

# MEA device test for differences in ORP, pH, EC and Voltage for various waters

## Introduction

The purpose of this paper is to describe a range of measurements that define the difference between structured and unstructured water. Structured water is defined as water with a hexagonal (six-sided) crystalline structure and negative charge (ie. most pristine, natural flowing water systems) and unstructured water has a pentagonal (five-sided) crystalline structure with a positive charge. Most urban or other still waters are unstructured.

The structured water used in the experimental measurements described in this paper was produced using a **Phión Magnetic, Energised and Activated (MEA) water conditioning device**. Phión MEA water devices were developed by Robert Gourlay (Chief Scientist of Resonate Research Pty Ltd, trading as **Phión**) and have been awarded **4 Australian Innovation Patents** and are unique in that they produce structured water with a **permanent negative charge** and **eliminate pathogenic microbes** (eg. E. coli). The permanent negative charge in the Phión structured water also has other features, particularly in the way that the water responds energetically and chemically to other environmental influences (epigenetics). This includes the Quantum Code Technology (QCT) developed by One08 Inc. USA and imbedded into the MEA water device for experimental testing. Preliminary results are in the Table on page 5.

Robert Gourlay's initial research for the design of a water unit commenced in 2003. This involved collaboration or discussion with people from Australia (inventors of magnetic and other water conditioning devices), Austria (Georg Gaupp-Berghausen) and Russia (Dr. Konstantin Korotkov whom he met in London in 2008). In 2008, he read the scientific papers of Dr. Mae-Wan Ho (London), her first book on the topic of structured water: *Rainbow and the Worm*, and her latest book *Living Rainbow H<sub>2</sub>O*. This led him to research by Dr. Martin Chaplin and Dr. Gerald Pollack's on Structured Water (2012).

Since the 1990's, Robert Gourlay also studied the works of Victor Schauburger, Jacques Benveniste, and Paolo Consigli, whose book titled *Water, Pure and Simple* is a very good summary of water as a unique molecule. There are many other water scientists who have *crossed the line* into water memory including Emoto, Schwenk, Vittorio Elia (including homeopathic solutions), Giuliano Preparata and Emilio Giudice. Robert has also extensively researched the subtle energy and geometry of life forms, from the works of numerous authors.

These people provide interesting insights into the energy, geometry and structure of water. However very few people have managed to apply this knowledge and invent water conditioning devices that turn positively charged (+) water from a still or stored state (the

urban water that most people drink) back to its original natural state of negative (-) charge and keep it in this state for more than 2 days. Robert Gourlay achieved this result in September 2012, using a unique configuration of North magnets and copper that took nearly 9 years to develop and achieve a successful outcome. Comparative tests were also conducted on water conditioning devices developed by others.

## Structure of Water

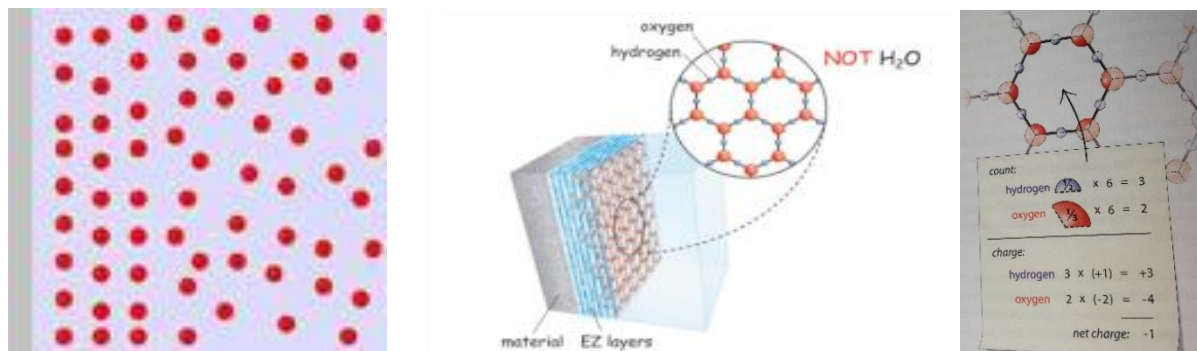
Structured water is found in the cytoplasm of healthy tissue. It has a high solubility for the body's minerals, so minerals and vitamins (which are formed with structured water), tend to go from the digestive tract and bloodstream into the tissues. Structured water can be formed using lights, magnets, temperature changes, quartz crystals, pyramids and sounds. Structured water formed with blue light or a North Pole magnetic energy field has an increased **surface tension**, and increased mineral solubilities and therefore numerous healing effects on the body. Also, the North pole magnetic energy and water is known to stop the growth of pathogenic bacteria and cancer tumors (see research of *Davis and Rawls*)

It is worth mentioning here that **surface tension** is a phenomenon with water that we see in our everyday life. Many biological performances and natural processes involve an understanding of wetting and interfacial tension where most biochemical reactions occur not in solution but at the surface and interface. Human biological fluids such as serum, urine, gastric juice, amniotic fluid, digestive, urinary and reproductive tracts, endocrine glands, etc. contain numerous surfactants, proteins, and lipids. These low and high-molecular weight surfactants are the common materials in various tissues of the body which control surface tension of human interfaces. The physicochemical processes that take place in these interfaces are of fundamental importance for various tissues and the vital function of body organs. Therefore, given that humans consume liquids of various surface tensions, there is no health benefit from selecting a water with high, normal or low surface tension. Despite this diversity in surface tension of consumed liquids, a common feature of various human disorders that underlies the physicochemical and biochemical factors is surface tension. Changes in the surface tension behavior of human fluids are characteristic for some diseases due to cellular stress. Human fluids contain numerous low-and high-molecular weight surfactants, proteins and lipids that adsorb at the fluid interface (eg. cell membrane). The composition of these fluids varies with age, sex, health condition and therapeutic treatment. However, it can be assumed that the integrity of the cell function, particularly the external and internal membrane (water interfaces) of cells, is significantly influenced by water structure through enhanced oxygen supply, hydration, mineral exchanges and detoxification. For example, cellular stress can cause the mitochondria in the cell to stop using oxygen and use start using glucose: this is a pathway to tumour growth and cancer.

The quantum electrodynamics theory of water put forward by Del Giudice and colleagues provides a useful foundation of structured water for a *life-affirming* state. In natural systems, it is the interaction of light with flowing (vortices), liquid water that generates quantum **coherent**

**domains** in which the water molecules oscillate between the ground state and an excited state of water's full potential in cells. Theory suggests that interaction between the vacuum electromagnetic field and liquid water induces the formation of large, **stable coherent domains** (CDs) of about 100 nm in diameter at ambient conditions, and these CDs may be responsible for all the special properties of water including life itself. Consequently, this oscillation produces a plasma of free electrons favouring redox reactions, the basis of energy metabolism in living organisms. Coherent domains stabilised by surfaces, such as cell membranes and macromolecules, provide the excited interfacial water that enables plant photosynthesis to take place, on which most of life on Earth depends. Excited water is the source of superconducting protons for rapid intercommunication within the human body. **Coherent domains can also trap electromagnetic frequencies from the environment (epigenetics) to orchestrate and activate specific biochemical reactions through resonance, a mechanism for the most precise regulation of gene function** (ie. see section on Quantum Code Technology: QCT on page 12).

It is now well known that the region of a liquid that bounds a solid surface is more ordered than within the bulk or normal liquid structure. This has been confirmed for the case of water in contact with silicon, in which the liquids layer's form layers, as found in liquid crystals. (The illustration on the left below is from a 1999 article in *Physical Review Focus*, and the illustrations in the centre and on the right, are from Pollack. These illustrations show the interfacial layer and net negative charge on hexagonal, structured water; respectively)

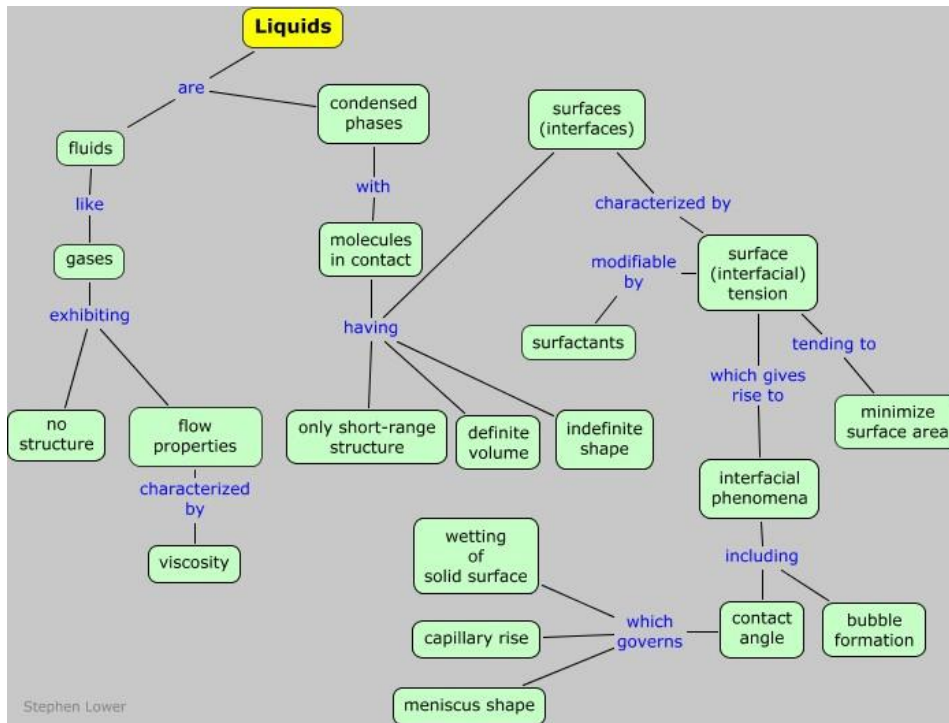


Recent x-ray studies give direct evidence for this structure near the surface of a solid (ie. a boundary or membrane effect). That is, liquid molecules form layers, which have different properties from the whole (bulk) liquid. Physicists have suspected that near the edge of its container a liquid is not a liquid: that its structure differs from the rest of the liquid. The analysis of x-ray reflections from an ultra-thin liquid film atop a silicon surface has shown that near the solid-liquid boundary the liquid's molecules form layers, much like those of some liquid crystals. The work supports a fundamental theory of liquids in confined geometries, conditions encountered in processes such as lubrication and filtration.

