

Structured water: the history, science and form for life

Introduction

Water is the driving force of all life. We now know that it is pervasive throughout the universe, and it is not the simple H₂O molecule that is taught by most academia. Consequently, *water science* divides the scientific community, yet tribes and cultures through antiquity have revered water in rituals and ceremonies. Water, essentially, has two basic forms: **structured water** in a six-sided, crystalline structure, and **unstructured water** in a five-sided crystalline structure (also known as bulk water). Structured water is the natural form of water in pristine, flowing water systems, and unstructured water is water that is held in storage and not flowing in a natural vortex action (ie. all urban supplied water). Unstructured, liquid water can be converted into structured water by freezing (ie. ice and snow crystals are six-sided: see images below) or conversion through water conditioning devices.



The science of water structure, as an energetic stimulus of life, currently divides scientists (and society at large) into 3 groups:

1. Those that believe that water is just water (H₂O) and with no other molecular structure
2. Those that could not care about the science of water (ie. irrelevant to their science and the use of water in experiments, and the effects that some technologies have on water)
3. Those who embrace the science of water structure (in its many forms) and its capacity to receive, store and transmit information. The six-sided, crystalline structure of water is the *sacred geometry* structure of cell life.

Within the 3rd group there are further subdivisions into the development and commercialisation of technologies for the treatment of water. These technologies include ionisation/reverse osmosis, alkaline pH water, water re-structuring devices, etc. These technologies are being sold into the market as ionised, alkalised, sun energy enhanced, sacred

geometry enabled, magnetised, intentioned, vortex, etc. for the treatment of water and some for cellular healing.

Consequently, there is so much contradictive information about water in books and on the Internet these days, that facts and science rarely come together. A book that does summarise the science very well is *Water Codes: The Science of the Health, consciousness and Enlightenment*, by Dr. Carly Nuday. Much of her material is used in this essay. The purpose of this essay is to disentangle some of the facts and history of the science, and present a view that may help in decisions about the role of structured water in *vital life*, based on research and development within **Phi'on**, since 2003.

History

Prior to 10,000 years ago humans usually settled next to a flowing river, creek or spring fed pond and consequently drank structured water. This water was naturally structured as it flowed (through a continuous vortex action of flowing water), and was constantly exposed to sunlight, biology, minerals and natural vibrations of the Earth. Ancient cultures across the planet (in time and space) understood the incredible nature of structured water, and some **water sites became places of sacred or ritual cleansings**. These cultures revered water because they intuitively understood the form (structure) and the energy function (*syntropy or energy building*) of structured (living) water.

Today, most water courses are polluted from chemical run-off into water storage systems, and the urban water supplies are housed in unnatural reservoirs, tanks, and straight pipes. Also, these urban waters are further polluted with fluoridation and chlorination. This type of water is also known as *entropy water or water that has a decaying force*. Consequently, people are concerned about water quality and seek technology to restore water quality (eg. eliminate chemicals and restructure the water to a living form).

The science of water structure has existed in some form for centuries. For example, Leonardo Da Vinci drew water vortices and described water as ***the driving force of all of nature***. The science gathered pace during the 1930's and onwards through the work of Dr. Szent-Gyorgyi (Nobel Prize winner) who described the structure of water as the ***essence of all life***. Other Nobel Prize winners who have championed the amazing properties of structured water included Dr. Linus Pauling and Dr. Luc Montagnier. In the 1980's Dr Marcel Vogel (former IBM researcher and renowned crystallographer) was involved in research on the relationship between structured water and consciousness. During his time with IBM he became known as the father of crystal and computer based technology, including development of the technology behind the application of liquid crystal displays and magnetic hard drive encoding. Later he became involved in collaborative research with Cleve Backster in demonstrating (using lie-detector technology) the connection between structured water in plants and a plant's ability to display conscious emotions or feelings in response to its environment. This work is summarised in the book *The Secret Life of Plants* (Tomkins and Bird).

Other scientists involved in the research of the effects of structured water on life are: Dr. Konstantin Korotkov, Dr. Mae-Wan Ho, Dr. Martin Chaplin and Dr. Gerald Pollack, Dr. Vladimir Voeikov, 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 the science of the capacity of water to hold and transfer information including Emoto, Schwenk, Vittorio Elia (homeopathic solutions), Giuliano Preparata and Emilio Giudice.

Of course, there are many other renowned scientists who have researched water structure in its many forms (eg. H_3O , H_3O_2), including the van der Waal bonds caused by electrostatic force or the forces between atoms and particles that are caused by their electrical charge. While a significant amount of new information about water has emerged from the work of these scientists, and others, much of it is ignored by scientists involved in the use of water directly in either their experiments or indirectly in other research (including pharmaceuticals). On the other hand, we know almost nothing about the full capacity of water in life, and particularly its capacity for cell regulation and healing.

Most of the scientists named above have described structured water as having a unique arrangement of molecules that makes it *biologically active*. That is, structured water has a life-affirming effect on all living species. These findings led most of these scientists to support the long tradition of using homeopathy because structured water holds the energy of the specific ingredient (as opposed to the scientific idea that water holds only physical or chemical forms) and when a homeopathic formulation is delivered in structured water, it transmits the energy of that ingredient to cells. All living things are based on energy to function and it is the strength of cellular energy that determines its capacity for life. Food (along with its minerals and nutrients) is converted into energy (ATP) by the mitochondria within the cell, and cells use the energy to perform bodily functions. The medical system will never get their mind around the science of *water structure energy* because they are stuck in a chemical belief system where the *energetic forms of body function* do not exist in medical practise or language. Therefore, doctors only work on the chemistry of blood and other measurements of the physical aspects of the body. The medical system does not measure cell energy levels (*the essence of life*).

