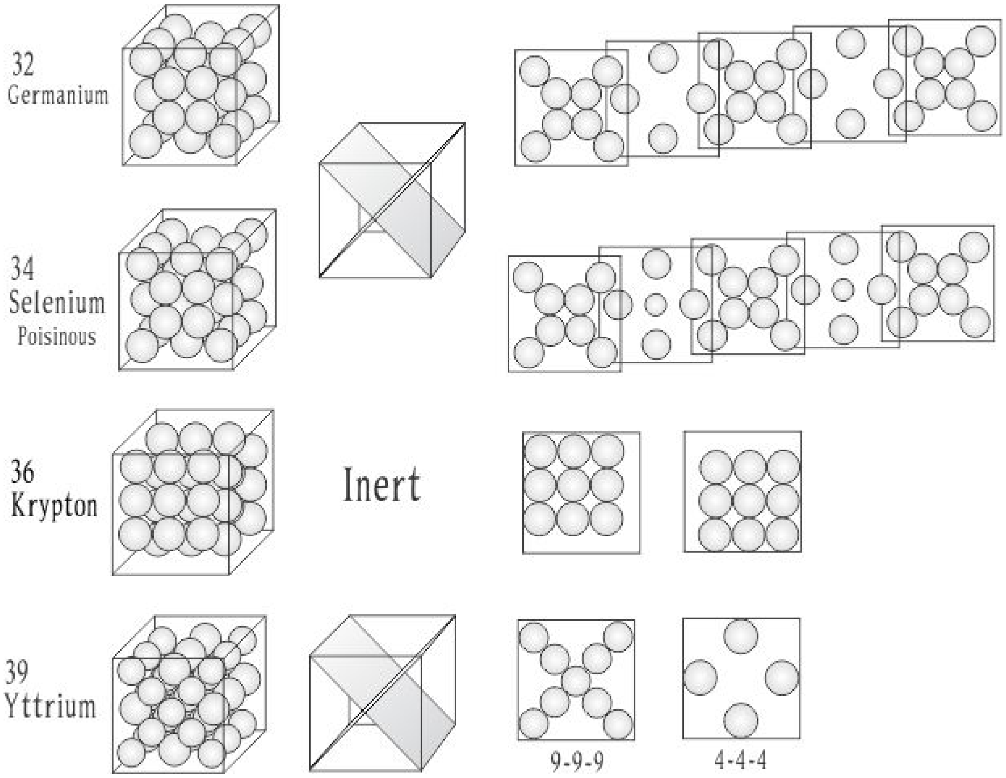
The x10's

The Elements 30, 40 and 50 are divisible by 10, and have a diagonal Bias, all with similar diagonal layering as shown below. Their ratios of non-Bias Spheres (termed "Fillers") to Bias Spheres are all **3/2**.



The 3-Layer Crossing Bias

Crossing Bias starts at 32 with three 8-Sphere crossing layers, and fillers offset to intermediate positions between layers.



At Yttrium(39), 3 layers of 13 is too shallow in depth to be supported. Instead 3 layers of 9 in a cross are intersperced by 3 layers of 4 larger offset Spheres (as shown above).

The Refractory Group

The refractory metals are classified by the physical property of being resistant to heat and wear. They are grouped in the mid-section of octaves 3, 4, and 5. The most resistant are shown in red in the periodic table below.

The 4 Elements (41 42 73 74) have a similar Sphere arrangement and Bias (they are enclosed in a square below).

Abbreviated Conventional Periodic Table

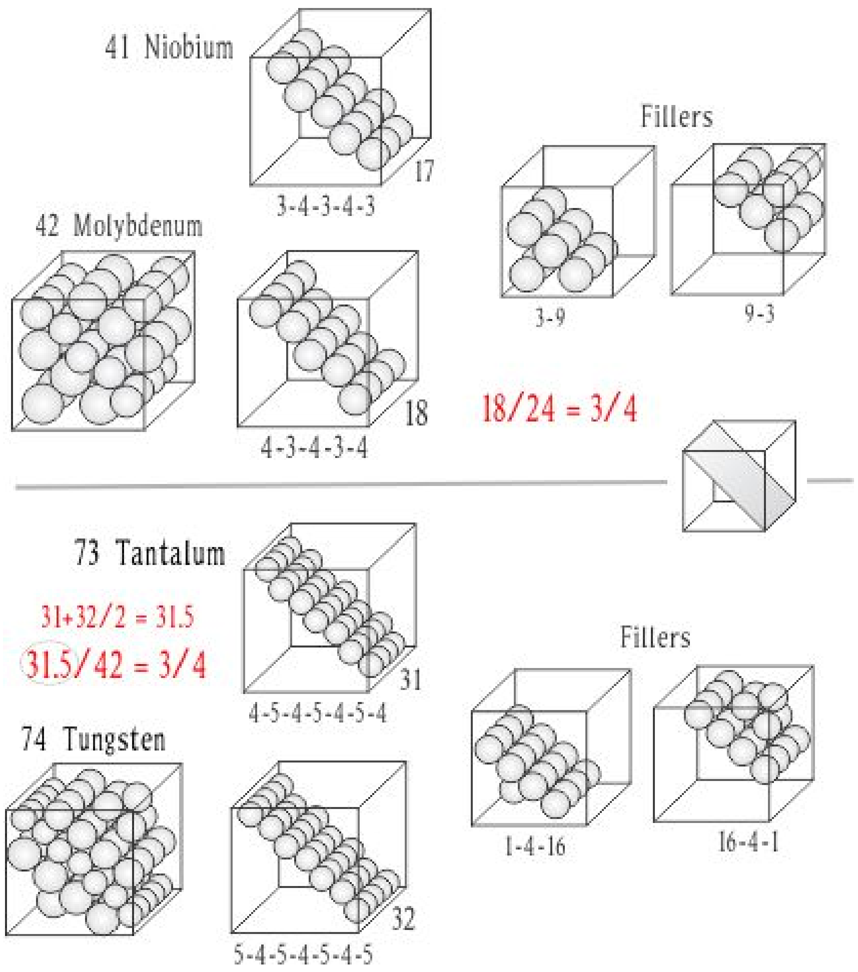
Refractory Metals
Red - Major
Blue - Minor

1																	2
3	4											5	6	7	8	9	10
11	12											13	14	15	16	17	18
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
55	56	57...	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86
...																	