This near surface zone structure looks very much like Dr. Pollacks Exclusion Zone (EZ) and could explain a lot about observations made about MEA structured (negatively charged) water that may have this non-liquid structure throughout its bulk area. That is, normal urban and

rainwater (stored in a tank) will have a positive charge and yet behave in a manner when in contact with a surface, like the structure in the diagrams above. However, MEA structured water has been measured to have higher surface tension values, and observed to have greater wetting capacity and less resistance or viscosity when flowing through a pipe.

Traditionally, science sees liquid behaviour as in the diagram below:



This diagram, within current knowledge, suggests that whatever structure simple liquids possess is determined mainly by the repulsive forces between the molecules. That is, the attractive forces act in a rather nondirectional, general way to hold the liquid together (ie. the dynamics of water molecules). It is also found that if spherical molecules are packed together as closely as geometry allows (in which each molecule would be in contact with twelve nearest neighbors as in structured water), the collection will have a long-range order characteristic of a solid until the density is decreased by about ten percent, at which point the molecules can slide around and move past one another, thus preserving only short-range order (as in non-structured water). In recent years, experimental studies based on ultra-short laser flashes have revealed that local structures in liquids have extremely short lifetimes, of the order of picoseconds to nanoseconds.

Clearly, if these measurements or observations are undertaken with non-structured water, then only one view about the dynamics and anomalies of water will be constructed or formed.

It is well known that cells have a negative charge, and it was Dr. Pollack who confirmed that this charge comes from the structured water within a cell. Pollack and others (eg. Ling) have

confirmed that this water is  $H_3O_2$ , as opposed to bulk or ordinary water that is  $H_2O$ . That is, structured water is  $H_3O_2$  and it exists in nature as glacial melt water, all flowing (constant vortexes) water in pristine rivers, creeks and springs.

The measurements below are from experiments by Phi3n to demonstrate that the MEA water is different from ordinary water and is structured water, as it tends to behave like structured water ( $H_3O_2$ ). The table below compares differences between structured and non-structured water for ORP (Eh), pe, pH, pe/pH, EC and voltage.

Description	ORP (Eh)	pe	pH	pe/pH	EC	Voltage (mV)
<b>April 2017 tests</b>						
<b>Braidwood town water (raw)</b>	125	6.2	7.2	0.86	160.4	+800
MEA bottle top treated	98	5.8	7.4	0.78	183.4	-1,300
QCT One08 treated	108	6.0	7.8	0.76	171.6	-1,100
				<b>0.02</b>		
<b>Warrambucca Creek raw</b>	173	7.1	6.6	1.08	129.5	-500
MEA bottle top treated	165	6.9	6.9	1.00	131.1	-800
One08 treated	161	6.8	6.8	1.00	127.4	-1,000
				<b>0</b>		
MEA treated <b>bore</b> water	153	6.7	7.2	0.93	47.6	-130
MEA bottle top treated	149	6.7	7.0	0.96	53.8	-250
QCT One08	157	6.8	6.8	1.00	47.0	-550
				<b>-0.04</b>		
<b>Rainwater</b> tank raw	192	7.3	5.9	1.24	15.55	+9
MEA bottle top treated	200	7.5	6.0	1.25	15.29	-190
QCT One08 treated	211	7.7	5.7	1.35	14.87	-130
				<b>-0.10</b>		
Mangiri <b>pond</b> raw	205	7.6	6.0	1.27	47.3	-24
MEA bottle top treated	181	7.2	6.3	1.14	47.0	-114
QCT One08 treated	190	7.3	6.3	1.16	47.0	-270
				<b>-0.02</b>		
Mongarlowe <b>River</b> raw (flood flow) Mar 2017	179	7.2	6.3	1.14	51.1	-1,300
MEA bottle top treated	190	7.3	6.4	1.14	53.6	-500
QCT One08 treated	171	7.0	6.4	1.09	57.9	-620
				<b>0.05</b>		
MEA treated <b>bore</b> water <b>Oct 2012</b>	157	6.7	7.0	0.96	52.5	-1,270
MEA bottle top treated	159	6.8	6.9	0.99	52.9	-1,270
QCT One08 treated	148	6.7	7.0	0.96	55.5	-1,270
				<b>0.03</b>		
Mangiri <b>Spring</b> water <b>extracted 2013</b>	145	6.6	6.2	1.06	50.8	-250
MEA bottle top treated	165	6.9	6.3	1.10	49.4	-360
QCT One08 treated	175	7.1	6.4	1.11	50.6	-130
				<b>-0.01</b>		

## Table (page 5) Notes

1. **ORP = Eh: pe= Eh+244/59.2**
2. **EC= Electrical Conductivity:** The measure of the amount of electrical current a material can carry or its ability or potential to carry a current. Electrical conductivity is also known as specific conductance. Conductivity is an intrinsic property of a material (eg. Na: sodium).
3. **QCT** = Quantum Code Technology developed by Dr. Robert Williams (**One08** Inc. USA).
4. The test for voltage only applies to waters **tested in April 2017**.
5. The measurement of **ORP, pH and EC** was undertaken with conventional meters.
6. The measurement of the **voltage** was undertaken using a proprietary technology developed by Phi6n and involves a copper probe, a voltmeter (multimeter) and UCurrent device between the Multimeter and the probe.
7. The Phi6n MEA water device used in this experiment was a bottle top (magnetic vortexer) with 2 x 1L bottles.



## Conclusions to tests of ORP (Eh), pe, pH, pe/pH, EC and voltage

Generally, the movements in ORP (Eh), pH, EC and voltage are highly dependent on the water chemistry (mineral composition, and additive like fluoridation and chlorination as in **Town** water) For example, the Mongarlowe **River** water has a rich diversity of minerals compared with the **rainwater** from a tank. Other observations are:

1. The MEA water bottle top device does initiate or trigger a range of oxidation and reduction processes (as with all Phi6n water devices) that are reflected in the changes in ORP, pe, pH and EC due to the mineral composition of the water.
2. Negatively charged (structured) waters with pe/pH values greater than 1.00 generally will have a greater capacity to hold minerals in a colloidal form, resist oxygen reduction (oxidise) and therefore support cellular health.
3. The MEA device will produce and hold a permanent negative charge in all water, regardless of the starting (raw) values (either – or +)
4. The MEA device coupled with the imbedded Quantum Code Technology (QCT) will generally enhance the negative (-) charge in waters with a moderate to high mineral

diversity and abundance, however this is not the case with the mineral deficient rainwater.

5. The MEA water voltage can be inversely related (generally) to the starting voltage value. The more + the voltage in the raw water (eg. **town** water), the greater % increase in - charge. Also, the higher the - charge in the raw water (eg. **river** water), the greater % the decrease in - charge.
6. MEA treated **bore water** that was processed in **October 2012** still (in 2017) has a high negative charge of (negative) -1,270mV. Also, **spring water** that was collected in 2013 from Robert Gourlay's property (Mangiri) still has a (negative) -250mV even though it had not been previously treated with a MEA device. However, this spring water was stored with other MEA water (negatively charged) and through a process of **entrainment** (energy transfer from one body to another) the spring water has retained its negative charge in storage.

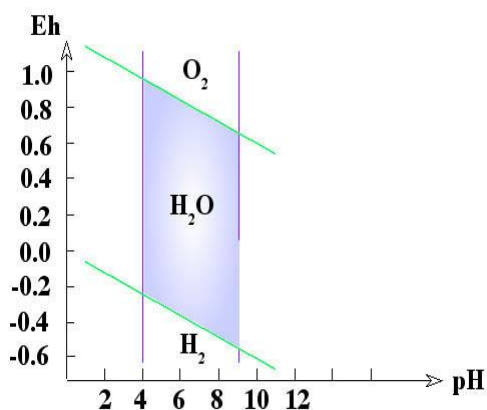
## Oxidation and Reduction in terms of Oxygen Transfer

### Definitions

The Eh–pH diagram below, illustrates the fields of stability of mineral or chemical species in terms of the **activity of hydrogen ions (pH)** and the **activity of electrons (Eh)**. Consequently, the reactions illustrated on Eh–pH diagrams involve either proton transfer (eg. hydrolysis) or electron transfer (oxidation or reduction) or both. In natural environments, pH values can extend from 1 to 9.5 (albeit generally within natural waters from 5.5 to 7.5), and Eh values from -500 to +800 millivolts (mV). This mV value in ORP (Eh) meter is not a measure of water voltage or charge resulting from the restructuring of water. The measurement of water voltage or charge requires a Voltmeter or Multimeter.

- Oxidation is the gain of oxygen
- Reduction is the loss of oxygen

pH - Eh diagram





## The basic pH-Eh diagram

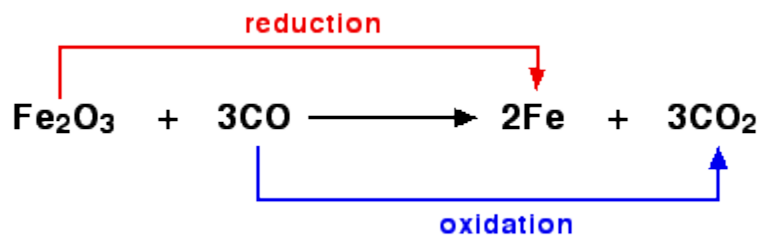
The hydrogen ion plays important role in both the definition of pH and Eh. Water is a vital ingredient in all living environment. So, the reaction  $2\text{H}_2\text{O} \leftrightarrow 2\text{H}_2 + \text{O}_2$  becomes an important boundary condition for the normal living environment.

