

The Pico-sized Particle Water is an Essential Substance for an Organism

Sunao Sugihara^{1,2*} and Hiroshi Maiwa¹

¹Shonan Institute of Technology, Department of Human Environment, Fujisawa, Japan

²General Incorporated Association Green Earth Again, Yokohama, Japan

***Corresponding Author:** Sunao Sugihara, Shonan Institute of Technology, Department of Human Environment, Fujisawa, Japan; General Incorporated Association Green Earth Again, Yokohama, Japan.

Received: May 29, 2024; **Published:** June 08, 2024

DOI: 10.55162/MCMS.06.215

Abstract

The essential function of SIGN water is a chemical reduction by infoton, $\langle H^+ \sim e^- \rangle$ which is the pico-sized particle (1/1000 of nanometer). The epidermis in a skin contains 60% water giving good effects as well as blood in capillaries. Water plays an important role regardless of the lens and vitreous body in the eyes. We introduce to cure thyroid gland and kidney diseases with water. The Alzheimer's disease must be a total issue in the body due to the brain, and the disease can be cured by the reductive action of the infoton in the water. Furthermore, if a proton in the infoton, $\langle H^+ \sim e^- \rangle$, works effectively for a nuclear transmutation at room temperature, then the radioactive body could be decontaminated with the water.

Keywords: pico-sized water; skin; cataract; thyroid; kidney; Alzheimer's; radiation reduction

Introduction

Water is a universally found compound, and there are many research and reports on the behavior of water in the chemical, biological, and medical fields. Some primary textbooks like Pauling L [1], include hydrogen bonding in water, and Frölich H introduced the structure of water of the regular tetrahedron in the five H_2O molecules [2].

Macroscopically, there is wide variety of water research like water bridge phenomena between two beakers under high voltage of 25kV [3, 4]. Here is an exciting study of the fourth phase of water, although the water exists in liquid [5].

Another intriguing research is the dynamic spectroscopy of aqueous and biological systems describing peculiarities of water ("aquapoptomics") [6]. On the other hand, the hydrogen bond network of liquid H_2O has been much researched since the 2000s [7], where they reported the infrared spectrum of the OH stretching. They discussed the relaxation behavior of hydrogen bonds in liquid water [8-10]. Furthermore, the energetics of hydrogen bond network rearrangements in liquid water are close to our research but their temperature is lower than ice [11]. Regarding potential energy, the surface of H_2O is exciting study that is also intrigued by the *ab initio* calculation [12]. More *ab initio* calculation studies have been reported [9-11, 13]. The basic researches were reported on hydrogen bonding definitions [14], and quantum water dimmers [15], as well.

Other energy views are vibrational bands at 4.1 and 2.0 THz in the vibration-rotation-tunneling spectroscopy of the water tetramer-d8 without any application in daily life [16], in which they referred to as tetrahedral [2] as Frölich pointed. Here is another unique research in even a similar spectroscopy; thermal infrared emission, and fractal ordering in distilled coherent water [17].

Now, water is a subject of medical view point. First, water-channel protein found by Agre [18], and their group reported research of an intracellular aquaporin [19, 20].

However, we do not wholly understand water as a basic science, although water occupies 70% on the Earth and 80% in our blood.

Sahele C. J. et al. researched the microscopic structure of water at 134MPa and temperature 0~600°C using molecular dynamics simulation and density functional theory and analyzed the number of H-O, O-H, O-O and H bonds. However, they did not discuss the characteristics of the water [21].

Most of the research above relates to a macroscopic water molecule itself. Our essential points are water's originality, including chemical reduction and nuclear change characteristics, even when applying water to human health and the environment.

Some molecules of H₂O bound with hydrogen bonds each other and water is one of dielectric substances with dipole moment [1]. More basic research on water needs to be done. However, many studies have been reported for a macroscopic viewpoint of water, H₂O molecules, and they use water as a solvent, lubricant, and surfactant (detergent) daily. So, we do not cite references to water ions like H₃O₂⁻ and H₃O⁺. The structure and density of H₂O water have been discussed with X-ray and neutron diffraction methods (Mishima, 1998) and (Elington, 2001). There are so many academic fields relating to water as well as the used area of water, not only in physics and chemistry fields but also biology. All of them are just H₂O. However, different viewpoints of H₂O are the fourth phase of water [2] and interesting water bridge under high voltage like 25kV leading to the water flying between two beakers [3, 4].