The "refractory group" have a similar diagonal arrangement to the 10's group, except the 10's group have aligned rows and the 4 refractory Element Bias's alternate offset rows (of [3 & 4] for 41,42 and [4 & 5] for 73,74)

The Niobium(41) Bias alternates 3,4,3,4,3 =17.
The Molybdenum(42) Bias alternates 4,3,4,3,4 =18.
Both have 12 fillers on each side of the Bias.

Molybdenum(42) has a ratio of Bias to fillers of 18/24=**3/4**. Niobium(41) is one Sphere short of the 3/4.



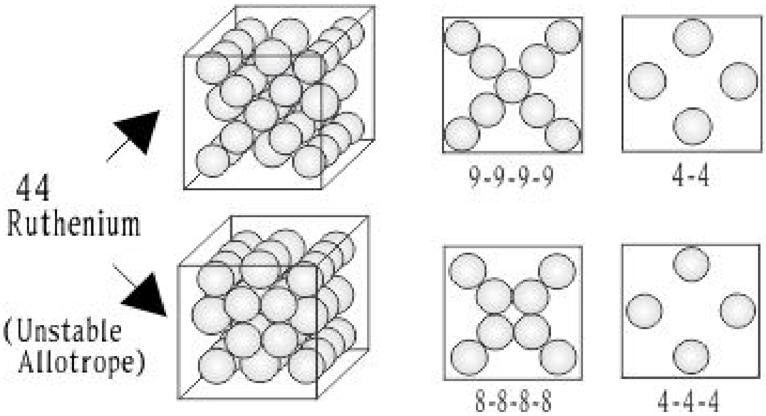
The Tantalum(73) Bias alternates 4,5,4,5,4,5,4 =31.
The Tungsten(74) Bias alternates 5,4,5,4,5,4,5 =32.
Both have 21 fillers on each side of the Bias.

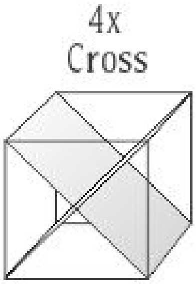
The Tantalum(73) and Tungsten(74) average to 31+32 /2 =31.5, each having 42 fillers, and 31.5/42 =**3/4**.
Each is ½ off the **3/4** ratio.

Transition to 4 layers

Element 43 does not occur in nature.

Ruthenium(44) is caught in a transition between
4 crossing layers of 9 Spheres, with 2 offset filler layers of 4, and
4 crossing layers of 8 Spheres, with 3 offset filler layers of 4.