The diagram above illustrates the basic pH and Eh values exist in natural environment. The pH values of natural water, which include the surface water and shallow groundwater are in the range between 4 and 9.

Within the pH values of natural water, the Eh value determine if the water can be maintained as a stable material. At extreme environments, in addition to water, either the oxygen gas or the hydrogen gas would become available.

An example of high Eh environment would be the atmosphere where the oxygen gas is stable. An example of low Eh environment would be at the bottom of a swampy mud deposit where water is dissociated into hydrogen and oxygen gas.

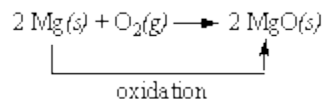
For example, in the extraction of iron from its ore:



Because both **reduction** and **oxidation** are going on side-by-side, this is known as a **redox** reaction, and is measured with an ORP (Eh) meter.

The term oxidation was originally used to describe reactions in which an element combines with oxygen.

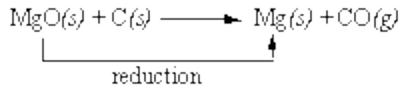
Example: The reaction between magnesium metal and oxygen to form magnesium oxide involves the oxidation of magnesium.



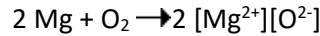
The term reduction comes from the Latin stem meaning "to lead back." Anything that that leads back to magnesium metal therefore involves reduction.

The reaction between magnesium oxide and carbon at 2000C to form magnesium metal and carbon monoxide is an example of the reduction of magnesium oxide to magnesium metal.





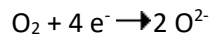
After electrons were discovered, chemists became convinced that oxidation-reduction reactions involved the transfer of electrons from one atom to another. From this perspective, the reaction between magnesium and oxygen is written as follows.



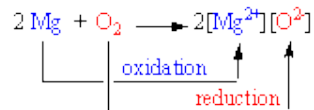
In this reaction, each magnesium atom loses two electrons to form an  $\text{Mg}^{2+}$  ion.



And, each  $\text{O}_2$  molecule gains four electrons to form a pair of  $\text{O}^{2-}$  ions.



Because electrons are neither created nor destroyed in a chemical reaction, oxidation and reduction are linked. It is impossible to have one without the other, as shown in the figure below.



## Water Responses to Resistivity and Light

Experiments by Phi6n have measured and observed changes in water due to:

- The source of the water (rainwater or land based in rivers or springs)
- Changing the water structure to a negative (-) charge
- Mineral and other chemical factors (eg. pH, ORP, EC, etc.)
- Exposure to light
- Exposure to air for water that has been containerized and either away from light or in direct sunlight. Some outgassing or in-gassing (eg. oxygen, nitrogen, sulphur, etc.) seems to take place.

It is the dynamics and the anomalies of water, and particularly the effect of voltage (charge) on water structure that produces the variations in water chemistry, and ultimately its quality for human health.

The resistivity of water is the reciprocal of conductivity (electrical conductivity: EC), so if a water sample has a low resistivity it will have high conductivity. An EC or resistivity (measurement can be used to indicate the purity of a water sample. It can be said that the less dissolved salts in a water sample, the purer that water is. This purity of water is one factor in water quality

monitoring. Natural factors that affect the resistivity of water include rain, geology, and evaporation. Human factors that affect resistivity include urban, agricultural and other runoff of mineral salt materials into water catchment areas.

For example, rainwater will have low mineral salts, while seawater will have high mineral salts. Research suggests that people who continuously consume water with low resistivity values (high EC) suffer a higher incidence of certain diseases. This is because only those mineral salts (isotopic) that refract polarized light through a cell membrane are utilised by cells (see illustration below). The other salts (anisotropic) remain outside the cells, and can in some circumstances increase osmotic pressure, and therefore deprive the cell of adequate water (ie. capacity to hydrate a cell).

The resistivity of ionic solutions (electrolytes) varies tremendously with concentration. While distilled water (demineralized) is almost an insulator, salt water (high mineral salts) is a reasonable electrical conductor. In biological membranes, currents are carried by ionic salts. Small holes in cell membranes, called ion channels, are selective to specific ions and determine the membrane resistance. Salts are ionic compounds, made from the elements present in the periodic table. Metals and non-metals combine to form salts. Metals (eg. Potassium) form positive ions and non-metals (eg. Oxygen) form negative ions. The combination of positive and negative ions makes up an ionic compound (ie. inorganic salt).

Metals with the highest resistivity are:

Metal	Resistivity value (Ohms)
Iron (Fe)	96.10
Lithium (Li)	92.80
Potassium (K)	72.00
Sodium (Na)	47.70
Magnesium (Mg)	43.90
Beryllium (Be)	35.6
Calcium (Ca)	33.6

Some of the essential mineral salts/ions present in human body are:

Extracellular matrix	Organelles	Cytoplasm
Na <sup>+</sup> , Ca <sup>2+</sup> , Cu <sup>2+</sup> , etc.	K <sup>+</sup> , Mg <sup>2+</sup> , Fe <sup>2+</sup> , Co <sup>2+</sup> , Ni <sup>2+</sup> , Zn <sup>2+</sup> , etc.	K <sup>+</sup> , Mg <sup>2+</sup>

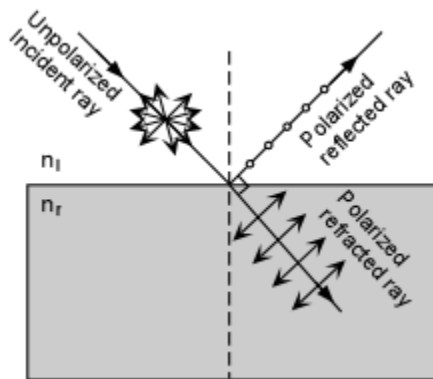
The **extracellular matrix** is the space outside of the cell that is a collection of extracellular molecules secreted by cells that provides structural and biochemical support to the surrounding cells.

An **organelle** is any part of a cell having a specialized function. Organelles are located within the cytoplasm, or the area between the cell wall (membrane) and the nucleus. Organelles maintain the integral activities within the cell. Without these vital structures, the cell loses its ability to function and eventually dies.

The **cytoplasm** constitutes of dissolved nutrients and it aids to dissolve waste products. It helps movement of the cellular materials around the cell through a process called cytoplasmic streaming. Cytoplasm also constitutes numerous salts and is a very good conductor of electricity.

## Light

Normal light from the sun can be either reflected or transmitted through the water. The amount and type of light transmitted (vibrational direction and magnitude) will be influenced by the types of minerals/compounds present in the water, and specifically the crystalline structure of the minerals (eg. hexagonal/tetragonal).



Light consists of a succession of electric and magnetic fields. This is how light can be involved in electron transfer in water. Also, we must regard light not only as a wave, but also as particles under some circumstances. Also, particles of matter, under certain circumstances, will also exhibit wave properties. Electric and electromagnetic forces of light underlie many molecular and intermolecular interactions. For example, enzymes cannot work unless they are *massaged* by water. The interaction between water bound to the macromolecules and free water are key determinants of enzyme catalysis, and the self-assembly of the cytoskeleton. The cytoskeleton gives a cell its shape, offers support, and facilitates movement through three main components: microfilaments, intermediate filaments, and microtubules. This interaction process also occurs in the cellular organelles and the extracellular space.

Cells also emit light and are known as **Biophotons**, or ultraweak photon emissions of all biological systems. Biophotons are weak electromagnetic waves in the optical range of the light spectrum. All living cells of plants, animals and human beings emit biophotons which cannot be seen by the naked eye but can be measured. According to the biophoton theory developed on the base of these discoveries, the biophoton light is stored in the cells of the organism. That is, they are in the DNA molecules of their nuclei. Biophotons are a dynamic web of light,

constantly released and absorbed by the DNA. They may connect cell organelles, cells, tissues, and organs within the body and serve as the organism's main communication network and as the principal regulating instance for all life processes. The processes of morphogenesis, growth, differentiation and regeneration are also explained by the structuring and regulating activity of the coherent biophoton field.

Therefore, a diet with adequate intake of alkalising minerals (complex salts), adequate cellular hydration with a quality water (mineralised with alkaline minerals salts or high resistivity), adequate sunlight; and maintaining a high negative charge (ie. -50 to -70mV) at a cellular level, are critical for cellular health.

## Quantum Code Technology in MEA water devices

A component of the tests outlined in the table on page 3 involves the use of Quantum Code Technology™(QCT).

### What is QCT

Quantum Code Technology™(QCT) uses a proprietary process that infuses the MEA water devices with one hundred and eight (108) sacred natural energies that naturally clarifies, reinforces and balances the body's innate energetic system or **Biofield**, allowing it to operate more efficiently. QCT can identify, convert and harness fundamental life supporting codes that are found everywhere in nature, the codes compose the fabric of the living world. The QCT is a non-invasive subtle field generation system, which has been shown to change molecular structures, including those of water (cellular and extracellular).

According to many scientists, the Biofield fundamentally supports and reinforces the body's ability to cope with stressors, allowing for optimized management of the body's many states, physical and mental included. When 24/7 modern day stress interferes with the linkage between our biofield and our expressed lives, we lose efficiency, vitality, and overall quality of life. QCT clarifies, re-establishes, and enhances that innate connection – so vital to the accessing innate healing, creativity, and our maximum potential.