Now, we have focused on the hydrogen bond of water; the strength of the hydrogen bond has been reported in a textbook [5]. This water is unusual for dissociated hydrogen bonds, which is an assumption since no body looks at the water itself. The specially processed water we developed is called MICA (Minimal Catalyst) water pressurized more than 3MPa. The Hatanaka family found this water, and they have commercialized more than a half century. Then, Sugihara developed SIGN water (Spin Information Gauge Network) since we used the water to reduce radiation from the soils in Fukushima. The SIGN water can be formed under 100MPa; called activated water commonly.

The characteristics of the activated water may possess a pico-sized particle like an elementary particle. We name the particle "infoton" involving, not hydrogen atom nor ion such as proton or electron. So, we can recognize the nucleus transmutation, and with the chemical reduction through outside electron of the nucleus.

Many researchers have reported a reduction of radioactive contamination by using materials such as zeolites or plants to adsorb radionuclides. In such processes, the absorbents still exist in radioactive materials, requiring subsequent disposal, usually by long-term burial. The essential theme is the deactivation of the radionuclides to change non-radioactive substances.

The manuscript here aims to look at the functions with some evidence of the activated water from both chemical reduction and nucleus changes. Firstly, we focus on the skin, eyes, kidney, and Alzheimer's.

Furthermore, we employed MICA water to reduce the radioactivity from the contaminated soils in the Fukushima disaster in 2008~2011, and we found nuclear changes of radioactive caesium134 & 137 (RI) to stable barium, lanthanum, and cerium [22]. We theoretically developed the analysis of the water as the reason why the RI changed to the non-radioactive substances [23, 24], in which a proton may involve for its decay.

Methods

The essential point is the quantum mechanical existence relating to MICA, and SIGN water which are fabricated under the pressurized condition more than 30 and 100MPa, respectively. Then, the SIGN water supposedly contains one hundred percent elementary-like particle (infoton) after hydrogen bond dissociation, although approximately sixty percent in the MICA water. It is neither a hydrogen atom nor an anion, and an electron oscillates toward proton and the opposite. The infoton emits the far-infrared frequency

through terahertz, and continues to exist stably [24].

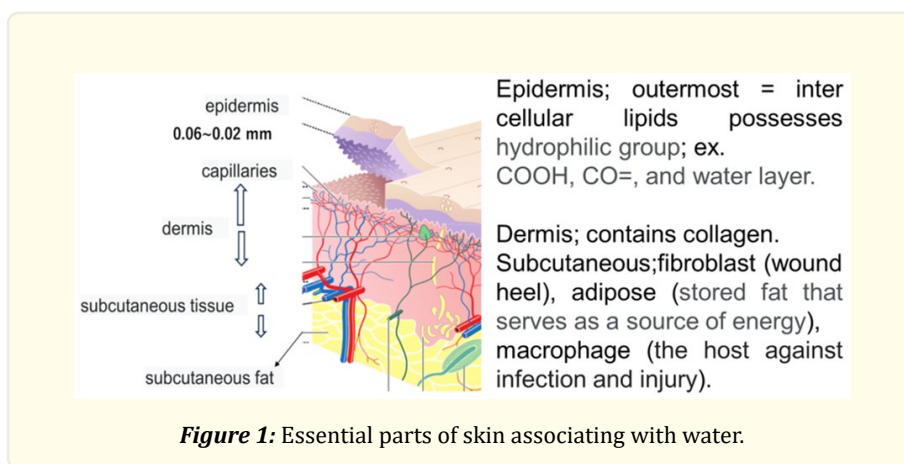
We suggest drinking to whom they try to do it more than one litter per day, and continue three months at least. The people may feel certain changes in their body.

Results and Discussion

We discuss the following theme in viewpoint of water, and the organs that water plays roles mostly. The selected items are skin, kidney, thyroid, Alzheimer’s disease, and cure of radioactive human body in the Fukushima, 2011, although we could not identify the caesium existence location specifically at that time.