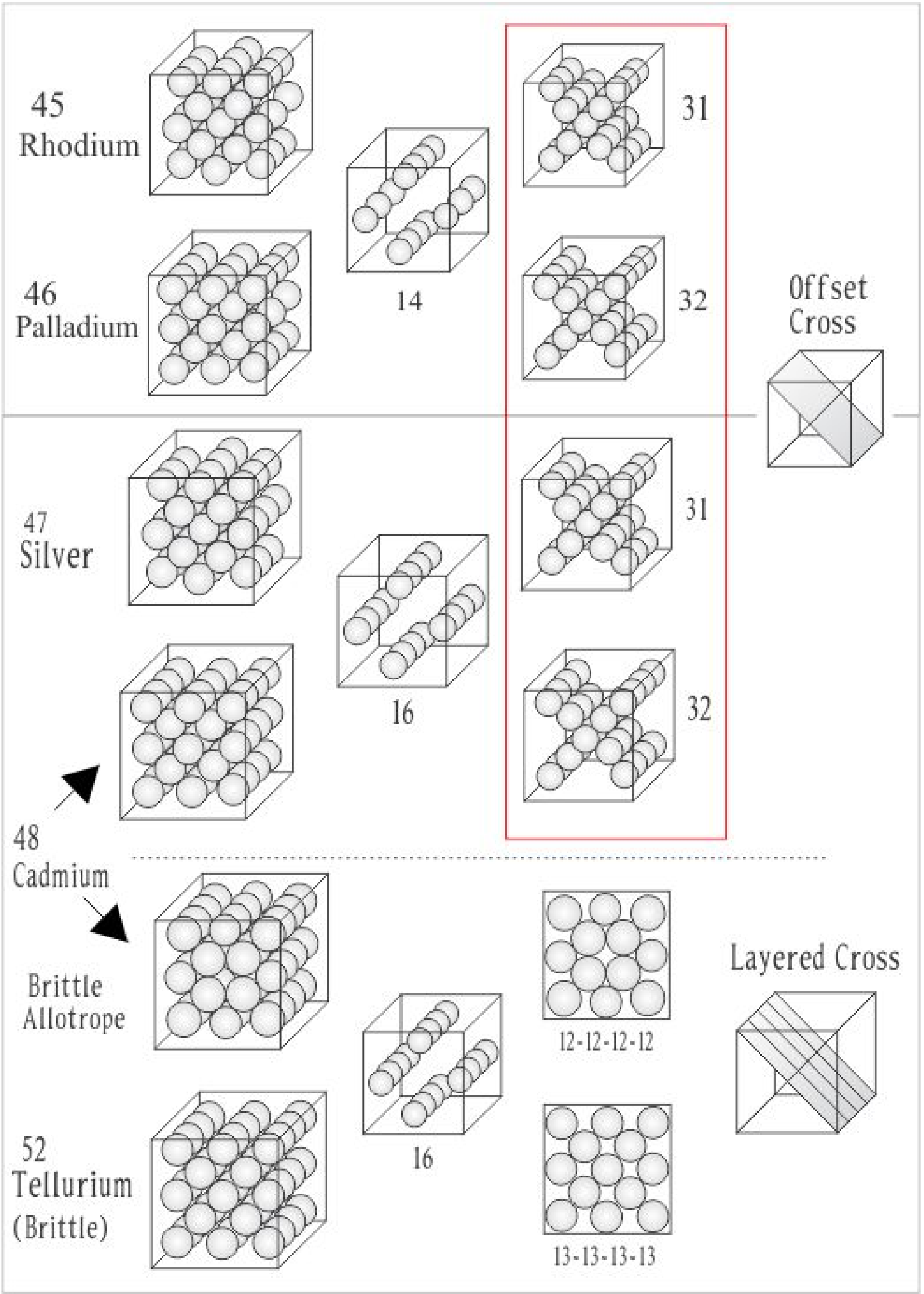


Offset Crosses

Starting with Rhodium(45), offset Bias-crosses form.

Rhodium(45) has a 31 Bias-Sphere-cross (rows of 3,4,3,4,3) -- Silver(47) also has rows of (3,4,3,4,3)
Palladium(46) has a 32 Bias-Sphere cross (rows of 4,3,4,3,4) -- Cadmium(48) has rows of (4,3,4,3,4)

The difference between 45&46 and 47&48 is that the fillers advance from 14 to 16.



Cadmium(48) has an allotrope of 4 layers (of 12 Spheres each). This is the first full "layered-cross" arrangement.

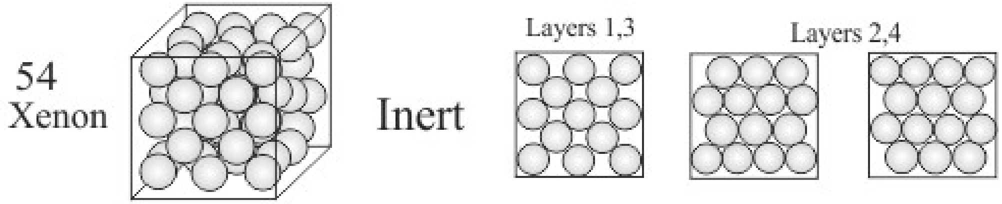
Tin(50) is shown with the x10 group (30,40,50)

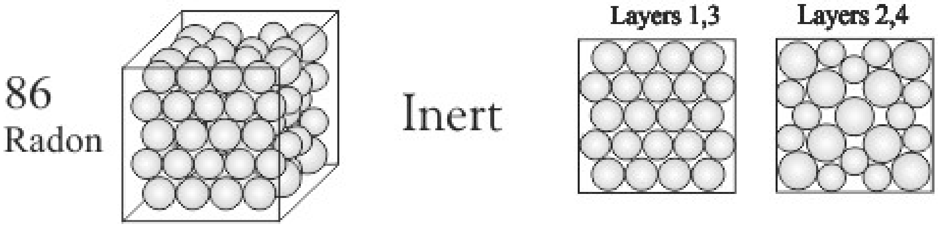
Tellurium(52) has four 13-Sphere layered-cross layers.

Both the Cadmium(48) allotrope and Tellurium(52) are brittle because of their layer regularity.

Layer Shift

With the inert Element Xenon(54), 4 layers are alternated that force some of the Spheres of the layers to shift out of their plane, preventing any Bias.



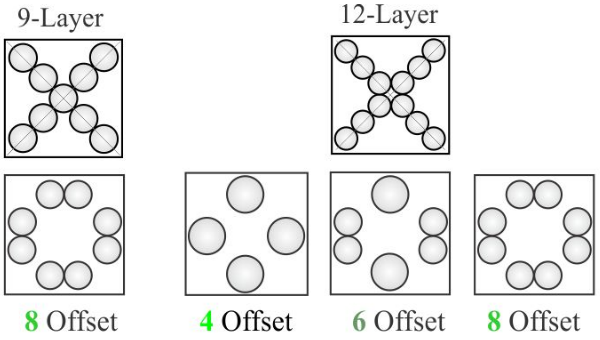


Radon(86) has a similar inert arrangement.

The Neodymides (58 to 72)

Conventional Lanthanides (57 to 71)

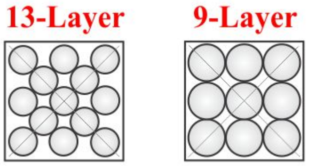
The Lanthanides variously utilize the 4-layered-cross forms (shown below) of 9 or 12 Spheres, with offset fillers between the layers. Neodymium(60) is known as the "true Lanthanide".