The process of QCT can be defined as a *harmonic phenomenon wherein a vibration will start resonating in sympathy with another vibration of similar or equal quality*. In the case of QCT interacting with human biofields, the QCT in the MEA Quantum Water is generating the 108-ideal life supporting codes to improve the quality of life on all levels. The codes are already part of the foundation of the biofield, and therefore, the QCT in the MEA Quantum Water simply enhances and supports the innate intelligence for maximum life potential.

QCT provides subtle energy that maximizes the physical properties of the Phion MEA water devices. This subtle energy it provides scientific results and outcomes that further enhance and amplify the results that are already provided by Phion water devices. This amplification with QCT is infused into the devices by a Trade Secret Process developed over 20 years whereby

water attains many additional benefits by this marriage of QCT and Phión MEA water device technologies. These benefits can include:

- Attaining a higher vibrational quality to the water
- Adding even more life force to the water
- Affecting the biofield for all that use the water
- Enhancing the **chi life force** and balancing the meridian energy system for all that use the water
- Providing even more lasting results to the attributes that Phion MEA water devices already achieve in cellular health.

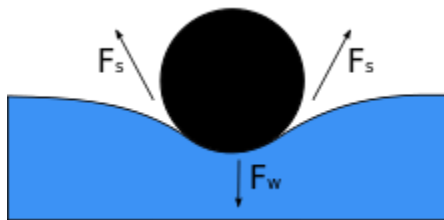
Independent testing for Phión and One08 Inc (QCT owners) of the efficacy of the combined MEA water device and QCT, using a BioScan device has demonstrated in 100% of cases to reduce stress levels (eg. adrenal stress) to normal levels within 2 minutes of consuming or holding the water.

This marriage of technologies is perfect for many reasons as water is the best recipient of subtle energy transfer for the positive outcomes that all people, plants and animals can benefit.

## Surface Tension Results

The table below illustrates the results for differences in **surface tension for structured water versus non-structured water**.

Phión measured the surface tension of 6 different waters that included water that had been structured using a MEA bottle top water device and unstructured water (urban water and rainwater from a tank). The measurement technique involved the use of a balance beam with a needle (or it could be a wire clip: see image below) suspended on top of water in a container, on one end of the balance beam and an empty water-holding container on the other end of the balance beam.



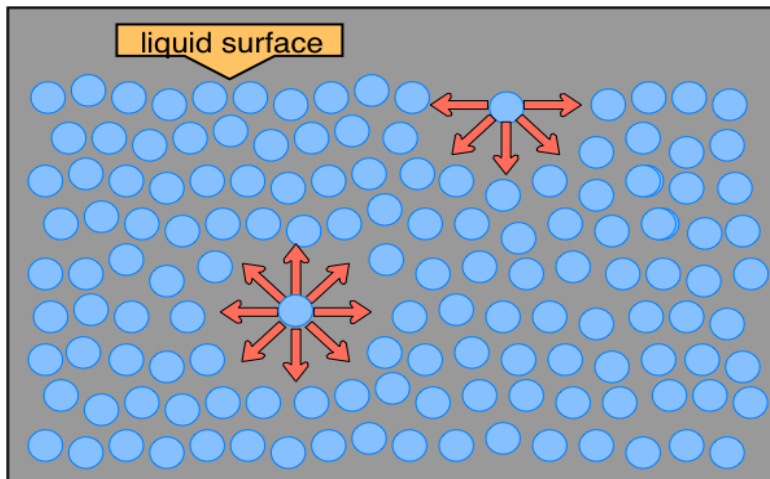
*Cross-section of a needle floating on the surface of water.  $F_w$  is the weight and  $F_s$  are surface tension resultant forces.*

Surface tension is a contractive tendency of the surface of a liquid that allows it to resist an external force. It is shown, for example, in the floating of some objects on the surface of water, even though they are denser than water, and in the ability of some insects (eg. water striders:

see image below) to run on water's surface. This property is caused by cohesion of similar molecules and is responsible for many of the behaviors of liquids.



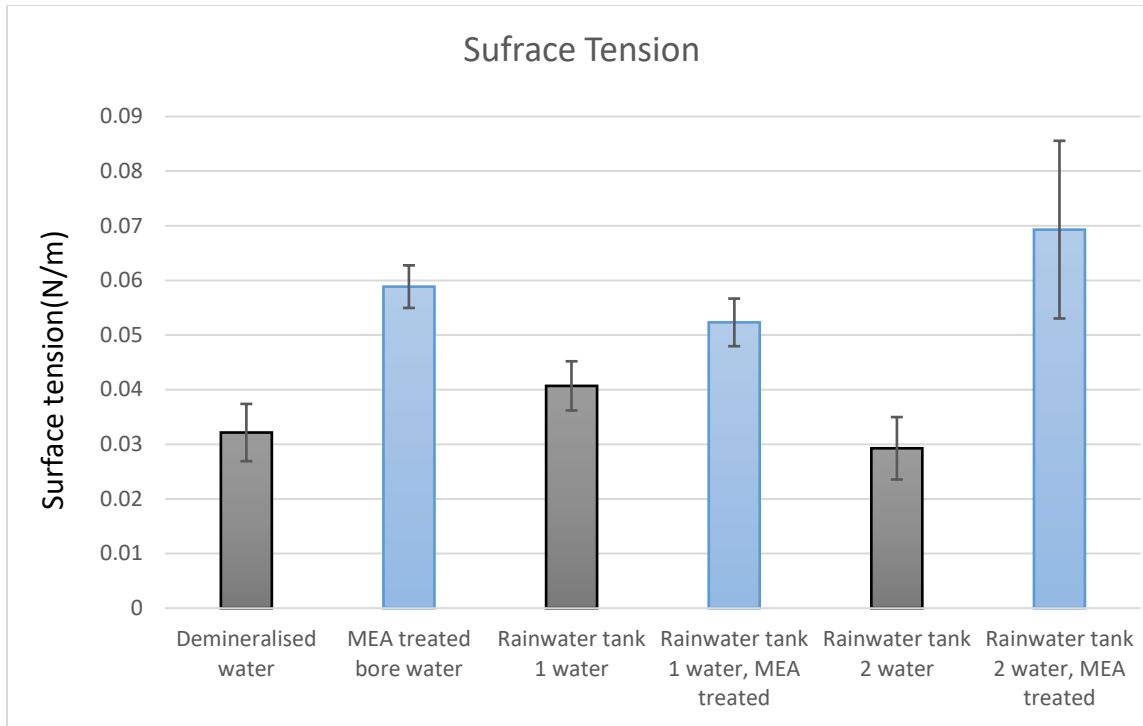
The cohesive forces among liquid molecules are responsible for the phenomenon of surface tension, as shown in diagram below. In the bulk of the liquid, each molecule is pulled equally in every direction by neighboring liquid molecules, resulting in a net force of zero. The molecules at the surface do not have other molecules on all sides of them and therefore are pulled inwards. This creates some internal pressure and forces liquid surfaces to contract to the minimal area.



Surface tension has the unit of force per unit length, or of energy per unit area. The two units are equivalent. However, when we refer to energy per unit of area, we use the term surface energy, which is more general in that it applies to solids as well as liquids.

A measured amount of water was added using a calibrated pipette to the empty container until the needle separated from the water. The water added represents the force required to overcome the

The results are illustrated in the table below. Clearly, when water is restructured with a MEA water device to hold a permanent negative charge the surface tension increases. The extent of the increase is highly dependent on the chemical and energetic state of the raw water.



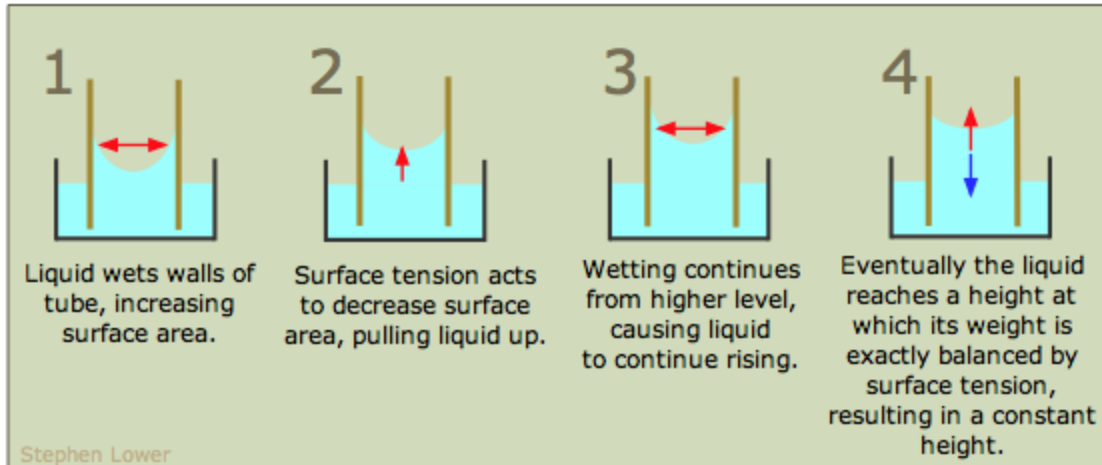
***The data above represents mean value +/- standard deviation.***

Clearly, the increase in the energy of hydrogen bonds in the now structured water ( $H_3O_2$ ) directly reflects the increase in the surface tension.

## Capillary Action

Capillary action, or capillarity, is the ability of a liquid to flow in narrow spaces without the assistance of, and in opposition to, external forces like gravity. The effect can be seen in the drawing-up of liquids between the hairs of a paint-brush, in a thin tube, in porous materials such as paper, in some non-porous materials such as liquified carbon fiber, and in a cell. It occurs because of intermolecular attractive forces between the liquid and solid surrounding surfaces. If the diameter of the tube is sufficiently small, then the combination of surface tension (which is caused by cohesion within the liquid) and adhesive forces between the liquid and the container act to lift the liquid.