However, what we do know about structured water can be summarised as follows:

- The water molecules in structured water are ordered into a six-sided (hexagonal), crystalline, ordered structure, of small clusters versus bulk water (ie. the form of water that most people drink from urban sources) that has a five-sided (pentagonal) crystalline, disordered structure with large molecule clusters
- 80% of cell capacity within all living species is structured water and when the cell retains this structured (negatively charged) form it carries the oxygen and information

essential for cell coherence that is required for continuous cell regulation, replication and healing

- Structured water can receive, store and transmit information (sometimes called *water memory*) that is critical for life (cellular regulation and healing) It is the hexagonal crystalline form of structured water that enables all nutrients (eg. amino acids, enzymes, vitamins, proteins, etc.) to transmit or communicate their specific attributes in collaboration with each other in pathways of cellular regulation and healing. That is, nutrients cannot work or reach their full potential in these metabolic pathways without the presence of structured water. Therefore, structured water is the foundation and ***the essence of life***.
- Water is bioavailable only in its structured form to support hydration, digestion, absorption, assimilation, detoxing and elimination
- Structured water has abundant negatively charged hydrogen ions. Dr. Albert Szent-Gyorgyi, stated years ago, *hydrogen is the fuel of life*. The negative hydrogen carries oxygen into the cell where the oxygen burns the hydrogen to form ATP, the compound that all cells use for energy. Negative-ion hydrogen is a non-caloric source of cellular energy. Negative hydrogen establishes environments whereby pathogenic microbes cannot survive. **Phión's** MEA water has already been proven to eliminate pathogenic microbes like E. Coli. Besides, this negative hydrogen environment is unfavourable to cancer cells.
- The structure of water in cells can be degraded (ie. loss of the hexagonal crystalline structure cellular and negative charge) by chemical toxins (eg. pharmaceutical drugs, chemical sprays, air pollutants, etc.) Also, a person's cell health will decline due to constant exposure to radiation (microwave ovens, mobile phones, etc.), lack of fresh, nutrient dense food, drinking disordered, non-structured water, a high carbo-hydrate diet, lack of daily sunlight exposure, stress (in its many forms, including emotions such as grief, resentment, etc.). Premature aging, sickness and disease are all outcomes of cell degradation and dysfunction due to the loss of the hexagonal structure in cell water (*bio-water*).

It is also very likely that both structured and unstructured water can form into many dimensions or forms, within their 6 and 5-sided crystalline and bonding structures. For example, the many *healing waters* of the world are renowned for their *healing properties*, eg. Lourdes in the French Pyrenees, Tlacote in Mexico, Pamukkale in Turkey, Nordenau in Germany, Nadana in India, Liaoning in China and Yankalilla in Australia. It could be assumed that these healing waters are in a six-sided, crystalline, structured form. However, their crystalline structures may have different dimensions in time and space. Also, the molecule bonding arrangements may be different as they put these waters into a **permanent structured, negatively charged form** that restores cellular charge to negative (-) mV. This higher form of structured water would carry a higher negative charge and hence have considerably more

electrons (⁻) of oxygen and hydrogen (H⁻). Some sources of *healing water* contain the H⁻ ion, and include glacial runoff water, high altitude lakes, wells and springs and some deep groundwater sources where the aquifer has been stable for millennia.

*The water inside your cells is critical for your health. If you have a pathology (dysfunction or disease) of an organ, it is not only the **proteins** inside that organ that are not working, but also the **water** inside that organ (group of cells). That near-**protein water** is not ordered the way it should be. What you could do is, re-establish a kind of ordering, if you need that entity to function properly. Take a muscle for example, if the muscle is not functioning, it is the **protein and water** that are not functioning. You need plenty of this **ordered/structured water and proteins** in the right form to make the muscle function properly.*

Dr. Gerald Pollack, Professor Bioengineering Washington University

Three Nobel Prizes were awarded in the 1990's for scientific research involving *clustered/organised* or structured water. This research involved the relationship between structured water and DNA, intercellular fluids, **cellular communication**, and protein folding. The discoveries demonstrated that healthy DNA (in cells) is surrounded by cellular water in a crystalline (structured) matrix. However, what is amazing is that Nobel Laureates have known about the link between structured water and every bio-chemical/energy reaction in organisms for over 100 years. Academic science, government authorities and the medical system still scoff at these facts and remain ignorant of the natural healing and preservation properties of using structured water.

Water treatment technologies

The purpose of this section is to discuss the differences in water technologies and whether these technologies produce water in its natural structured water (negatively charged) state. This section should sort out some of the facts from the myths.

Alkaline pH or ionised water

Technologies have emerged globally, that promote alkaline water for cellular healing or supporting blood alkalinity.

There are commercial, alkaline water systems that claim a range of health benefits. These systems have a water science based on the use of an Oxidation Reduction Potential: ORP meter to measure and promote the health benefits of water's negative (-) ORP value. Firstly, the claim that ORP measures voltage is flawed. There is a diagram on page 7 that shows swamp water with a negative ORP (with low oxygen and low diversity of biological life), so this is near dead water. Water that is living and in a structured form has a positive (+) ORP.

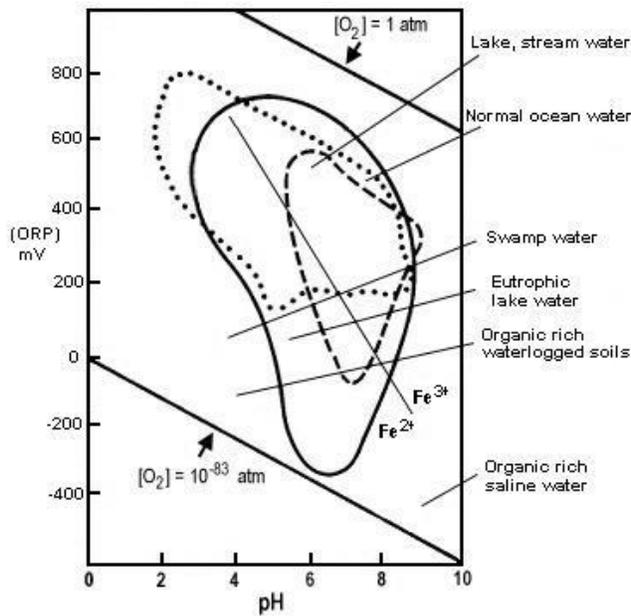
Natural flowing water in pristine rivers, creeks and springs is living water. This natural water carries a **negative voltage (charge) and has a full range of trace minerals including alkaline earth minerals or metals**, like lithium, sodium, potassium, magnesium, calcium, rhodium and strontium. When water is not flowing (eg. water held in a tank, pond, dam, reservoir, etc.) it