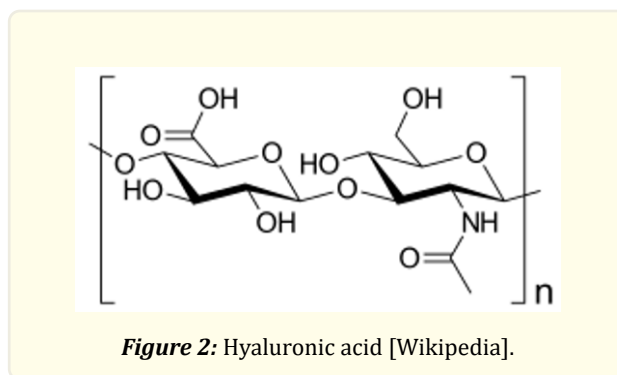
Skins

Firstly, we introduce the constituents of usual skin shown in Figure 1; the most outside is epidermis which thickness is μm orders. We can understand the skin is the largest organs occupying about 9 kg of body weight, and water content is 58 %. Protein and lipid amounts are about 27 and 14 %, respectively, and ash contains 0.9 % [25].



Inter cellular lipids in epidermis forms the lamella structures with water so that works for the barrier functions protecting stimulants from outside.

Collagen constituents with fibrous protein mostly, and hyaluronic acid fills with water between them. As shown in Figure, it distributed widely like connective.



Hyaluronic acid distributes widely connective tissue in the animal body that is the one of four tissues (Figure 2); namely, muscle, epithelial and neural tissues.

The subcutaneous tissue consists loose connective tissue, and contains larger blood vessels, and nerves than those found in the dermis. It is a major fat storage in the body.

The subcutaneous tissue cells found in the layer are fibroblasts, adipose cells, and macrophages. The macrophages are 15~20 μm in diameter, spreading in a body widely. The cells work for important natural immunity, and can eat bacteria from outside of body resulting in sterilization and protection of infection.

Thyroid cancer

We experienced healing thyroid cancer of a boy after drinking the MICA water in Fukushima 2012~2013 shown in Figure 6.

As shown in thyroid gland is on both sides of trachea, from where the thyroid hormone is secreted, and functions to a whole body leading to increase metabolic rate. Why the thyroid disease is difficult maybe because that the hormone receptors spread to a whole body.

Hypothyroidism and hyperthyroidism are the two main types of thyroid disease. But they have each multiple possible cause. Thyroid diseases are treatable with medication.

Too much coffee and blended tea containing kelp are not good to the thyroid disease.

Graves' disease produces extremely thyroid hormone because of autoantibody, namely autoimmune disease resulting in effect on whole body like heart pounding, weight loss, sweaty, getting tired easily, diarrhea, muscle weakness, etc.

Catecholamine is a general term of monoamine neurotransmitter existing in brain and adrenal medulla which is derived from the amino acid tyrosine (Figure 3). One of the neurotransmitters, dopamine existing in brain and adrenal medulla is a hormone generating motivation and feel happiness from tyrosine. The dopamine protects our body from stress by activate sympathetic nerve, increase heart rate, and blood pressure and sweat-inducing effect.

The thyroid hormone is so difficult to estimate the mechanism by the SIGN water, but it was remarkable result in the Fukushima.

The thyroid also releases a hormone called calcitonin to help regulate calcium levels in our blood by decreasing it. The stable calcium exists in $^{40}_{20}\text{Ca}$, and natural abundance is 96.9%, but radioactive one is $^{41}_{20}\text{Ca}$ (a half-life; about 10^5 years). We may protect to form it in a body with the SIGN water.

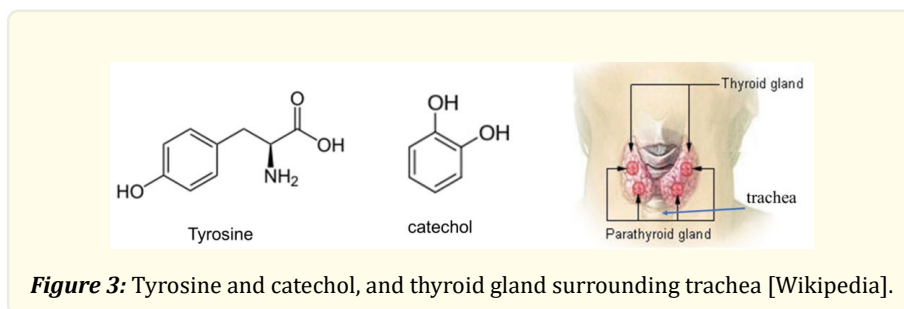


Figure 3: Tyrosine and catechol, and thyroid gland surrounding trachea [Wikipedia].