The above diagram shows a glass tube of small cross-section inserted into an open container of water. The attraction of the water to the inner wall of the tube pulls the edges of the water up, creating a curved *meniscus* whose surface area is smaller than the cross-section area of the tube. The surface tension of the water acts against this enlargement of its surface by attempting to reduce the curvature, stretching the surface into a flatter shape by pulling the liquid farther up into the tube. This process continues until the weight of the liquid column becomes equal to the surface tension force, and the system reaches mechanical equilibrium

### Wetting Action

It has long been observed that MEA, negatively charged water has a far greater surface wetting action. This was first observed when wine was structured (ie. the water in the wine) it had a greater surface spread on a bottle or glass. The image below on the left is the procedure to restructure wine with a MEA bottle device (spun anti-clockwise 4 times). The centre image is structure wine swirled in the glass to detect evidence of surface wetting. The structured wine has no visible dribbling or tears due to its stronger surface tension and wetting action, while the image on the right of non-structured wine has strong evidence of dribbling or tears caused by lower surface tension or wetting action



*Tears or legs* in a wine bottle or glass are caused by wine dribbling down the sides of a wine glass. They are most often visible after tasting a wine, when the glass has been tilted on its side, and then righted (see images on page 15 for non-structured and structured wines). Non-structured wine will coat the inner sides of the glass, and will begin dripping back down into the bottom. This is caused by alcohol in the wine evaporating, breaking the surface tension on the upper edge of the wine, causing the watery components to fall away back into the glass. The shape and size of the legs are a sign of the wine's viscosity (which in turn is affected by the amount of glycerol and alcohol found in the wine). Structured wine will always show greater surface wetting action than non-structured wine. That is, a wine with low viscosity will have smaller, more watery legs, and wine with higher viscosity will have larger (wider), slower (more time to disperse) legs.

Other interesting aspect of structured wine are:

- Greater balance in wine structure
- Increased sense of flavours, and aroma is intensified
- Considerably less tannin taste and sharpness (acidity) taste
- Potentially enhances the beneficial aspects of polyphenols
- Alcohol does go to the blood faster, however the alcohol does seem to be converted faster to an acetyl form for processing by the liver with far less after effects (hangover or headaches) from the alcohol consumption.

Other benefits of the improved wetting capacity of the MEA water are:

- Far greater plant surface contact when the MEA structured water is combined with biological, non-chemical and chemical sprays for either inoculation or insect control.
- Less spray drift from spray applicators and more spray on plants. Farmers have reported to me that MEA water combined with either beneficial biology, insecticide and herbicides has a far greater effect due to better wetting action and less spray drift.
- When you shower in MEA water you get greater contact with the negatively charged water (like standing under a natural waterfall)
- MEA water requires less surfactant (eg. soaps or detergent) for washing or cleaning

## Viscosity

The term *viscosity* is a measure of resistance to flow. It can be measured by observing the time required for a given volume of liquid to flow through the narrow part of a *viscometer* tube.

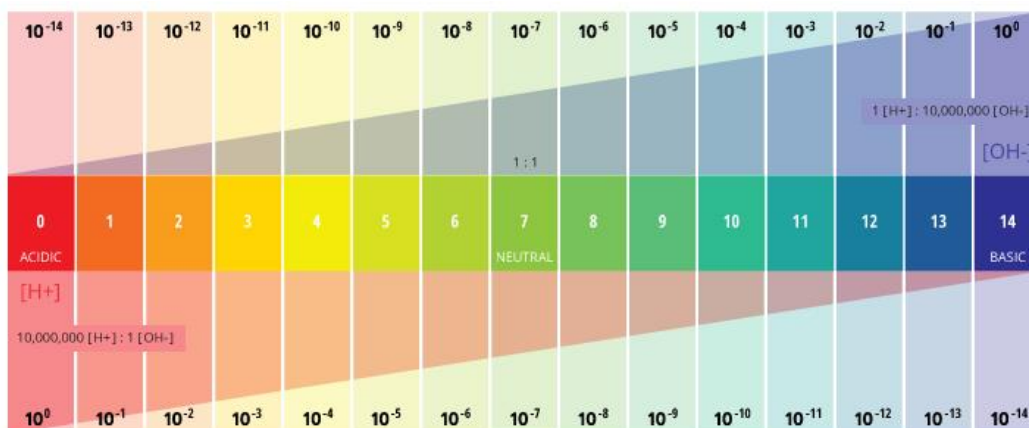


The viscosity of a substance is related to the strength of the forces acting between its molecular units. In the case of water, these forces are primarily due to hydrogen bonding. Liquids such as syrups and honey are much more viscous because the sugars they contain are studded with hydroxyl groups (–OH) which can form multiple hydrogen bonds with water and with each other, producing a sticky disordered network.

## pH of Water (Alkalinity verses Acidity)

What is pH?

pH is a determined value based on a defined scale, like temperature (see pH diagram below). This means that pH of water is not a physical parameter that can be measured as a concentration or in a quantity. Instead, it is a figure between 0 and 14 defining how acidic or basic a body of water is along a logarithmic scale. The lower the number, the more acidic the water is. The higher the number, the more basic it is. A pH of 7 is considered neutral. The logarithmic scale means that each number below 7 is 10 times more acidic than the previous number when counting down. Likewise, when counting above 7, each number is 10 times more basic than the previous number.

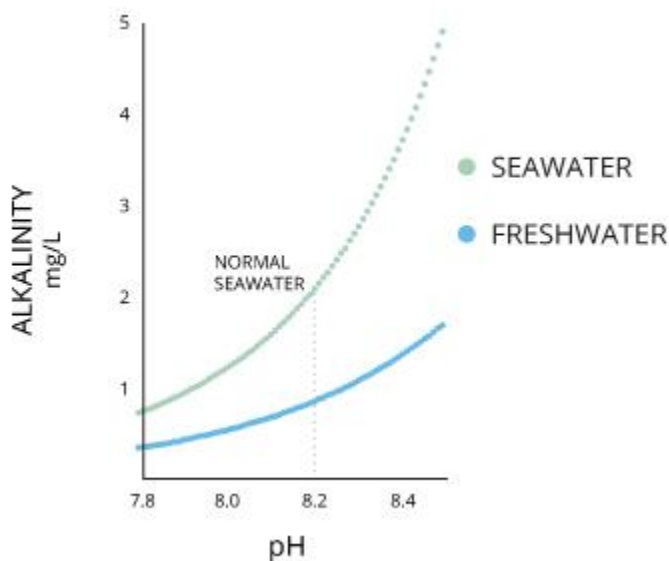


The logarithmic scale of pH means that as pH increases, the H<sup>+</sup> concentration will decrease by a power of 10. Therefore, at a pH of 0, H<sup>+</sup> has a concentration of 1 M. At a pH of 7, this decreases to 0.0000001 M. At a pH of 14, there is only 0.000000000000001 M H<sup>+</sup>.

pH stands for the *power of hydrogen*. The numerical value of pH is determined by the molar concentration of hydrogen ions (H<sup>+</sup>)<sup>3</sup>. This is done by taking the negative logarithm of the H<sup>+</sup> concentration (-log(H<sup>+</sup>)). For example, if a solution has a H<sup>+</sup> concentration of 10<sup>-3</sup> M, the pH of the solution will be -log (10<sup>-3</sup>), which equals (pH) 3.

This determination is because of hydrogen ions (H<sup>+</sup>) and hydroxyl ions (OH<sup>-</sup>) on pH. The higher the H<sup>+</sup> concentration, the lower the pH, and the higher the OH<sup>-</sup> concentration, the higher the pH. At a neutral pH of 7 (pure water), the concentration of both H<sup>+</sup> ions and OH<sup>-</sup> ions is 10<sup>-7</sup> M. Therefore, the ions H<sup>+</sup> and OH<sup>-</sup> are always paired – as the concentration of one increases, the other will decrease; regardless of pH, the sum of the ions will always equal 10<sup>-14</sup> M<sup>2</sup>. Due to this influence, H<sup>+</sup> and OH<sup>-</sup> are related to the basic definitions of acids and bases.

### Alkalinity and the pH of Water



Alkalinity and pH are directly related at 100% air saturation.

Alkalinity does not refer to alkalis (*in chemistry, an **alkali** is a basic, ionic salt of an **alkali** metal or alkaline earth metal chemical element*) as alkaline does. While alkalinity and pH are closely related, there are distinct differences. The **alkalinity of water or a solution is the quantitative capacity of that solution to buffer or neutralize an acid**. In other words, alkalinity is a measurement of water's ability to resist changes in pH. This term is used interchangeably with acid-neutralizing capacity (ANC). If a body of water has a high alkalinity, it can limit pH changes due to acid rain, pollution or other factors. The alkalinity of a stream or other body of water is increased by carbonate-rich soils (carbonates and bicarbonates) such as limestone, and decreased by sewage

outflow and aerobic respiration. Due to the presence of carbonates, alkalinity is more closely related to hardness than to pH (though there are still distinct differences). However, changes in water pH can also affect alkalinity levels (as pH lowers, the buffering capacity of water lowers as well). pH and alkalinity are directly related when water is at 100% air saturation.

The alkalinity of drinking water (presence of alkaline minerals like Lithium, Sodium, Potassium, Calcium, Magnesium, etc.) also plays an important role in daily blood pH levels. The process of photosynthesis by algae and plants uses hydrogen, therefore, increasing water pH levels. Likewise, respiration and decomposition can lower pH levels. Most bodies of water can buffer these changes, yet small or localised fluctuations can quickly change and these changes may be difficult to detect.