turns to a positive charge. **Phi'on** has a patented magnetic device to hold a **permanent negative charge** in water that imitates water from nature. This voltage or charge is measured with a **volt meter**. The **Phi'ón** water restructuring device is called MEA (**M**agnetic, **E**nergised and **A**ctivated). The device converts the water to its natural, six-sided crystalline structure, and this water is commonly called structured water. When water is in this form, it holds negative voltage due to the increase in oxygen molecules (ie. the water has high or positive oxygen potential or positive + ORP). Also, we have independent laboratory data that shows that the MEA water device will destroy pathogenic microbes.

Phi'ón scientists have measured natural flowing water all over the world and have found that most waters (possibly >95%) are slightly acidic (ie. 6.6pH) to acidic (5.5pH). When water pH has high alkalinity, oxygen (measured as ORP) is low (or -ORP). When water pH is low (below pH 7) the ORP is high and positive (+) and carrying more oxygen. All body regulation and healing require oxygen, and high levels of oxygen in water is highly desirable because oxygen carries a negative (-) charge. Also, see **Phi'ón** papers on the results of using negatively charged (including + ORP) water on plants (MEA Water Measurement Results). These papers provide clear evidence that all living species require negatively charged (voltage) water and high levels of oxygen (+ ORP) water. There is something to be said for the **messages or laws in nature for natural water** systems.

The myth in the alkaline water story is the belief that ORP is a measure of voltage in water. It is not. Voltage in water is measured with a voltmeter: that measures charge or voltage (- or +). An ORP meter only measures **oxidation reduction potential** or the ability /state of water to gain or lose oxygen. **Phi'ón** has invented a meter technology to measure voltage in water. In many respects, the alkaline water is dead water and not life-affirming, as claimed. Alkaline water is rarely found in nature (except from limestone or carbonate groundwater (fractured rock) systems and humans never evolved or adapted to using highly alkaline water. It most likely that the voltage in these human-made alkaline waters is positive (+).

The diagram on page 7, shows that pristine waters in rivers and creeks have slightly acidic pH and an ORP value that is positive, and often well above +200 mV. By way of contrast, organic rich saline water has a pH of about 9 and an ORP value of -300mV. This sounds like the water promoted by *alkaline water companies*. It is concluded that the consumption of alkaline water has no relevance in terms of cellular health. In fact, alkaline (high pH above 7.5pH) water is deprived of oxygen and these waters are not life-affirming. However, pristine water that is well mineralised (particularly with alkaline minerals) and oxygenated (high positive ORP) will produce the best structured water results.



The key to water integrity is the negative charge (-) and the amount of primary alkalisng minerals (eg. bicarbonate, Lithium, Sodium, Potassium, Calcium, Magnesium, Rubidium and Strontium) in the water. It is these minerals that keep your blood alkaline, not the alkaline pH of water.

Alkaline water does not provide the natural negative charge of flowing, pristine water. As soon as you drink alkaline water it becomes acidic in the stomach as the stomach is acidic (1-3pH). Studies have shown that pathogenic microbes (with gram negative membranes) are destroyed in water with a pH of 2.5 or below, and this fact is one reason your stomach is acidic. Your stomach is also acidic to break down food into the small particles that microbes can digest in the small intestines. If you put alkaline water into the stomach, then the stomach must put more acid (mainly hydrochloric acid) into the stomach to counter the pH imbalance.

Clearly, there is some value from the alkaline minerals and extra hydrogen in any natural alkaline water. However, all food and water you swallow becomes acidic within seconds of reaching the stomach and therefore the alkaline water pH is rendered useless at this point. Also, alkaline water will have less dissolved oxygen due to the higher, alkaline pH (the hydrogen ions reduce the oxygen ions in non-structured water forms). Every cell in your body requires a negative charge to create a new cell (see *Healing is Voltage*, by Jerry Tennant) It is the negative charge in water that neutralises the positively charged free radicals in your body. Also, anti-oxidants (eg. Vitamins A, C and E) do the same thing, along with fresh, raw vegetables and fruit. The best thing you can do for your cardiovascular system is to drink negatively charged (MEA) water developed by my research company, and eat fresh, organic, raw vegetables and fruit at least daily. Himalayan and Celtic salt are **complex salts** that have more than 70 trace minerals and are full of alkalisng minerals. You need an adequate daily intake (about ½ a teaspoon at least) of complex salt (sodium and magnesium) to:

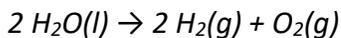
- Regulate heart rhythm
- Metabolise the water into the cells
- Balance blood pH and pressure
- Encourage digestion and elimination
- Sustain nerve and muscle function
- Regularise the quantity of bodily fluids (eg. blood contains about 10grams of sodium per litre)

A good summary of the issues with drinking alkaline water is on Wikipedia (see extract on page 7 below) and the website of Dr. Mercola (www.mercola.com) He says: *In my interview with water filtration expert, Houston Tomasz, I asked for his thoughts on the growing use of alkaline water. There are several potential problems with alkaline water. Firstly, most water ionizers and alkalizers are marketed by multi-level marketing (MLM) companies with questionable ethics. Some people experience an initial "high" when they start drinking alkaline water. This can easily be attributed to detoxification, and the fact that they are likely just becoming better hydrated. Detoxification is about the only benefit of alkaline water, and this benefit is limited to very SHORT-TERM USE (no more than a week or two). An additional concern is that many individuals have stomach dysfunctions like GERD or ulcers that are largely related to having too little stomach acid. Long-term use of alkaline or ionized water can interfere with your body's natural digestive process by reducing the acid needed to properly break down and absorb food. This could then lead to an upset of your body's good bacteria, which can then open the door to parasitic infection, ulcers and malabsorption.*

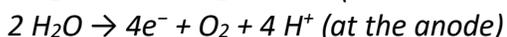
If you want to boost the alkalising minerals in your water put a few drops of magnesium oil or Himalayan salt into your drinking. That is, add the alkalising minerals to your water and use the MEA bottle top device to charge the water: or install the Phión, MEA in-line water device (either the ½" or ¾" device) to the house supply and then add the alkalising minerals. The house device will ensure all water in the house is negatively charged and at a cost of about \$1,375, with no ongoing maintenance required.