Cataracts

We had two cured patients of the cataract safter spraying the SIGN water to the eyes for half a year. The lens decreased visual acuity and looking hazy from yellowish white or brown. The lens constitutes 66% water; and protein (33%) degenerates becoming cloudy and decomposes by light resulting in yellowish.

We suppose water in the lens decreasing with age, which is the largest cause of cataract.

Furthermore, 99% water is component parts in vitreous body, and other substances are collagen and hyaluronic acid. water retention is high, and distributes skin, in a body widely.

The hyaluronic acid plays a role in skin, cartilage, and joints keeping smooth movements as lubricant. In particular, the acid retains water and protects losing it possessing viscosity.

The pico-sized water is essential factor for eyeballs.

The SIGN water absorbs blue to ultra violet light partially.

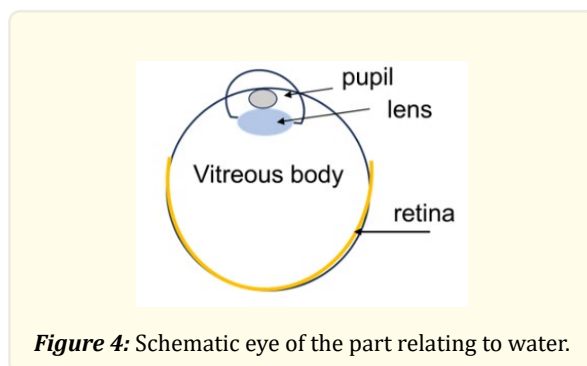


Figure 4: Schematic eye of the part relating to water.

Kidney

The organ associates with water. We introduce the main common functions first.

The paired kidneys receive blood from arteries. Each kidney attaches to a ureter, a tube carrying excreted urine to the bladder. The kidneys play an important function of body fluids control like water of about 60% of total body weight, and various electrolyte concentrations, and removal toxins. Furthermore, filtration function occurs in the glomerulus. Although blood relates water, we focus on the organs itself. The glomerulus is a small blood network of capillary vessel entering the kidneys, where the blood is filtered.

The kidney diseases associate with renal tubule and glomerulus. So, kidney needs the pico-sized water. The causes of the disease relate to control of the fluids from the capsule down into the tubule, it is processed by the epithelial cells lining the tubule: water is reabsorbed and substances are exchanged (some are added, others are removed).

Thus, water plays essential functions in kidney, and we suppose the effective work of the pico-sized SIGN water. We had a good new in 2018 from a patient treated medical with insulin injection every day, but a doctor said no necessary of the injection after drinking the water for ten months.

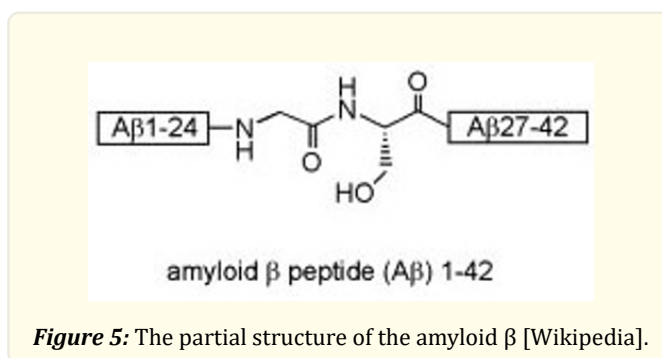
Alzheimer's disease and one cured evidence

Here we discuss Alzheimer's disease, although we have experienced one evidence. Many results associating with A β in medical viewpoints have been developed with effects [26]. On the other hand, no existence of A β is reported that the loss of physiology and function do not happen. For instances, activation of kinase, protect from the oxidized stress, antibacterial activity, cholesterol transport: a lead to neurotoxicity etc. have been reported [27, 28]. These results are like our effects of infoton in the dissociated hydrogen bond water. For instances, anti-oxidization for keeping foods fresh at room temperature [29]. Furthermore, we must be careful with accumulation of the amyloid in the blood vessels and walls, namely, cerebral amyloid angiopathy. Especially, we need a special care that the A β protein accumulates in central nervous system and meninges. Three films from skin, dura mater, arachnoid mater, pia mater have overlapping layer on the bone for protecting brain and spinal cord. This is one of cerebral amyloid angiopathy (CAA) which is insoluble in water and salt.