58-72 Neodymides

(Conventional 57-71 “Lanthanides”)

Layer/Offset Sequence Symmetry Required

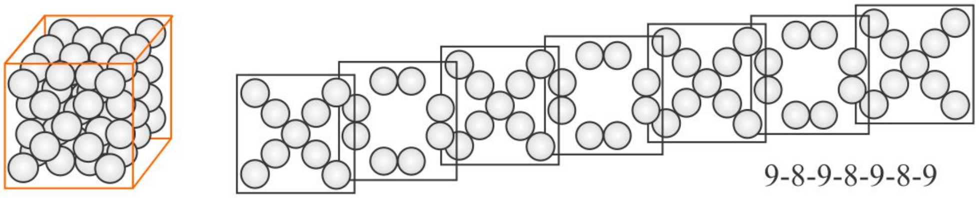


Center Layers for Odd Number Elements

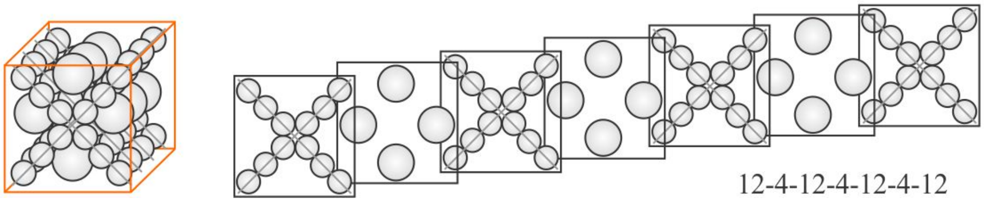
58=12,4,9,8,9,4,12	(4 layer) Cerium
60= 9,8,9,8,9,8,9 or 12,4,12,4,12,4,12	Neodymium
62= 9,8,12,4,12,8,9	Samarium
64=12,4,12,8,12,4,12	Gadolinium
66=12,8,9,8,9,8,12	Dysprosium
68=12,8,12,4,12,8,12	Erbium
70=12,8,12,6,12,8,12	Ytterbium
72=12,8,12,8,12,8,12	Hafnium

59= 8,9,8,9,8,9,8	(3 layer) Praseodymium
61= 4,12,8,13,8,12,4 or 6,12,6,13,6,12,6	Promethium
63=12,4,9,13,9,4,12	(5 layer) Europium
65=12,4,12,9,12,4,12	Terbium
67=12,6,9,13,9,6,12	Holmium
69=12,4,12,13,12,4,12	Thulium
71=12,8,9,13,9,8,12	Lutetium

60
Neodymium
“True Lanthanide”



60
Neodymium
Allotrope
(Higher Energy)

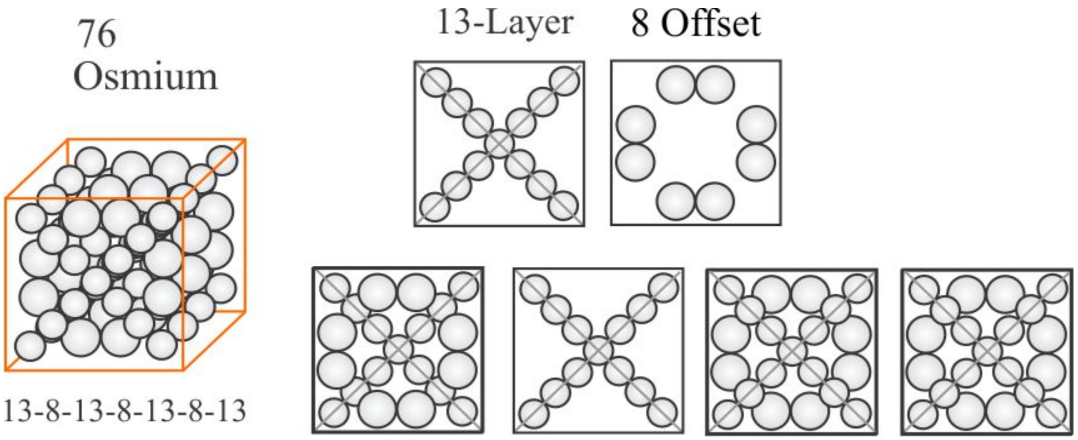


Tantalum(73) and Tungsten(74) are diagrammed in the Refractory Group with Elements 41 and 42.

Rhenium(75) is considered a Refractory Element because it can bond to:
Rhenium(75)Tungsten-form(74) -- Rhenium(75)Osmium-form(76)

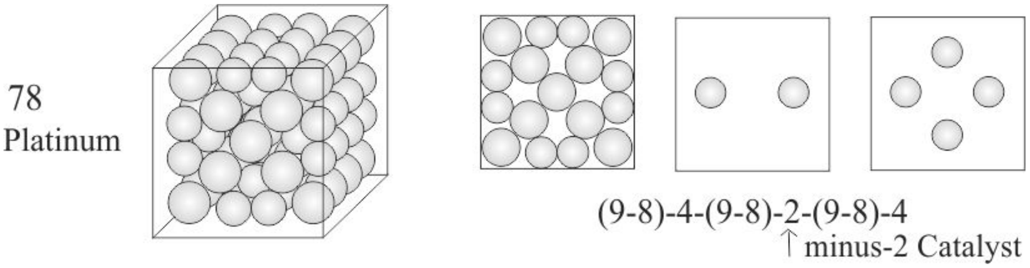
The Heavy Elements

Osmium(76) is the heaviest Element.