Finally, this is what **Wikipedia** has to say about ionized or alkaline water: *A **water ionizer** (also known as an **alkaline ionizer**) is a home appliance which claims to raise the pH of drinking water by using electrolysis to separate the incoming water stream into acidic and alkaline components. The treated water is called **alkaline water**. Proponents claim that consumption of the alkaline stream results in a variety of health benefits, making it similar to the alternative health practice of alkaline diets. **Such claims are not accepted in chemistry, physiology, and evidence-based medicine.** The machines originally became popular in Japan and other far eastern countries before becoming available in the USA and Europe.*

Despite being described as 'water ionizers' the machines are designed to work as water electrolyzers. This is an electrochemical process in which water is split to form hydrogen and oxygen by an electric current. The overall chemical reaction is shown below:

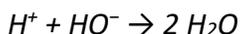


During this process, the water near the anode is acidic while the water near the cathode is alkaline.



Water ionizers work by simply siphoning off the water near the cathode. Water siphoned off the cathode side contains increased levels of hydroxide (OH^-) and would be expected to have a higher pH (ie. be more alkaline), whereas water siphoned off near the anode would have increased levels of H^+ making it acidic. The acidic water is claimed to be useful for household disinfecting.

The effectiveness of the process is debatable because electrolysis requires significant amounts of time and power; hence, the amount of hydroxide that could be generated in a fast-moving stream of water such as a running tap would be minimal at best. Additionally, the process of reversing the reaction requires much less energy, so if the area between the alkaline and acidic water is at least semi-permeable, the water will undergo another reaction that just leaves neutral water. The second reaction is shown below:



Similar machines have been used to produce electrolyzed water which is chemically much different because it also contains sodium hypochlorite, the main ingredient in bleach, and may therefore be used as a disinfectant.

*Water ionizers are often marketed based on health claims which are normally focussed on their putative ability to make water more alkaline. A wide variety of benefits have been claimed, including the ability to slow aging, prevent disease, offer protection from nuclear fallout, give the body more energy, and offset the effects of acidic foods. There is no empirical evidence to support these claims, nor the claims that drinking ionized water will have a noticeable effect on the body. **Drinking ionized water or alkaline water does not alter the body's pH due to acid-base homeostasis.***

Reverse osmosis

Reverse osmosis (RO) works by forcing water into a series of filters and membranes. These filters and membranes require regular replacement or cleaning. A typical reverse osmosis system contains, at least, four membranes and a water softener to help remove any organic

particles and soften the water by removing alkaline minerals, like calcium and magnesium. A RO system contains a pre-filter, that removes silt and particles that may clog and destroy the subsequent filters (eg. carbon filter) that remove any odorants and chlorine molecules. Next, the reverse osmosis filter will remove mineral or metal ions that are present in the water. This filter is normally followed by another carbon filter. Then, a water softener will remove any residual calcium and magnesium particles to soften the water.

One major concern is that the RO water system removes the minerals that play an important role in health (eg. alkaline minerals to sustain the blood pH and avoid blood acidity). Typically, a natural or pristine flowing water contains between 30-70 minerals. It could be argued that the natural minerals in urban water are minute and have no real impact on health when compared with the minerals in fresh, raw food. However, urban water usually contains added chemicals such as fluoridation, chlorination and aluminum (as activated alumina). Also, some urban waters contain heavy metals in the form of lead, mercury and arsenic from a range of local containing sources, including soil and air.

Certainly, RO removes waste materials from the water, and therefore it does produce some waste water. Wastewater is produced when the rinse water flushes out the contaminants from the membranes.

The pH of urban (treated) water can generally vary from 6.5 to 7.5. RO can remove the alkaline bicarbonate crystals through the filters, however it cannot remove the acidic carbon dioxide (CO₂) particles, and this makes the water more acidic than usual. However, as discussed earlier the water pH is not an issue for digestion, besides the change in the water's pH when placed in an RO system is not that significant. The product water from an RO system is 6, while coffee has a pH of 4 and most soft drinks have a pH of 2.5, and this low pH does not cause any immediate harm to the body, as they become even more acidic in the stomach. This acidity is subsequently buffered by the release of bicarbonate from the pancreas as food particles and liquids move from the stomach to the small intestine.

Some Australian urban waters and many inland groundwater supplies contain calcium and magnesium ions, which makes the water *hard*. Therefore, water softeners are added to RO water system to make the water softer. Conventional water-softening appliances intended for household use depend on an ion-exchange resin in which *hardness ions*: mainly Ca²⁺ and Mg²⁺, are exchanged for sodium ions or potassium ions (Na⁺ or K⁺). Hard water can cause scaling on the inside of pipes (see image on page 11).



In the case of RO, it takes advantage of hydrostatic pressure gradients across a special membrane. The membrane has pores large enough to admit water molecules for passage; hardness ions such as Ca^{2+} and Mg^{2+} remain behind and are flushed away by excess water into a drain. The resulting soft water supply is free of hardness ions without any other ions being added. **Membranes have a limited capacity, requiring regular replacement.**

When water is restructured using a **Phión water conditioner**, the pipes do not scale with Ca^{2+} and Mg^{2+} ions. Therefore, softeners are not required when the water holds a permanent negative charge. Besides, all restructured water with a permanent negative charge tastes soft, even though water may be hard (with alkaline salts, eg. calcium salts) before passing through a **Phión water conditioner**.