CAA occurs by amyloid protein, which relates to Alzheimer's disease. Cerebral hemorrhage can be often seen in some patients of Alzheimer's disease.

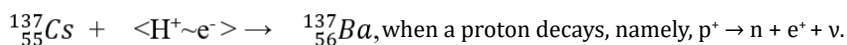
But cerebral apoplexy appearing in high blood pressure is a little different since hemorrhage (bleeding) of CAA is usually located in a special cerebral lobe.

We obtained the information from one patient family; husband could not say his wife, and could not greet her. However, he remarkably cured after drinking one litter SIGN water a day for one year. Our estimated mechanism is that the infoton may reduce the lower bonding energy in nitrogen, N-H; 3.9eV rather than in oxygen, O-H; 4.6 eV [36] of the amyloid β in Figure 5 resulting in protection of the amyloid β -cumulation.



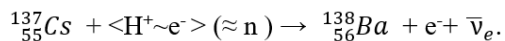
A challenging idea for the nuclear transmutations with the infoton

We checked the reduction of radioactive caesium with the SIGN water as well as MICA water, resulting in our finding the changes of Cs134 and Cs 137 to the stable barium [22]. We verified the energy and mass conservations for the nuclear transmutation by indicating the following equations;



The mass of the infoton is only 0.14%, different from the neutrons', so the mass of the neutron in the right-hand closes to the infoton, $\langle \text{H}^+ \sim \text{e}^- \rangle$. The unsolved problem in physics is here; protons decay or not? if so, its' half-life is said to be unknown. We don't care it. For instance, the infoton reacts getting RI energy from ${}^{137}_{55}\text{Cs}$ as above the equation, even if proton doesn't decay, which energy close the nuclear binding energy [35, 36].

And the neutron-decay may show the following changes, $n \rightarrow p^+ + e^- + \bar{\nu}$, then the next equation may occur,



We show the element changes from radioactive caesium 134 and 137. The total radioactivity was approx. in 700,000 Bq./kg (2012/ March), we treated the soils with MICA water, leading to a 64% reduction of the total radioactivity for nine months.

We know the difficulty of nuclear changes at room temperature without higher energy like CERN (Conseil Européen pour la Recherche Nucléaire), and a well-known experiment by Fleischmann and Pons, who had claims for the nuclear fusion of deuterium in 1989 [30]. Furthermore, atomic change research studies are associated with concrete substances, where Notoya et al. reported a low-temperature nuclear change of alkali metallic ions caused by electrolysis [31] and the D₂-Pd system [32, 33]. On the other hand, there were precious discussions of β-decay [34, 35].

Since Sugihara noticed some experiments in the Fukushima contaminated soils, without a doubt, nuclear change can be possible at room temperature.

One reason theoretically is that every element possesses any radioactive isotope even if its half-life is short, which emits radiation with KeV~ MeV energy [36, 37]. Therefore, we can elucidate that this radiation energy in our water system may help to the nuclear changes as the basic discussions with an elementary particle theory [38-40].

Application of the theory to internal radioactive body in the Fukushima in 2013

We substantiated reduction of RI from the woman’s body, and cure of the thyroid cancer of 12-year-old boy after drinking the SIGN water for one year. We measured them with AMSAT instrument (Automatic System Analysis and Therapy).