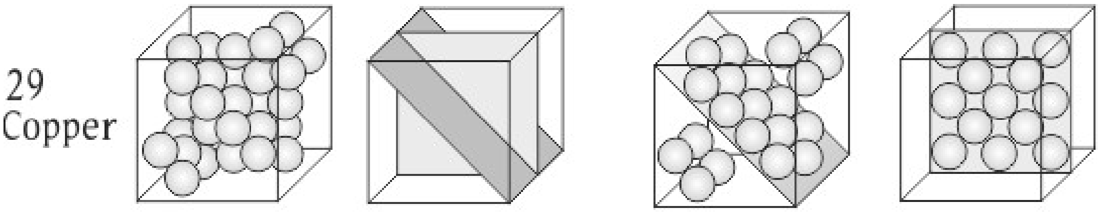


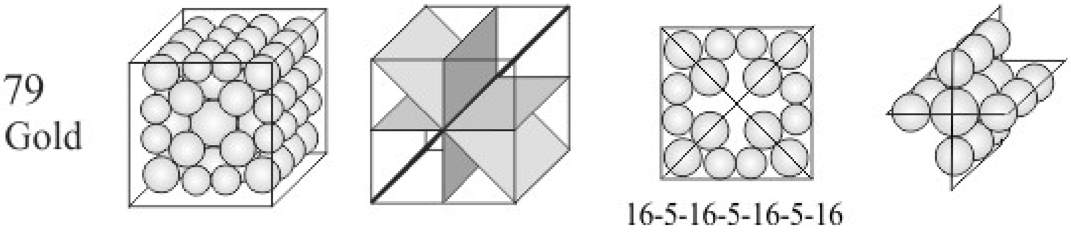
Iridium(77) (rare and with a very high melting point) can bond to:
Iridium(77)Osmium-form(76) -- Iridium(77)Platinum-form(78)

Platinum(78) is the Element defining the Isotope Balance Equation.

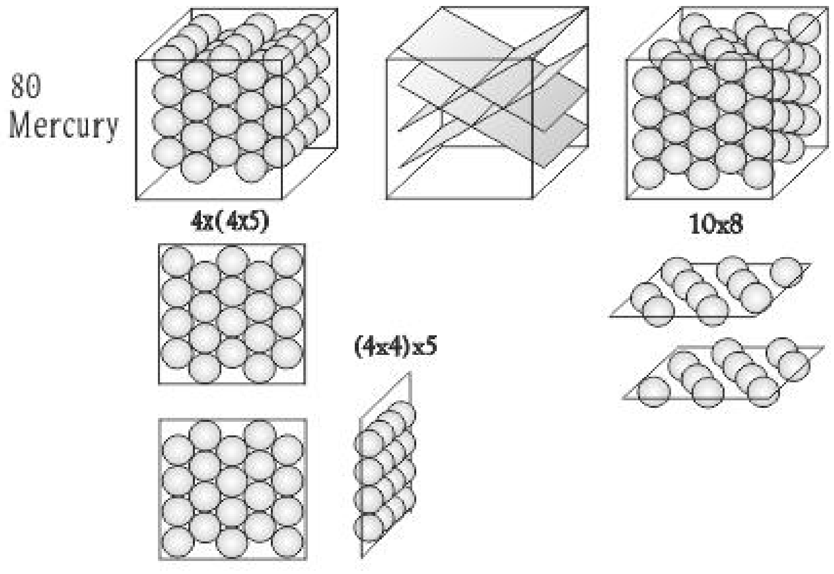


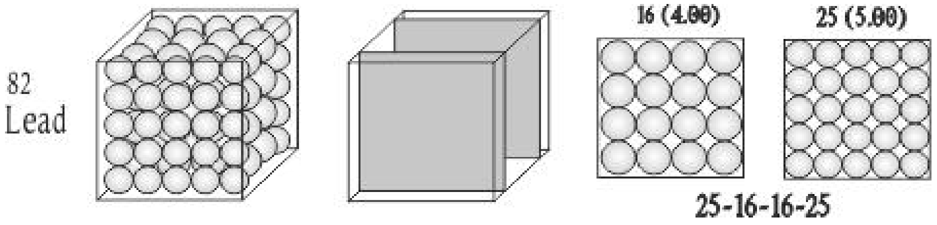
Gold(79) has a unique Bias similar to Copper(29), but even more malleable and warmer in color due to twice the number of perpendicular and diagonal Bias planes.





Mercury(80), with 4 offset 20-Sphere layers, has a 'liquid Bias" due to the unfilled space on each layer that allows the arrangement to in-effect shift between 4 layers of 4x5 and 5 layers of 4x4. This shift is illustrated as 8 offset layers of 10 Spheres. The effect of this shifting is that the metal acts like a liquid at room temperature.



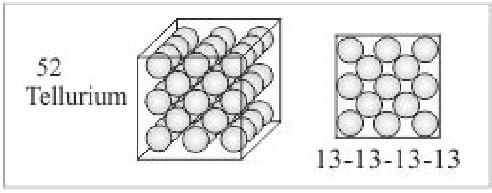


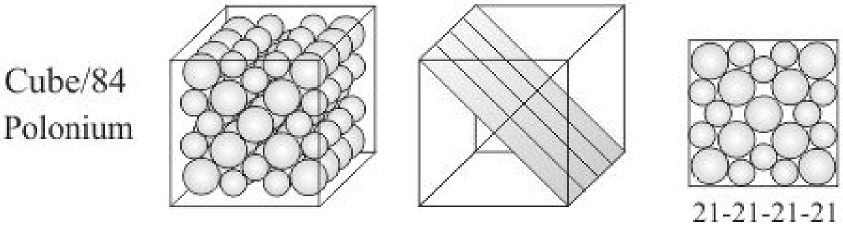
Lead(82) introduces the “Shield” layer of 25 Spheres. The shield layer is highly compact and able to reflect light down to the x-ray and gamma-ray size (shielding from x-rays), but a Shield-layer requires internal support. For Lead(82) the 2 layers of 16(4.0) support the 2 layers of 25(5.0).