Forms of water restructuring technologies

The commercial imperatives to develop water restructuring devices has been around since the 1930's. These days, water structure devices are primarily advertised within the wellness domain. Typically, the claims include: *no salts, no maintenance, no electricity, no magnets, no hassles, the most economical way to naturally balance and structure water, one-time installation, neutralize the effects of pollutants such as Arsenic, Bacteria, Chloride, Chlorine, etc., cost effective and efficient, one-time purchase, no filters to replace, no moving parts, etc.* In most cases, the technology does not address the science of structured water, and specifically the negative millivolt charge that is the principle characteristic of structure water. In most cases these technologies have some of the following features:

- Vortex generators (everyone seems to have a different and unique way to create the water vortex, eg. implosion technology)
- Piezoelectric effects (*the linear electromechanical interaction between the mechanical and the electrical state in crystalline materials with no inversion symmetry*) that resonate with tourmaline or quartz
- Infused rock dust/powders (paramagnetic fields), minerals, gems, etc.
- Light (ie. IR, UV) or sunlight exposure
- Focused intention (eg. love, healing, joy, etc.) to entrain that intention into the water (made famous by Dr. Masaru Emoto: Japan)
- Natural frequencies or wave energies
- Sacred geometry influences
- Magnet effects

There are other claimed techniques for conditioning or restructuring water, however the list above captures most of the techniques. Certainly, these features will influence water and potentially its structure because water has a capacity to receive, store and transmit energy as information.

Firstly, Phión research discovered very early in the innovation phase that water does not need to be directed to vortex, because water has high level of consciousness and knows how to vortex. Therefore, we never attempted to install techniques in devices to force a vortex. Secondly, Phión understood that the negative charge in water was the key measurement that indicated water was in a natural structure (six-sided crystalline form), and if the water held this negative charge for more than 48 hours then the charge was being held permanently. Interestingly, **Phión seems to be the only developer of structured water devices that makes this claim of holding a permanent negative charge in water and has a capacity to measure the charge in the water.**

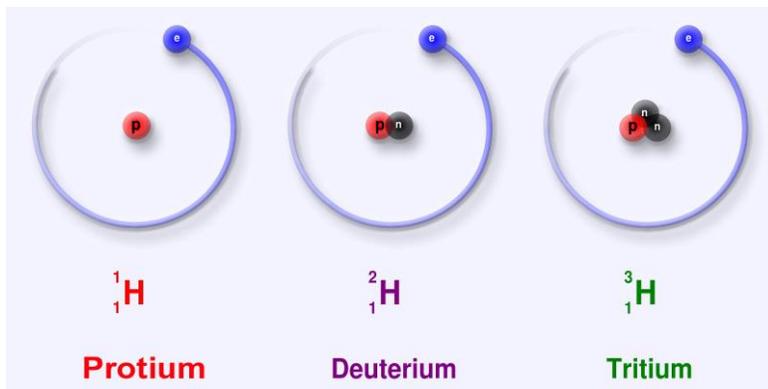
Thirdly, structured water has a light blue colour that is sustained with the negative charge. Fourthly, structured water will entrain energies from its environment and this is acknowledged by many of the water technology developers, eg. from natural frequencies, natural wave energies, sunlight, gems, minerals, magnetism, etc. However, **only structured water with a negative charge will permanently hold these natural energies.**

Some technologies claim that their restructured water has low surface tension as *high surface tension makes it hard for the water to penetrate the cell membrane (in people and animals) or the cell wall (in plants), which in turn leads to dehydration*. However, this claim is false: it is **the smaller size of the water molecule cluster in structured water that facilitates cell membrane penetration and not surface tension**. Structured water has a higher surface tension than unstructured water. In other words, structured water is sticky and elastic, and tends to clump together in drops rather than spread out in a thin film. **Surface tension is responsible for what is known as capillary action**, that allows water (and its dissolved substances) to move through the xylem and phloem of plants and through the tiny blood vessels in our bodies.

[Deuterium in water](#)

There is an interesting debate about the amount of deuterium (^2H or D) in water and some commercial products are available to reduce the amount of deuterium in water. There are claims that reduced deuterium in water is beneficial to human health. However, there are no known reports of how deuterium behaves in structured, negatively charged water.

Natural water has tiny amounts of D_2O molecules (deuterium and oxygen), mixed in with the dihydrogen monoxide. Deuterium, also called heavy hydrogen, is an isotope of hydrogen that contains one proton and one neutron. In some cold and mountainous regions, typical drinking water has a deuterium concentration of about 150 ppm, roughly equivalent to a few drops per litre.



Theoretically, deuterium has been present in water ever since water appeared on Earth, and therefore has been part of life forms ever since that time. Deuterium has probably been a *foundation stone* in Earth energy (Gaia) and fundamental to the **primal consciousness** (essence) of evolving life.

All chemical elements have isotopes and they are part of the primal constructs for life. For example, Hydrogen has two stable isotopes: Protium (${}^1\text{H}$) has a mass number of one and is the major isotope with an abundance of 99.985 %, whereas Deuterium (${}^2\text{H}$) with mass number of two is abundant only up to approximately 0.015 %. In addition, there is also a radioactive isotope of hydrogen: called Tritium (${}^3\text{H}$). Tritium has relevance in the field of determining the age of deep groundwater sources (often called *primary, magmatic or the source water*). However, in natural surface waters, the ratio of isotopes is not constant, due to constant churning of physical, chemical and biological processes, and therefore the isotope ratios can be changed (isotope effects) rapidly in time and space. Consequently, different isotope effects cause local and temporary compositions of precipitation.

Primary or magmatic water is water that exists within, and in equilibrium with, a magma or water-rich volatile fluids that are derived from a magma. This magmatic water is released to the atmosphere during a volcanic eruption. Magmatic water is also be released as hydrothermal fluids, and particularly during the late stages of magmatic crystallization or solidification within the Earth's crust. The crystallisation of hydroxyl bearing amphibole and mica minerals acts to contain part of the magmatic water within a solidified igneous rock. Ultimate sources of this magmatic water includes water and hydrous minerals in rocks melted during subduction and Earth expansion, as well as *primordial water* brought up from the deep mantle.