## The Nature of Wilderness or Natural Systems

All wild or natural systems are open systems. That is, they are influenced by their natural environment, comprising climate, weather, geology, soils, vegetation, etc. This makes such systems extremely complicated and difficult to measure in isolated or laboratory conditions. These conditions also apply to water that is extracted from these natural systems.

Often, natural systems are called **living systems** due to the dynamics or continuous interactions of the environmental conditions (epigenetics). By way of contrast, manmade or created (unnatural) conditions are often used in experiments to measure or simulate a natural environment. These unnatural systems are **dead systems** as they cannot reproduce the natural environmental interactions.

Measurements taken of living water in a natural environment can change significantly, and often within hours and certainly within 2 days, when removed from the natural flowing (vortices) state. Within hours of the water losing its vortex state, the biology can change and become contaminated with pathogenic microbes. Also, a range of oxidation and reduction actions can commence in the water that changes its chemical state. A similar process can occur with soil and plants that are removed from the natural environment for measurement in a laboratory.

All living systems exhibit a range of self-evident (observable) features, ie. evolution, symbiosis and microbial pleomorphism (ie. *ability of some microbes to alter their shape or size in response to environmental conditions*). These facts can be observed, however can lack scientific theory. While this phenomenon resist scientific explanation, and often remain beyond science for long periods of time, these observations are real. In many cases, observations recorded in nature cannot be repeated in experimental or laboratory conditions.

For example, Professor C. Louis Kervran uncovered a process that he called **biological transmutations** whereby minerals can evolve in nature, or minerals can combine to form other minerals (eg. Silica: Atomic No. 14 combines with Carbon: Atomic No. 6 to form Calcium: Atomic No. 20). Firstly, how was calcium formed on Earth? How can cows produce so much calcium in milk and chickens produce so much calcium in egg (plus the shell) when their intake of calcium is not a high as the output. Also, are there other mineral pathways for calcium to form, including Magnesium and Potassium, and are there different pathways within the ocean and terrestrial systems.

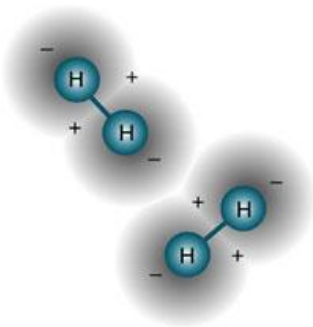
Similarly, are there biological transmutation pathways in soil and water involving microbial, mineral, light energy (or other subtle energies), enzymes, etc., that create change to enable adaptation, survival, creation, modification (eg. in the case of chemical and radiation wastes), regulation, healing, etc. Clearly, in many of these processes there are influences from hydrogen (including H<sup>+</sup>) and electrical potentials in cellular metabolism. All living systems require a state of homeostasis or equilibrium to reach full survival potential. However, when the cellular negative charge (-) falls towards positive (+) in humans, combined with mineral imbalances (eg. cellular Sodium and Potassium) then a wide range of diseases can occur, including heart, thyroid and hormonal issues.

A major challenge with the creation of a permanent negative charge in water, is that the observed or felt differences from either drinking this water or using the water for food production, is providing the scientific proof (measurement) of the change in water structure or water behaviour, compared with other waters (eg. the unstructured water from an urban tap). There is no definitive answer and there is unlikely to be any array of measurements that will satisfy most scientists, sceptics, etc. that structured, hexagonal water exists; and has significant benefits for health of soils, plants, animals and humans.

### Negative hydrogen ions in MEA water

The results obtained from the application of MEA water to plants by **Orbtek Pty Ltd** (a Phión research company) can in part be explained by the capture and concentration of negatively charged (-) hydrogen (H) ions in the water through the interface of magnetic energy pulses and the flowing (vortex) water. Research by **Orbtek** has also determined that the H<sup>-</sup> ions are potentially enhanced or concentrated in the water vortices and in the presence of biologically active water (ie. water with a high diversity and abundance of beneficial microbes). This gives rise in natural systems to the concentration of H<sup>-</sup> in flowing water, biologically active ponds/lakes, and soils.

The degradation of H<sup>-</sup> ions in nature is a direct consequence of man's intervention with natural systems that has reduced the availability of H<sup>-</sup> to biological systems. These interventions include agriculture, water processing or treatment (eg. septic systems with trenches), engineering facilities that change water flow patterns, air pollution, chemical use in the environment, any action that changes the natural light energy input and biological/microbial balance in natural systems, etc. There can be no healthy natural systems without a concentration of H<sup>-</sup> ions. For example, nature re-conditions water in chains of ponds (biologically active with sunlight energy), flowing rivers with bends and rapids/waterfalls, etc.

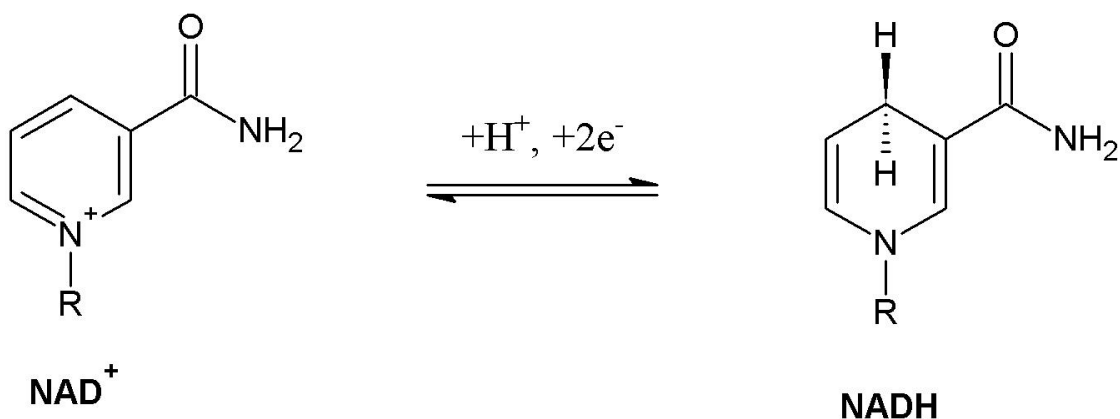


**This little-known nutrient (H<sup>-</sup>) is, in fact, the smallest element known to exist, and existed before any life on Earth. Regardless of its size, it is indispensable in virtually every chemical reaction in water, soil, plants, animals and humans. Nowhere is this more important than inside the cells where tiny organisms, called mitochondria, translate the free electron negative charge associated with the H<sup>-</sup> molecule into the ATP which provides the energy necessary to produce growth, repair and regeneration.**

It became generally recognized by the late 1990s that the likely mechanism by which certain key energy-transport molecules in living systems were formed and subsequently regenerated after *being burned* (e.g. NAD conversion to NADH), was via donation of  $H^-$  to the molecule by a donor molecule, the origins of which ultimately traced back to the **energy liberated from sunlight during photosynthesis**.

In other words, hydrogen and the  $H^-$  ion have emerged as the primary energy currency in living systems. An excellent and simple example is the binary pair NAD and NADH. **Nicotinamide adenine dinucleotide**, abbreviated **NAD<sup>+</sup>**, is a coenzyme found in all living cells. The compound is a dinucleotide, since it consists of two nucleotides joined through their phosphate groups. One nucleotide contains an adenine base and the other nicotinamide.

In metabolism, NAD<sup>+</sup> is involved in redox reactions, carrying electrons from one reaction to another. The coenzyme is, therefore, found in two forms in cells: NAD<sup>+</sup> is an oxidizing agent – it accepts electrons from other molecules and becomes reduced. This reaction forms **NADH**, which can then be used as a reducing agent to donate electrons. These electron transfer reactions are the main function of NAD<sup>+</sup>. However, it is also used in other cellular processes, the most notable one being a substrate of enzymes that add or remove chemical groups from proteins



**NADH** is well known as a powerful energy carrier in living systems, and play a key part in the energy currency of most cells of many life forms, including those of humans, while NAD is its low-energy combustion product. There are pathways in many organisms, including humans, which can, to a limited extent, recharge the NAD with an  $H^-$  ion to convert it back to the high-energy form of NADH. Thus, the NAD, as the low-energy state, serves as both a precursor to NADH and a combustion product of NADH. As such, NAD can be visualized as the *ground state*, and NADH as the *high-energy state*.

Hydrogen and its  $H^-$  ion as energy currency in life forms

The preceding discussion is of great interest, because it is suggesting that hydrogen, at least the  $H^-$  ion, might be the primary energy currency of life. Indeed, closer and deeper examination of



the literature shows that this idea is hardly new. As early as the 1950's, Nobel Prize-winning biochemist Albert Szent-Gyorgyi proposed in articles and books that ***hydrogen is the true energy currency of life***, and is the *true currency or carrier of energy* in photosynthesis. He stressed that this energy currency may be traced directly back to the sun, or more literally, to the energy contained in sunlight. This is especially fascinating, given the discovery of latter 20th century astronomy that much of the sun's atmosphere is composed of the H- ion. In this respect, one can see that hydrogen and its H- ion, located in the sun millions of miles away, donate energy in forms which allow photosynthetic organisms on earth to also liberate the H- ion from compounds which were initially at a lower energy state, and then bind and transport that H- ion as energy currency to support a wide range of life on earth.

The negative hydrogen ion (H- ion) has been observed to occur naturally in our universe in water and water vapour subjected to ionizing radiation. The H-minus ion may be found in rather copious quantities on our planet's surface in the biosphere, at *normal or* standard temperatures and pressures (STP) in:

- high-altitude mountain wells and springs
- high-altitude glacial runoff streams
- some deep wells in relatively stable geological formations
- pristine sources of moving water in open air (rivers and creeks, etc.)
- living life forms such as plants, animals and humans.