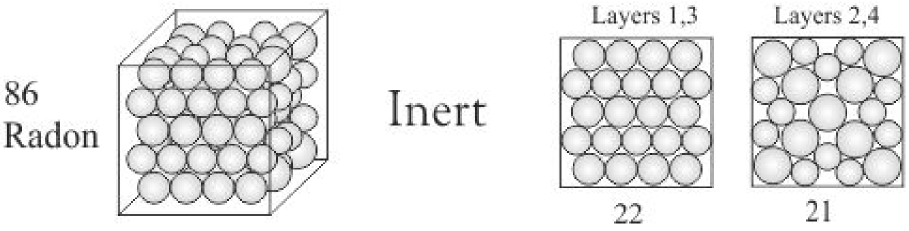
Radioactive Elements

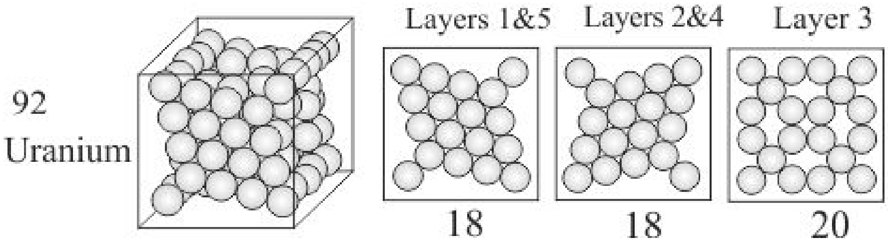
The Elements between Bismuth(81) and Lawrencium(103) are radioactive. For the Elements up to Radon(86) the radioactivity is caused by Sphere sizes imbalance introduced by symmetry requirements.

Polonium(84) has a similar arrangement as Tellurium(52), which is why it has the nickname “Radio-Tellurium”.







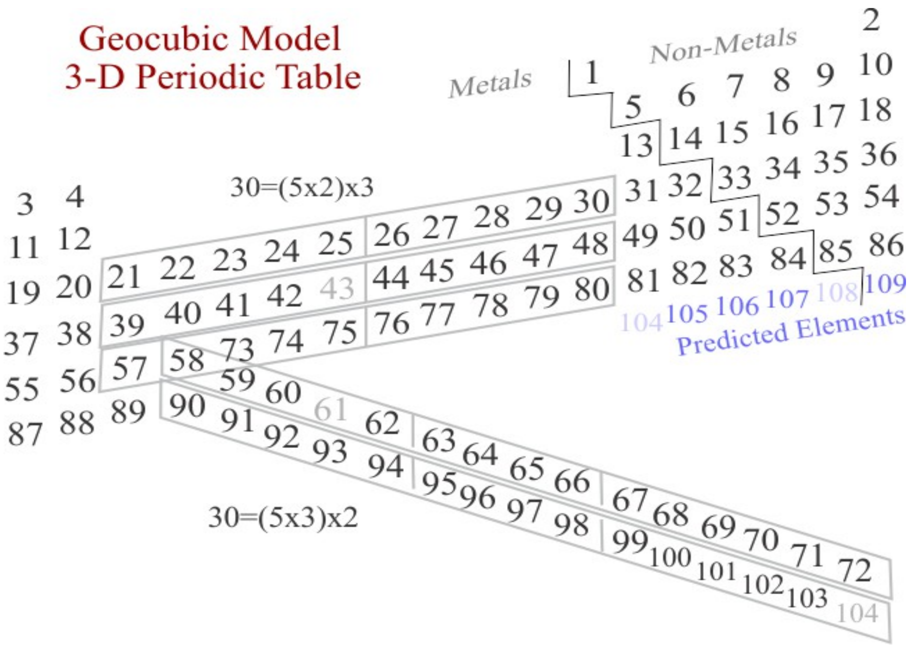


With the exceptions at Uranium(92) and Plutonium(94), the Elements between Frankium(87) and Lawrencium(103) the radioactive decay is due to "Shield Intervention", meaning the Shield layer repeatedly forms but insufficient support causes the Shield layer to immediately collapse.

At Uranium(92), while still radioactive, a 5-layer form of 18,18,20,18,18 avoids the Shield layer and provides the last naturally occurring Element. Plutonium(94) is a man-made Element with layers of 18,20,18,20,18.

Predicted Non-Radioactive Elements 105, 106, 107, and 109

In the Geocubic Model, names are assigned for the Elements from 104 to 109. These Elements complete the 6th octave of Elements.