Stable isotope studies of oxygen and hydrogen in igneous rocks indicate that the oxygen-18, ${}^{18}\text{O}$, content is approximately 6 - 8 % **higher** than standard mean ocean water (SMOW) while the deuterium, ${}^2\text{H}$, content is 40 to 80 % **lower** than SMOW. Water in equilibrium with igneous melts should bear the same isotopic signature for oxygen-18 and deuterium. Isotope data on hydrothermal solutions spatially associated with igneous intrusions should reflect this isotopic signature. However, isotopic studies of hydrothermal waters indicate that most bear the

isotopic signature of meteoric water. Any magmatic waters in these hydrothermal solutions must have been swamped by the rapid circulating groundwaters of the environment.

Fluid inclusions are microscopic bubbles of aqueous solutions which were trapped within crystals during crystallization and are considered as examples of the relic mineralising waters. Analyses of the isotopic content of these trapped bubbles show a wide range of ^{18}O and ^2H content. All samples examined show an enrichment in ^{18}O and depletion in ^2H relative to SMOW and shallow groundwater systems that are part of the hydrologic cycle. Fluid inclusion data from many deep *ore deposits* plot directly on the magmatic water *region* of an ^{18}O vs ^2H plot. It is very likely that deep magmatic water sources have a variable negative charge and are structured due to the variation in the magnetism of the deep rock system.

Similarly, studies have shown that water from mountainous regions has a higher oxygen-18 and lower or depleted deuterium amounts compared with waters of low elevation from sea levels. A ^{18}O vs ^2H elevation plot would show that oxygen-18 and deuterium (D_2O) are correlated. It is therefore reasonable to hypothesize that surface waters from low elevations could revert to a lower (depleted state) through restructuring the water with a **Phi'on water conditioner device** to a **permanent negative charge**, would increase oxygen levels, prevent oxidation and transform deuterium concentrations into a form that assimilates with cells, in a life-affirming manner.

Surface waters with higher concentrations of D_2O are known as *heavy water*, and is considered by some to be harmful to plants and animals. Therefore, they claim that water with hardly any D_2O , or *light water*, may boost the immune system and benefit plant and animal health, according to several studies. In one study from 2003, plant photosynthesis increased with the use of light water. A study involving mice blasted with ionising radiation showed a dramatic difference in survival between mice that drank light water and mice that drank regular water. It was even used as a cancer treatment for humans: In 2008, researchers reported that light water (deuterium depleted water) noticeably lengthened the lifespan of terminal cancer patients.

Given these reported effects, it seemed smart to some people to provide greater quantities of *light water* for public consumption, however light water is difficult to produce. Current deuterium extraction methods include electrolysis, distillation, a high-temperature exchange method that uses hydrogen sulfide, and desalination from seawater. The water produced from these processes would be oxygen depleted and positively charged, and therefore the deuterium depleted water would be in a destructured (chaotic) form.

H_2O in its unstructured or destructured, pentagonal form is usually electrically neutral to positive, but if the hydrogen atom is deuterium (D, ^2H), and the water molecule is D_2O , the electrical charge of the heavy water is positive, until an electron (-) fills the shell in the D orbital of the hydrogen atom. When that happens, the heavy water molecule usually disassociates, because the hydrogen atom then looks like a light-weight helium atom (which is a noble gas)

Therefore, it is likely when deuterium is removed from water the polarity of the water would become less positive, and this may account for the reported results using *light deuterium water* (deuterium depleted) compared with the more positively charged *heavy deuterium enriched water*.

The opposing view about the health benefits of deuterium has been presented by Mikhail Shchepinov, a former Oxford University scientist, who considers *heavy water* (deuterium enriched) water would increase lifespan by 10 years. His view centres on fortifying the body's tissues and cells against attack and decay caused by free radicals, dangerous chemicals produced when food is turned into energy. Such *attacks* on proteins are particularly damaging and have been linked to cancer, Alzheimer's and Parkinson's.

Dr Shchepinov's theory is based on the idea that deuterium strengthens the bonds in between and around the body's cells, making them less vulnerable to attack. He found that water enriched with deuterium, which is twice as heavy as normal hydrogen, extends the lifespan of worms by 10 per cent. Fruit flies fed the deuterium rich water (*water of life*) lived up to 30 % longer.

Tom Kirkwood, of Newcastle University, said: *Shchepinov's idea* is interesting, but the history in the field of *deuterium enhanced versus deuterium depleted* is cluttered with hypotheses which are only partially supported by the data. Tom's laboratory has an interest in the biophysical effects of heavy water (both heavy-hydrogen water, D₂O, and heavy-oxygen water, H₂O¹⁸) Consequently, this angle of research could fill in some gaps in the research data and throw more light onto the role of deuterium in oxygen rich, structured, negatively charged water in cell regulation and healing.

What differentiates the Phión MEA water devices in the structured water market

Phi'on's water conditioning devices have been under research and development since 2003. In 2012 a working prototype was finally produced that sustained a natural, permanent, negative charge (mV) in the water. In 2016, **Phión** was granted 4 Australian Innovation Patents for the capacity of the devices to hold a permanent negative charge in the water, demonstrate a capacity to activate microbial activity, demonstrate a capacity to eliminate pathogenic microbes in water (E. coli) and raw milk, and to permanently hold any natural quantum wave energy that is life-affirming. This included a demonstrated capacity to reduce cellular stress levels back to a normal range.

Since our first working prototype in 2012, there has been a process of continuous innovation and improvement in design, testing and application. **Phión** has undertaken over 300 experiments and trials in the areas of human and animal health, agriculture and industrial applications (including waste water treatment). This process is ongoing as applications for the devices expand through new opportunities in trialling and testing results.