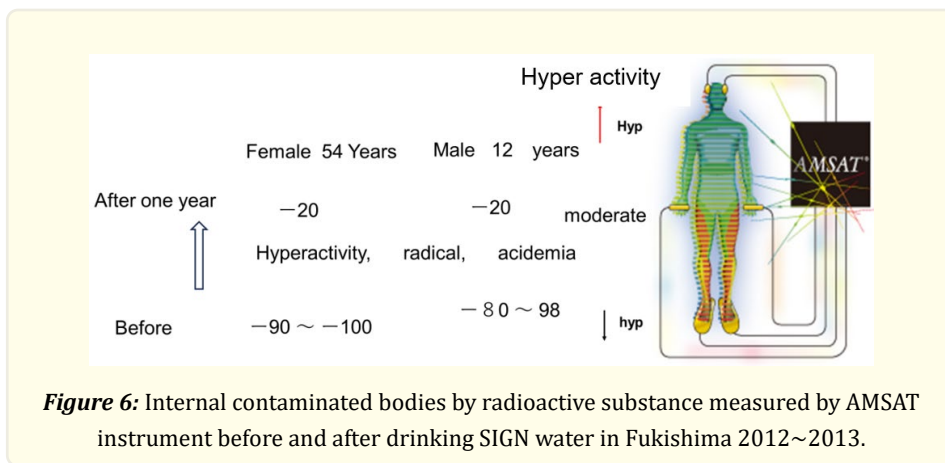


Figure 6: Internal contaminated bodies by radioactive substance measured by AMSAT instrument before and after drinking SIGN water in Fukushima 2012~2013.

The figure of AMSAT in the right indicates usually dark purple colour in hypoactivity and hyperactivity. But the cases are not bad. And the green colour shows a moderate condition.

The thyroid in the boy (the twelve years old) was dark purple colour, but the colour turned to be green after drinking the SIGN water for one year.

We suppose the machanim reduced RI contaminated bodies are the same as the soils in the Fukushima.

Outline of the SIGN water roles

The basic functions of the SIGN water are chemical reduction including offer of infoton, $\langle H^+ \sim e^- \rangle$ which is the pico-sized particle (1/1000 of nanometer). Regarding a skin, 60% of water in the epidermis obtains good effect as well as blood in capillaries. Regardless of lens and vitreous body, the SIGN water played an important role for the cataracts as well as the diseases associating with thyroid gland, and kidney. The Alzheimer disease must be totally issues in a body due to a brain, and the disease can be cured by the reductive action of the infoton.

Furthermore, what a proton in the infoton, $\langle H^+ \sim e^- \rangle$ works effectively changes the nucleus as a nuclear transmutation in a room temperature, then the radioactive body could be decontaminated with the SIGN water.

Conclusion

We discussed the theme of water relating to the human body organs, although blood was out of scope here; first one was skin, and cataract containing much water. The third one was the kidney, but we focused on filtering of waste products in the human body as urine and reuse necessary one. We reported Alzheimer's cure by the apparent role of the water with a substantiated patient. The final item was in Fukushima, 2013; the one evidence related to the thyroid cancer resulting in cure with the water drinking for one year, and another evidence was RI-reduction from radioactive body. Furthermore, we discussed the mechanisms reduction of RI from the body in terms of elementary particle physics including the proton-decay.

Acknowledgement

We thank you for the processes in Fukushima that decontaminated radioactivity from the human bodies with the AMSAT instrument by Dr. K. Hashimoto. And we thank Mr. T. Matsubara, president of Japan Agaricus for accessing the patients in Yokohama and Mr. N. Kubota, president of Arata, Co.Ltd in Nagano.

Reference

1. Pauling L. "The Nature of Chemical Bond". 3rd edition, George Banta Company Inc (1960).
2. Frölich H. "The Theory of Dielectrics, 2nd Edition" Oxford at The Clarendon Press, translated by T Nagamiya, Y Nagai, Yoshioka Shoten (Kyoto) (1965).
3. Fuchs EC., et al. "The floating water bridge". J. Phys. D: Appl. Phys 40 (2007): 6112-6114.
4. Fuchs EC., et al. "Dynamics of the floating water bridge". J. Phys. D: Appl. Phys 40 (2008): 1-5.
5. Pollack Gerald H. "The Forth Phase of Water beyond Solid, Liquid, and Vapor". Ebner & Sons Publishers. Seattle, WA98105, USA (2013).
6. Tsenkova R. "Aquapohomics: dynamic spectroscopy of aqueous and biological systems describes peculiarities of water". J. Near Infrared Spectroscopy 17 (2009): 303-314.
7. Cowan ML., et al. "Ultrafast memory loss and energy redistribution in the hydrogen bond network of liquid H₂O". Nature 434.7030 (2005): 199-202.
8. Alenka Luzar and David Chandler. "Hydrogen-bond kinetics in liquid water". Letters to Nature 379 (1996): 55-57.
9. Smith JD., et al. "Energetics of hydrogen bond network rearrangements in liquid water". Science 306 (2004): 851-852.
10. Zhang Q, Sabelli N and Bush V. "Potential energy surface of H—H₂O". J. Chem. Phys 95 (1991): 1080-1085.
11. Sastry S. "Water structure. Order and oddities". Nature 409 (2001): 300-301.
12. Sotiris S Xantheas. "Computational chemistry: Dances with hydrogen cations". Nature 457 (2004):673-674.
13. Barbiellini B and Shukla A. "Ab initio calculations of the hydrogen bond". Physical Review B66 (2002): 235101-235102.
14. Kumar R, Schmidt JR and Skinner JL. "Hydrogen bonding definitions and dynamics in liquid water". The of Chemical Physics 126 (2007): 204107-3-12.