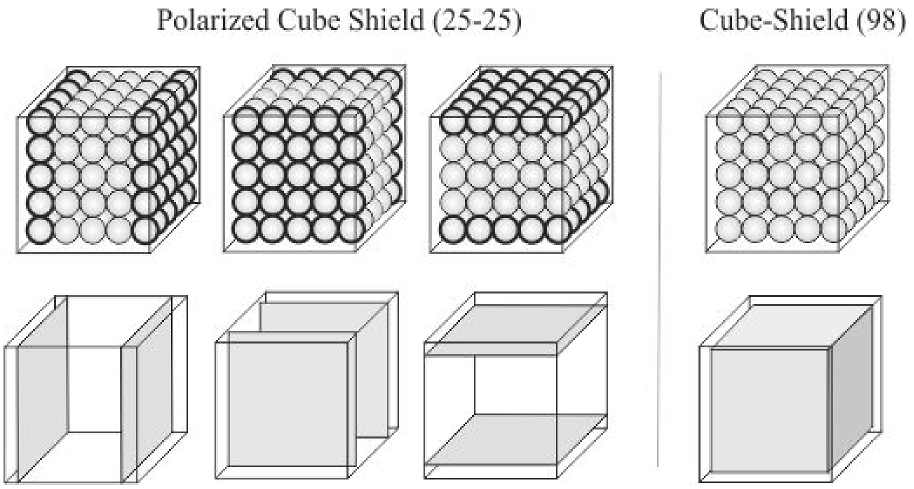


Without scientific data regarding the predicted Elements to go by, the deductions of the Sphere arrangements and Bias planes are purely speculative.

Element 104 is named “Vortexium”, Vo(104), because the Shield planes are predicted to collapse in a progressive shifting resembling a vortex. Scientists claim it has been produced, but in effect it has never existed.

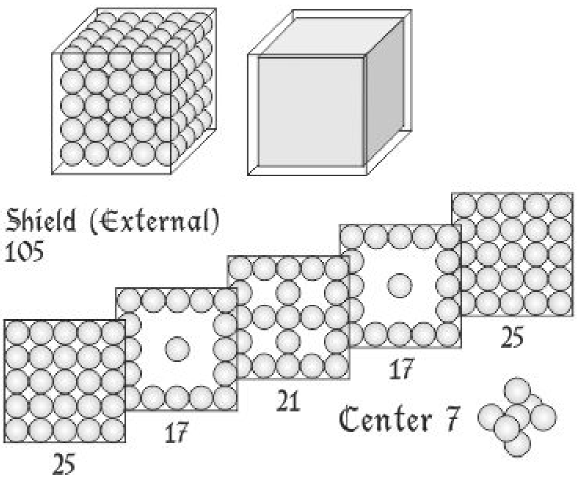
Cube-Shield

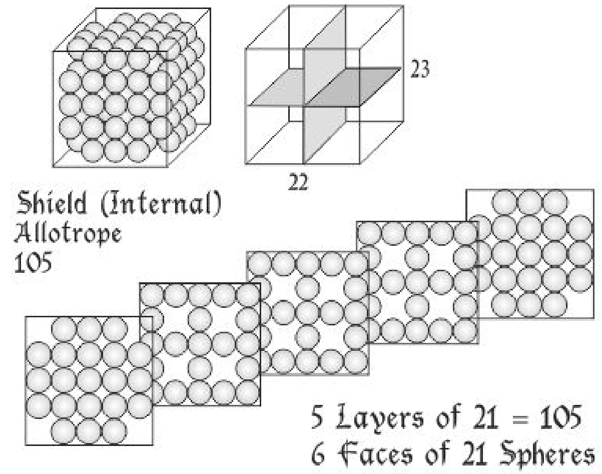
It only requires 98 Spheres to fill all 6 faces with 25, because Spheres are shared at edges. It could be that 2 opposite faces are polarized into 25-Sphere Shields, or that all 98 spheres act as a Cube-Shield (or both may apply).

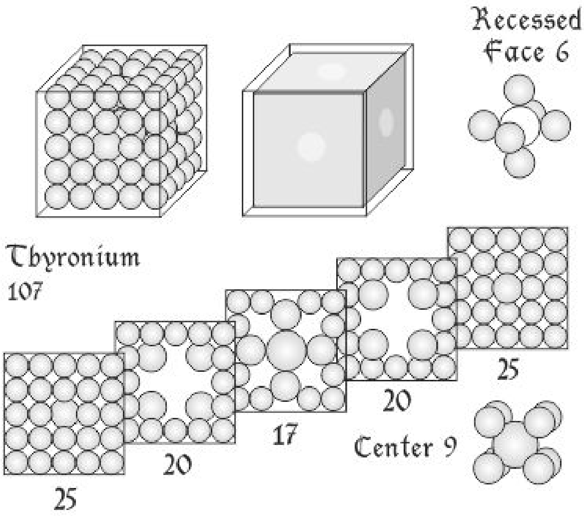


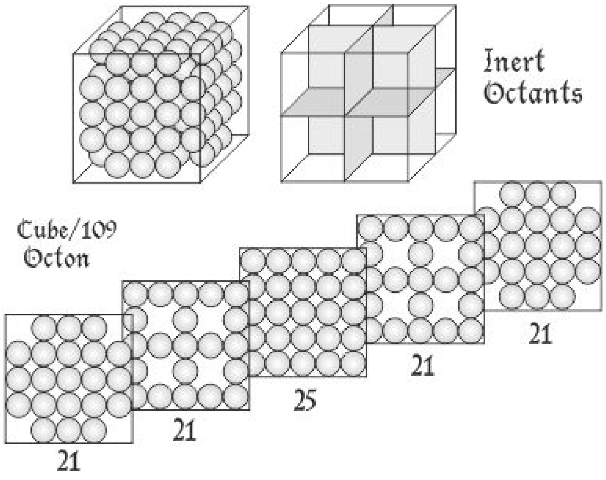
Shield(105) Space-ship Skin

For Element 105 there are 7 Spheres interior of the surface Spheres (105-98=7), and this allows for the 6 Shield faces to each be supported at the face centers, with a central Sphere supporting the 6 supporting Spheres, as diagrammed below-upper-left. Element Sh(105) is predicted to be heat and radiation resistant. It has not been produced because Vortexium disrupts the Shield-planes, and a critical mass is required to buffer the disruption. It will be produced when the technology advances to sufficient energy for producing the critical mass. There could be an allotrope of Shield with 8 empty corners, and these 8 filling the interior such that the Shield-planes produced are interior (see below-upper-right).