It is interesting to note that these water sources have high concentrations of mineral ions (eg. silica)

Negatively charged hydrogen ions in plant, animal and human health

The one ingredient that our bodies require to accomplish all tasks is H- (negatively charged hydrogen). H- is formed in natural flowing waters (including groundwater/springs) and water vapour through ionising radiation; and through the application of a magnetic or electrical pulse to the flowing water. Also, anyone consuming a significant quantity of nutrient dense raw food will ingest a high number of H- ions. The H- ion will travel almost anywhere in all biological systems due to its tiny mass and size.

***It is very likely that H- ions are the life force energy that enables all biological systems (microbes, water, soil, air, plants, animals and humans) to function to full capacity and integrity.*** However, most people only have access to water (and food) that has been manipulated and contaminated by human intervention. This includes the addition of Chlorine and Fluoride to water, along with piping water over long distances. Also, the cooking, heating, milling, chemical contamination or prolonged storage of raw (natural) food will remove H- ions. There would be no H- ions in processed foods or treated (including filtered) water.

In the latter half of the 20th century, it became apparent that the negative hydrogen ion was not as rare and short-lived in nature on our planet's surface as once thought. Indeed, by the

1990s it became apparent the H minus (-) ion is ubiquitous in the biochemistry of life forms on earth, and essential to certain key biochemical reactions related to the citric acid cycle (Krebs cycle) in living organisms.

By the late 1990's, it became obvious that several common antioxidants found in plants and animals, (Vitamin E among them) function as an antioxidant by acting as a transport vessel for the H- ion, donating it at the right time within living systems to neutralize any of several species of oxygen free radicals (oxidizing radicals), also known as reactive oxygen species (ROS) occurring in tissues or fluids in or around the cells.

Also, every cell in the human body contains a scavenging enzyme called superoxide dismutase (SOD) that neutralises emerging super radicals. The MEA device has been measured to eliminate E. coli from water (see results at page 7) and this may be explained as the creation of alternative oxygen species (eg. in the  $O_2^-$  form) in structured water (ie. a by-product of EZ dynamics) that effectively eliminates pathogenic microbes. The human body uses hydrogen peroxide ( $H_2O_2$ ) in the same manner.

The H-minus ion (or H- ion) also plays a critical role in all known life forms on earth. It acts both as an energy carrier (providing **energy currency**) and as an **antioxidant in numerous biological systems**. In its antioxidant role, this ion functions as a powerful primal, primitive, primeval, primordial and primary antioxidant found in all raw, unprocessed foods (plant and animal) and in many **wild, unprocessed, untreated water sources in the biosphere** (the area around the surface of the planet where life exists.)

It appears that this tiny and lightweight ion was the original antioxidant for all life forms on earth, and is likely the single most optimal antioxidant for life forms even today. However, this ion is rather fragile in our biosphere, and it is easily driven off or destroyed by processing food and water. It appears that our ancestors likely ingested a significant amount of this ion in their daily food and water intake, while we modern (*civilised*) folk often receive very little in our diets.

It is commonly known that the health of a plant depends on hydration. Peter C. Agre, an American medical doctor, professor, and molecular biologist won the 2003 Nobel Prize in Chemistry for his discovery of aquaporins, the water-channel proteins that move water molecules through cell membranes. Plant cellular aquaporins are micro channels that transport water and nutrients through cell walls, letting (H-) good water in and keeping (H+) bad water out.

When the molecule is positively-charged, and clumped, the aquaporin rejects it, and stops it from passing through the cellular membrane. This results in water molecules competing for remaining electrons and clumping together. Hydration at cellular levels can only receive one water molecule at a time through the aquaporin channel. That one molecule of water cannot carry with it anything physical or electrical. All it carries is the energy or vibration and the elements that are beneficial for life.

Regular tap water is in clusters of water molecules, while structured or energised water is in one molecule, allowing for super hydration of plants, animals and humans. Restructuring water at a molecular level revitalises water by **restoring the beneficial NEGATIVE hydrogen ions (H-)**, making the water readily acceptable for maximum absorption by plants and animals.

The use by humans of energised water saturated with negatively charged hydrogen ions may experience more energy, less fatigue, or improved mental clarity. This simple hydrogen atom can improve your performance while:

- Fighting free radical damage throughout the body
- Balancing the body's chemistry through the biological terrain
- Helping to resist sickness
- Reversing the disease process and slowing down aging.

Other studies of hydrogen's health benefits include;

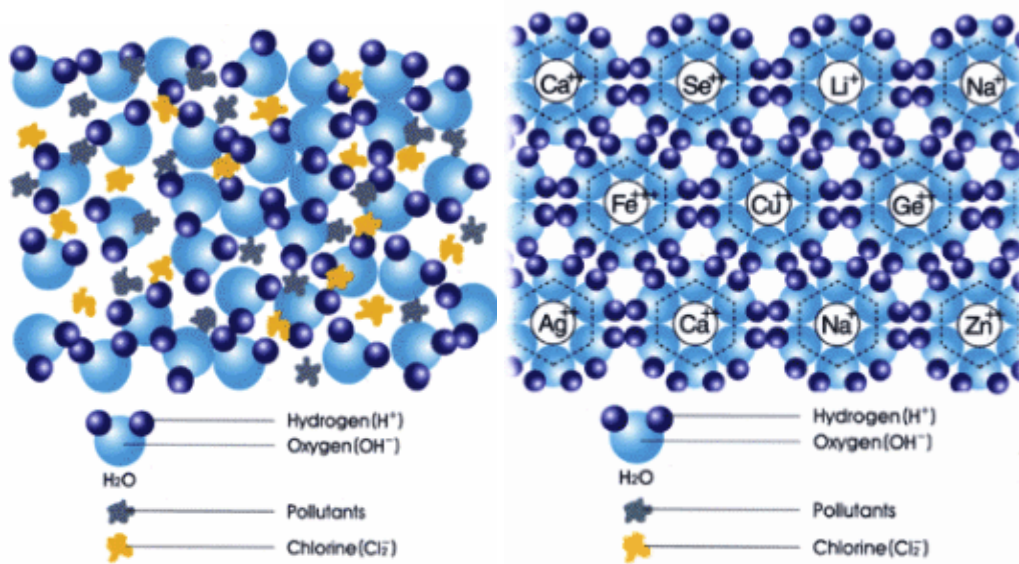
- It's been proven to fight the strongest oxidizing the Hydroxyl radical, which is a major villain in DNA damage. Also, structured water allows cells to pass information from DNA molecules with the help of structured light (biofield) from the cell nucleus
- It doesn't react with other oxidizing agents, which are beneficial to your body
- It also doesn't disturb necessary metabolic reactions or disrupt cell signaling
- Because it's so small, hydrogen can penetrate the important parts of your body that need revitalizing the most, like your mitochondria (the powerhouse of your cells) and nucleus. Without a powerful antioxidant like hydrogen, dangerous free radicals can degrade human health
- Hydrogen can pass through the blood-brain barrier, and may improve your brain health with its antioxidant power

## Changing the Chemical Toxins in Water

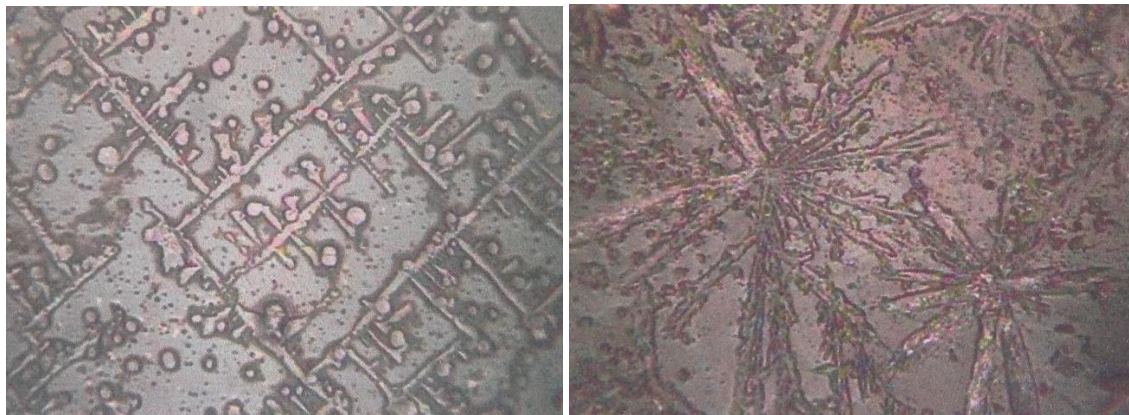
Contaminated water, such as we find in urban water and in some well water, possesses electromagnetic oscillations in certain wave lengths that can be traced to the contaminants in the water. These toxins can include fluoride, chloride, pesticides, herbicides, heavy metals (lead, arsenic, mercury, cadmium, etc.) pathogenic microbes (eg. E. coli). Even after filtration and chemical purification, the toxic signature of these contaminants will still retain the electromagnetic frequency of whatever passed through it previously.

The adverse health effects of fluoride, (a toxic waste product from aluminum processing) and chlorine have been documented for years (you may significantly increase the risk of cancer by drinking, inhalation or skin absorption of chemical toxins in urban water). Filtration of urban water may physically remove 80% of the fluoride and chloride however the toxic electromagnetic oscillations of these compounds remain in the water, and therefore impact adversely on human cells.

The restructuring of the water to a hexagonal structure will not only change the toxic electromagnetic oscillations of the fluoride and chloride to a harmless wave length, but enhance the elimination of toxins from cells. For example, in the images below, the image on the left is unstructured water that has toxins attached to water molecules. The image on the right is structured water that eliminates the toxins from cells (images from Pollack)



The following images were produced by an Independent laboratory (Hagalis AG) in Germany that analysed a sample of **structured water**. The images show evidence of a change in bonding angles of the hydrogen to the oxygen.