Also, Phións device manufacturing has reached a mature stage, including the stability of the negative charge in the water and its broad application for domestic, agricultural and industrial uses. **The Phión** website for these devices is www.meawater.com.au. The MEA website provides the evidence of its advanced capacity for water conditioning and restoring the natural, permanent negative charge to water. The **Phión** MEA devices include: a portable **bottle top device** for home or travelling to condition water, wine, spirits, juices and raw milk; an **under-sink/shower device** that can also be used on an outdoor tap and sprinkler, and 5 **in-line devices** ($\frac{1}{2}$ " , $\frac{3}{4}$ " , 1" , 1 and $\frac{1}{4}$ " and a 2" inner diameter) for house connections and a broad range of agricultural and industrial applications.

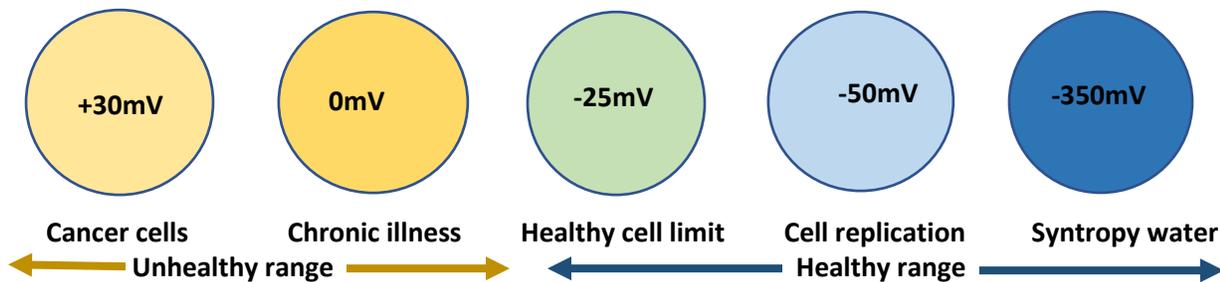


The key areas that differentiate the Phión MEA water devices in the structured water market are:

1. The simplicity of design, operation and installation (install and forget). There is **no ongoing maintenance**, except the bottle top device may need a change of the inner washer every 2-3 years depending on usage, however this process is very simple and Phión provide spare washers.
2. The water produced from these devices will **hold a permanent negative charge** (ie. a syntropy force). Phión has checked this capacity in numerous experiments with water and wine. Wine that is restructured will never oxidise (ie. lose oxygen and turn to vinegar). These results clearly demonstrate that the MEA water has a **natural preservative capability**
3. The cost to buy and sustain the device is **highly competitive and value for money** is significant given that it will hold a permanent negative charge and produce significant results in food production and food integrity
4. Phión structured water will **eliminate pathogenic microbes** like E. coli
5. Phión structure water has a **natural bonding with microbes in the processes of digestion, absorption and assimilation of nutrients and elimination** of cellular wastes
6. Phión structured water has been proven in independent measurement to **receive (entrain), store and transmit natural wave energies** (eg. Quantum Code Technology: QCT) that will reduce cellular stress levels to a normal range in about 2 minutes.

The key question arising from the above factors, that differentiates the **Phión** MEA water device results from other technologies is the fact that the **MEA water retains its negative charge**. The only explanation is that the **MEA water device creates another time and space dimension to the six-sided crystalline structure that creates a permanent bond between the water molecules, and this prevents the exposure of the bonding to disorganisation**, eg. oxidation. That is, the MEA water is in a state of **syntropy** (energy enhancing) and will sustain cells in a **higher function or order**.

Every cell on this planet operates at its fullest potential when the negative charge of the cell water (80% of the cell volume) is **-50mV or better**. When the cell charge falls towards a near positive (+) charge through cellular stress, due to poor diet (particularly access to nutrient dense food), poor lifestyle choices, exposure to radiation and chemical toxicity, then body organs and systems become diseased. See diagram below.



Our ancestors have intuitively known through antiquity, the value of drinking and bathing in flowing, structured water. Therefore, they settled on flowing streams or springs, and used it every day.

The implication of low cellular charge is clear: our state of health is highly dependent upon the structure (negative charge) of cellular water. Nobel Prize Laurates, like Dr. Szent-Gyorgyi, Dr. Linus Pauling and Dr. Luc Montagnier were often quoted as wondering why the scientific and medical communities could not grasp this simple principle of the value of structured water to health and wellbeing.

The key issue that these Nobel Laurates were pointing to would have been the fact that any disorganisation of cellular water structure (eg. loss of negative charge and oxygen) creates an environment for disease. Everyone has a genetic propensity (expression) for disease, acquired initially from forebears and time in the womb; and then modified by environmental factors relating to diet, lifestyle choices and life stresses. When these adverse factors affect cell structure, the cells will initiate gene expression and the cell will become disorganised. The rate of aging is different between the forces of entropy (decay) and syntropy (energy restoring) at a cellular level. For example, if the blood is continuously extracting alkalising minerals (eg. calcium, magnesium, etc.) from bones due to a chronic, acidic blood state, then decay can gradually overwhelm the forces of syntropy: this can be one pathway to disease regardless of gene expression.

Genes have 64 codons (recipes) to produce proteins from amino acids. Radiation, for example, can block the function of many amino acids, and particularly Tryptophan that is in a pathway to make serotonin (the hormone that prevents anxiety and depression). Radiation can also change the polarity of cellular water. The capacity of a protein to function as a syntropy force is highly dependent on it being surrounded by about 10,000 molecules of structured water. When proteins do not function properly then diseases like Parkinson's, Multiple Sclerosis (MS), cancer, etc. can take hold. The message of these Nobel Laurates was related to *the critical functions of structured water within organisms, including cellular communication to DNA integrity, and every bio-chemical-electro reaction in the body.*

In many respects, it is understandable why the pharmaceutical and medical systems focus public attention on genes as an underlying cause of disease, because this focus is a massive distraction from the real causes of disease. Disease is entropy in full flight and can only be arrested if the organism achieves a higher or altered state of syntropy at a cellular level.

Gene expression is only a symptom of the underlying cause of disease, and that is: ***the disorder in cellular water***. However, it is the escalation of profit from servicing escalating disease with pharmaceutical drugs that will not deter the massive promotion of gene therapy. It seems that we live in an era where truth is buried by propaganda.