Predicted Element Ty(107) (above-bottom-left) has 9 central Spheres, with eight Spheres at the interior-corners, supported by a central Sphere. This leaves the face-centers unsupported and they recess (and expand) to fill the gap toward the center Sphere. For this reason the faces form a 24-Sphere Shield-plane. In the Bias diagram the face-center gaps are shown faded white.

There might be a highly explosive crystal Element Cr(106) that bonds to:
Crystal(106)Shield-form(105) -- Crystal(106)Tbyronium-form(107)

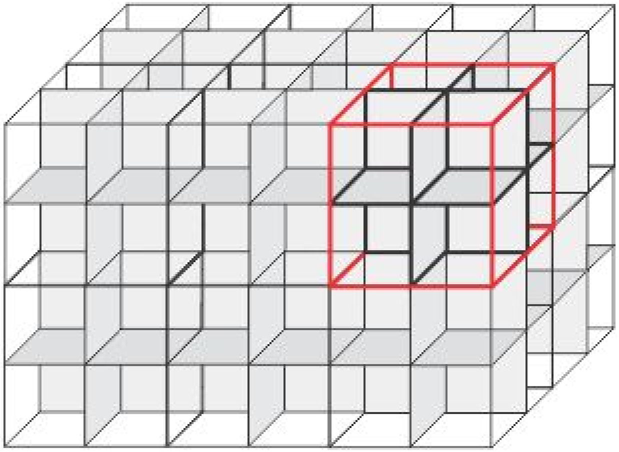
The Octave-Matrix

In Octon(109) the cube is partitioned by 3 Shield-planes (see above-lower-right). The 8 corners are empty and the 8 partition-middle positions are empty (a 5x5x5 fill is 125, and 125-16 = 109).

The 3-D Periodic Table predicts Element 109, is "inert", and this is in spite of having 3 crossing internal Bias planes. The inert status is because of the law of the "Cubic-Matrix" that dictates the Geocubic Matrix, which means the Bias partitions the cube into 8 empty (Void) sub-cubes. This Element is assigned the name "Octon", Oc(109), with an alternate name of "Lockon", Lo(109). The name Lockon is due to the effect of locking the 8 sub-cubes to the unit-cube.

Octon(109) is the last Element, and as an octant of empty cubes in the unit-cube, is in effect an octave Geocubic Matrix.

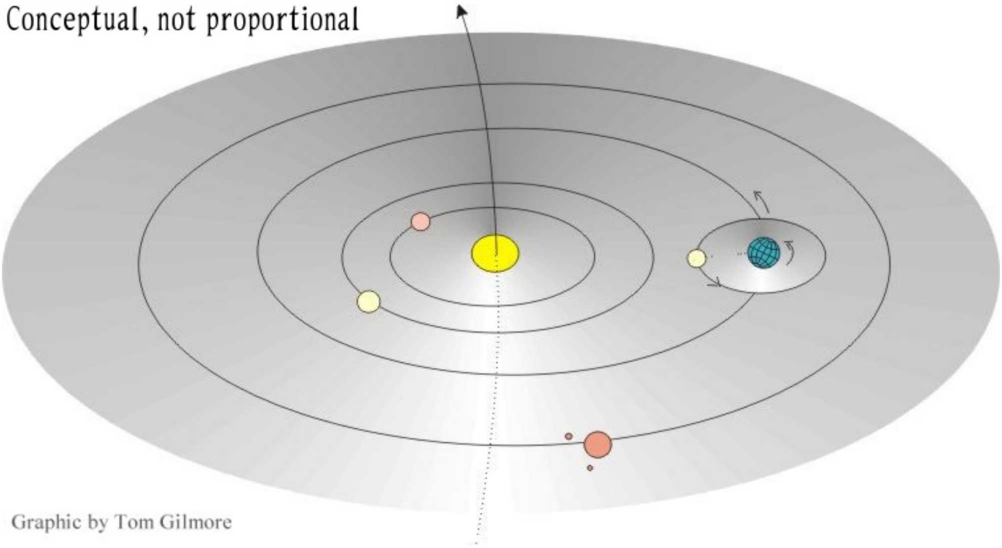
The Octon(109) crystal is illustrated below, highlighting the unit-cube at upper-right-front in red outline.



It may be that **black-holes** are a massive Octon crystal. The Octon atoms would form a heavy compact mass projecting significant gravity that holds the Solar Systems in orbit around it, and the internal Bias planes would block light from passing through, making it dark.

Astrophysicists assume absurdly that the black hole is black because light cannot escape the gravity, rather than simply that it is not emitting light and matter is blocking light behind it. Based on the massive extent of this imagined greater-than-light gravity, their calculations indicate that all the solar bodies in our galaxy should have already been drawn into its central black-hole. Instead of reassessing their gravitational premises, academic physicists preposterously claim that invisible matter (“dark matter”) must exist outside the galaxy that counteracts the gravity from the black hole.

There are 2 ignored factors that account for the galactic phenomenon, first is the actual gravity of the black hole that does not suck up everything, and second is the gyroscopic effect of solar systems that orbit their planets on a plane perpendicular to the orbit of the solar system around the black hole.


Conceptual, not proportional

Graphic by Tom Gilmore

This probably generally accounts for the distance of solar systems from the black hole by the relative gyroscopic mass inertia of the orbiting planets.