The image on the **left above is unstructured water** with a crystalline structure (square) with angles mainly of 90°. The image on the **right is structured water** with a crystalline structure (star shaped) of mainly 60°. It is the structured water that dislodges pollutants and changes the wave length of the toxic compounds into a harmless form. That is, the suspended pollutants in the image on the left have been dislodged in the image on the right.

According to Dr. Beneveste, a French scientist, the electrons in water molecules are spinning either right or left. Left or anti-clockwise spin is the spin of the moon, Earth and the Earth rotates around the sun anti-clockwise. Universal patterns of energy may be telling us something here! Anti-clockwise energy (eg. Yin: female) is considered to have negative polarity and is *life-affirming*. All substances with a right (clockwise) spin are *life-depleting* to the human body and have a **low Bovis rating**.

It is worth noting here, that **yin and yang** (female and male or dark and light) describe the opposite or contrary forces of nature, however they are actually complementary, interconnected, and interdependent in the natural world, and may give rise to each other as they interrelate to one another. Everything has both yin and yang aspects (for instance, shadow cannot exist without light). In many respects, and at a cellular level, life is about balance or equilibrium, like gut biology or mineral balancing. There will always be the *dance between life and decay*, and cells will decay at a faster rate when they lose negative charge, through nutritional deficiencies, dehydration lack of life-sustaining forces (eg. sunlight).

Most urban water is between 2,000 – 5,000 Bovis, and even bottled water is only 5,000, which is right or clockwise spinning in this state. This is because of the suspended pollutants in the unstructured water, and this is being pumped and transported through straight metal pipes. Therefore, urban water is *life-depleting*. When you consume water above a certain Bovis level, cells begin to rejuvenate or increase their negative charge. Only structured water raises the energy level of water to 90,000 Bovis.

In 1988, German researchers discovered that water can store information as electromagnetic signals. That is, water retains the toxic energy patterns and spin of pollutants even after they are removed. Further, the toxic water you drink transfers any toxic patterns and clockwise spin to other water, including the water of your cells. This *unhealthy* or toxic information enters the body, which results in stress as the body tries to compensate and deal with the water by giving it some of its own energy. Even filtering the water does not remove the harmful patterns and right-hand (toxic) spin, no matter how much water you drink. The more unstructured water you drink, the more energy (charge) is depleted in your cells.

You can remove most contaminants from water with a filter but the water will retain the memory of the frequencies of these contaminants, if the water is not restructured. Water binds and holds everything it encounters energetically until it is cleared magnetically. As water goes through people's bodies from drinking water and chemical food production, this toxic energy *fingerprint* is left behind in their cells and subconscious mind. **When you restore water to its natural state, not only are all toxic memories restored to natural wave lengths but the water experience in your body will be greater balance and harmony (coherence).**

The restructuring of water with a Phión water conditioner (in the absence of a filter) does not remove the fluoride or chlorine, however these toxic substances are changed to an

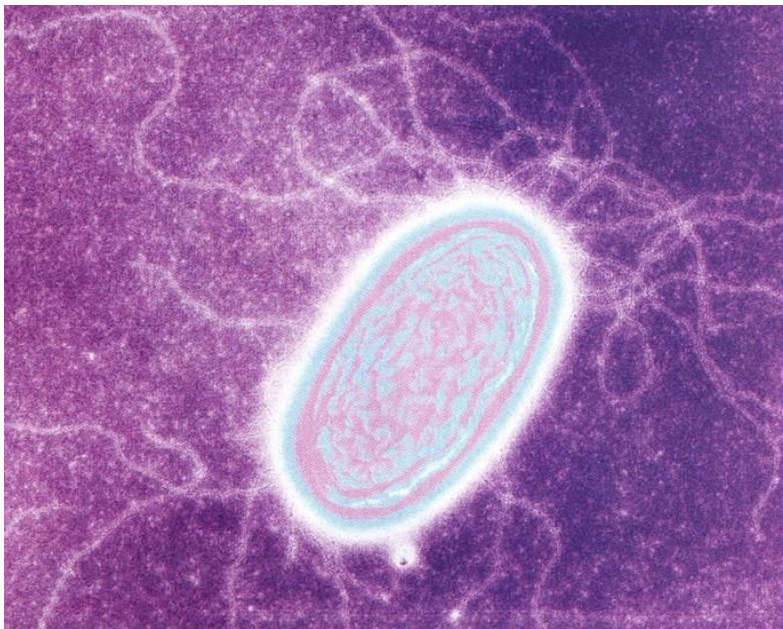


electromagnetic state that is harmless. This is possible because structured water, due to its fast spinning behaviour, is changing the molecular structure of the water molecules from toxic to non-toxic. This is precisely how flowing water in nature cleans itself through vortexes over time and distance in a pristine, and natural flowing river system.

## Biology, Light and Structured Water: the interface to life

Microbes have a unique association with subtle energies to sustain life. Early single celled microbes would have used light and structured water energies to sustain life, and this capacity became the basis of all life. That is, in life structured water, light and biology are interconnected and interdependent.

All plants, animals and humans sustain life through the electrical wiring of microbes in our digestive system, blood, etc. See image below from *New Scientist*, 13 August 2011.



### Bacterial 'wires' an electronic dream

For example, these electrically wired microbes use the subtle energies of negatively charged water and photons of light in blood to sustain the vortex within blood to spiral around the 100,000 km of blood delivering arteries, veins and capillaries of the human body. Also, it is now accepted that a molecular reaction in living matter is controlled by the modification of the position of the electrons in orbit (by their energy) and at the subatomic level the chemical reaction is initiated.

Dr. Pollack explains: *"In your cells are multiple batteries with plus and minus charges, separated. The question is, how are these cell batteries charged? The charge comes from incident radiant energy; light, heat, ultraviolet. These absorbed energies separate the charge. The energy that's coming in from outside builds this charge separation and order. This potential energy fills your cells. I think this energy is critical to an understanding of how your cells work."*

In a nutshell, the water in each of your cells achieves its ordered structure from energy obtained from the environment, typically in the form of electromagnetic radiation, including sunlight and infrared heat. What this means is that if you don't have properly structured water in your cells, it can impact the functioning of the much larger protein molecules (and others) that are interfacing with it.

In fact, the protein molecule in your cells cannot be viewed as just a molecule by itself. It's the molecule PLUS the water. These two factors *together* form the *entity* of the molecule in question. Dr. Pollack further explains: *If you need that entity to function properly: take a muscle for example; the muscle is not functioning, it's the protein and the water that are not functioning. "You need plenty of this ordered or structured water and proteins in their right form to make the muscle function properly. Therefore, if you have a muscle injury then both are not functioning."*

So, how do you restore it? Classically, one way of doing it is to use infrared radiation (heat). By applying heat to the muscle, you increase blood supply, which is helpful. But you're also building water structure! Dr. Pollack's research shows that infrared heat is very effective for ordering cellular water. In terms of the source of the infrared heat, if it emits the right wavelength of radiation, it will be effective. According to Dr. Pollack, the wavelength of 3 micrometers (microns) is ideal and very effective.

The sun also emits this wavelength, which may be yet another reason why sun exposure has such profound health benefits and just *feels* good through and through. Interestingly, the human body also emits radiation within the ideal range, which may explain why simple physical contact, including 'hands-on healing,' can contribute to improved health!

Another way to structure water is to use light. The visible light spectrum, ultraviolet (UV) and near infrared also builds ordered water zones. Again, light therapy has been used for years to remedy various maladies, such as depression and jaundice, for example. But it's only now that scientists are beginning to understand *why* such therapies work.

Clearly, one of the primary health benefits of sun exposure and UVB's is that it makes your body create vitamin D, which we now realise is crucial for optimal health. Light also helps structure the water within your cells as a conglomerate of symbiotic relationships.

However, Dr. Pollack believes that if you're able to drink structured water, it would be good for your health. Interestingly, certain waters, such as the *healing water* from the Ganges and Lourdes, for example, have been studied and found to have the signature of the structured water found in cells. Dr. Pollack says, *in other words, there is an absorption of energy at a specific wavelength that is characteristic of the structured water. That makes me think that there is a good possibility that the water really has the capability of retaining that structure over a long time. Therefore, it's possible that if you drink water that has this structure, it might be good for your health.*



The second issue is: what happens when you swallow structured water? Does it still have the proper structure by the time it's absorbed in your intestines? One thing that *is* known is that structured water tends to stay together. Dr. Pollack says, *it's possible that when you swallow properly structured water, it might be preserved. If this structure is then absorbed into your intestines then it's possible it can be retained all the way into your cells. It's also possible that it's the charge within the ordered water that really matters. Structured water contains negative charge. It's possible that what you're really doing is absorbing the negative charge, and that negative charge is critical for building the structure.*

*If you put a negative electrode right next to structured water, the structured region grows, but with a positive electrode it diminishes," Dr. Pollack explains. "This structured water is just filled with charge. It's not free charge, its charges that are fixed at points in a very tight matrix, something like a semi-conductor. But it can build, and the source from which it builds is water, ordinary bulk water.*

Dr. Pollack also offers some fascinating insights into the technique of earthing, or grounding: the simple act of walking barefoot to *ground* with the Earth. The scientific theory behind the health benefits seen from this simple practice is that your body absorbs negative electrons from the Earth through the soles of your feet and discharges the positive charge in your body that is often due to holding onto emotions like grief, resentment, anger, etc. Only emotions like love, joy and hope carry a negative (-) charge in your body and help to sustain the negative charge of cells.

Interestingly, Pollack adds support to this idea by explaining how the Earth is negatively charged, so when you ground, you're connecting your body to a negatively charged supply of energy. And since the Earth has a greater negative charge than your body, you end up absorbing electrons from it. These negatively charged electrons may then help increase the structure of the water in your cells, just as water increases in structure when a negative charge is introduced with a magnet (eg. **Phión water conditioning devices**) or an electrode.