The greatest impediment to scientific innovation is usually a conceptional lock, not a factual lack

Stephen Gould, Harvard Paleontologist

In the ideal world, children would be taught about the values of eating natural food that is nutrient dense, fresh and organic; and drinking structured water as a foundation to good health. They would also be taught that the energy of the mind is powerful (placebo effect of intention) in ***sustaining cell integrity***. Dr Vogel once wrote: *What we have found in our laboratory is that the energy of the mind projected through a crystal will structure water just like it was frozen into ice. The remarkable and unique differentiation is that water, when it is structured with the mind and with thought, remains fluid and structured; that type of structure is called liquid crystal, mesophase, a mesomorphic transition.*

The hexagonal structure of water is the one that promotes health and increase longevity

Dr. Yang Oh (Professor Baylor Medical School)

Cell water is generally different from that of bulk water, and (becomes) more bulk-like (unstructured water) in cancer cells.

Phillip Ball, Editor Physical Sciences

Structured water is liquid crystal that works as a fractal antenna to receive, store and transmit all cellular communications. **The way that we organise and conduct our lives to nourish and sustain this water structure in our cells is the key to a healthy life.**

The cell is immortal. It is merely the fluid in which it floats that degenerates. Renew this fluid at regular (hourly) intervals, give the cells what they require for nutrition, and as far as we know, the pulsation of life can go on forever. Dr. Alexis Carrel, Nobel Prize Physiology (Medicine)

Food production and quality testing with the MEA water conditioning devices has been high on the priorities for **Phión**. The results of MEA water testing on plants very clearly point to increased food quality in taste and the uptake of nutrients, and increased production yields. The MEA water technology is now providing new opportunities for home gardeners, and food and flower producers on small and large scale to produce plants and animals with integrity, and without chemicals (see images below and on page 16)



Many of these plant trials (mainly food plants and animals) have included **Phións** biological (microbial) formulations. For example, microbes in the soil have a unique partnership with structured water, and this collaboration is the basis of all cellular life. The food trial projects using **Phión** structured water and the biological formulations have also been undertaken in China with chilli plants, and in the USA with medicinal cannabis plants; where significant growth results were achieved in both cases (see images and comments on page 17)



This photo is a comparison between two Chilli plants grown in China: one was grown **without MEA water** and **Phión soil biology** (left) and the other (right) was grown **with the MEA structured water and Phión soil biology**. The yield of the chillies, by weight, was 5 times greater for the plants treated with the MEA water and **Phión soil biology**. Note the significant increase in root mass, the pathway for nutrient uptake to the plant.



This photo is of a Medicinal Cannabis plant grown from seed with MEA water in the USA (Oregon) The key point to note here is the increased strengthening in the bottom of the stem due to a significant increased uptake of silicon. This feature is not observed in plants not receiving MEA water. Silicon is critical to plants as it arms them to defend or fight pest attack. Trials undertaken by University of Delaware (USA) and Western Sydney University (Australia) demonstrated that plants that had silicon concentrations decreased insect growth and attacks, and consequently decreased root consumption by insects by 71%. Other Phión trials show similar nutrient uptake results in a range of species using or ingesting structured water.

Phión places a high priority on the quality control of the MEA water production and the feedback that we get from clients. It is our mission to sustain a leading edge in the market of water conditioning through results in human and animal wellbeing the achieving a high level of food integrity. The MEA website has over 20 papers dedicated to explanation of the structured water science and the results that we have achieved in research, development and testing since 2012. The website is updated regularly with new research and development information on the quantum phenomena of structured water and its function in cells of organisms.

Anyone who can solve the problems of water will be worthy of two Nobel Prizes: one for Peace, and one for Science

John F Kennedy, 35th President of USA

Conclusion

The **Phión** structured water is a dynamic, syntropy force that can increase and sustain energy expression at a cellular level: for microbes, plants, animals and humans. That is, cellular decay can be slowed (ie. anti-aging) through the continuous use of structured water for:

- Growing food. Structured water increases the life-force energy of the plant (as shown in the images above (pages 16-17)
- Hydrating the cells of animals and humans to improve cell regulation and healing
- Fermentation of foods, nutrient extraction from nuts, fruits and vegetables, preserving of food.
- Bathing (surround your skin with negative charge, like the negative ions in the air of a rainforest, waterfall, etc.

The human body potentially contains **one million trillion trillion molecules, and 99.9% of these molecules are water molecules**. Therefore, given that structured water in cells is in a unique fractal form (electromagnetic patterns), there is a massive amount of information that these cells can receive, store and transmit. It is this unique cellular capacity that enables a cell to amplify syntropy forces of renewal over entropy forces of decay. However, if the cellular entropy forces increase due to poor diet, water quality, lifestyle choices, and unhealthy thoughts; then cellular charge (voltage) will fall towards positive (+mV): the state of disease.

Thoughts can change the viscosity (thickness and stickiness) of water (blood is 92% water), and its properties. This changes the effect (towards entropy) the water has on a living organism.

Dr. Marcel Vogel

We know from the history of science that the structure of water is so intimately connected with the structure of energy (and therefore consciousness). Therefore, when we surround our cells with structured drinking water and the structured water in freshly picked, organic vegetables and fruit; we increase our vital force of syntropy energy. For example, the structured water in our cells act as a fractal antenna to enable complex communications between cells. Also, structured water molecules surrounding the genetic material of DNA influences gene expression, along with DNA stability and the cohesion of its electro-magnetic field.

This is the life-affirming energy we want flowing through our veins and our bioenergetic system (ie. Chi). Similarly, we need to surround our bodies with the universal wave energies, because it is this energy that determines the crystalline shape of water, and all other crystalline shapes or patterns in nature, eg. minerals, gems, etc. Besides, these universal energies influence our genes (ie. epigenetics), and then the ultimate shape and vitality of proteins. Ultimately, we are what energies we surround around and within our bodies, for cell and gene expression.

Aging is a phenomenon of our body becoming gradually drier (dehydration)

Dr Ishihari Yumi, MD.