15. Scott JN and Vanderkooi JM. "A New Hydrogen Bond Angle/Distance Potential Energy Surface of the Quantum Water Dimmer". *Water* 2 (2010): 14-28.
16. Wei Lin., et al. "Terahertz vibration-rotation-tunnelling spectroscopy of the water tetramer-d8: Combined analysis of vibrational bands at 4.1 and 2.0 THz". *The Journal of Chemical Physics* 128.9 (2008): 094302-10.
17. Johansson B and Sukhotskaya S. "Allometric Scaling Behaviour-A Quantum Dissipative State Implies a Reduction in Thermal Infrared Emission and Fractal Ordering in Distilled Coherent Water". *Water* 3 (2012): 100-121.
18. Agre P, Bonhivers M and Borgnia MJ. "The aquaporins, blue prints for cellular plumbing systems". *J. Biol. Chem.* 273 (1998): 14659-14662.
19. Asui M., et.al. "Rapid gating and anion permeability of an intracellular aquaporin". *Nature* 402.6758 (1999): 184-187.
20. Kozono D., et.al. "Aquaporin water channels: atomic structure and molecular dynamics, meet clinical medicine". *The Journal of Clinical Investigation* 109.11 (2002): 1395-1399.
21. Sahle CJ., et.al. "Microscopic structure of water at elevated pressures and temperatures". *Proc Natl Acad Sci USA* 110.16 (2013): 6301-6.
22. Sugihara S. "Deactivation of Radiation from Radioactive Materials Contaminated in a Nuclear Power Plant Accident". *Water* 5 (2013): 69-85.
23. Sugihara S. "Faster disintegration of radioactive substances using energy of specially processed water and theoretical prediction of a half-life of radionuclide". *International Journal of Current Research and Academic Review* 16 (2015): 196-207.
24. Sugihara S. "Model for Transmutation of Elements using Weak Energy of Water Leading to Faster Disintegration of Radionuclides". *Water* 10 (2018): 82-98.
25. Japanese Biochemical Dictionary. Skin, P1068. Tokyo Kagaku Dozin (1995).
26. F Prelli., et al. "Differences between vascular and plaque core amyloid in Alzheimer's disease". *J. Neurochem* 51.2 (1988): 648-51.
27. Sugihara S, Maiwa H and Hatanaka K. "Save of Environment and living organisms with weak energy of water". *Medicon Agriculture & Environmental Sciences* 1.2 (2021): 02-09.
28. Sugihara S., et al. "Reduction and Relief of Cancer using Activated Light Emitting Diode". *Medicon Medical Sciences* 2.4 (2022): 11-20.
29. Sugihara S, Suzuki C and Hatanaka K. "The Mechanisms of Activation of Substances by Minimal Catalyst Water and Application in Keeping Foods Fresh". *Water* 3 (2011): 87-94.
30. Fleischmann M and Pons S. "Electrochemically induced nuclear fusion of deuterium". *J. Electroanalytical Chemistry* 261 (1989): 301-308.
31. Notoya N, Noya Y and Ohnishi T. "Low Temperature Nuclear Change of Alkali Metallic Ions Caused by Electrolysis". *J. New Energy* 1.1 (1996): 39-45.
32. Y Iwamura., et al. "Detection of anomalous elements, X-ray, and excess heat in a D2-Pd system and its interpretation by the electron-induced nuclear reaction model". *Fusion Technology* 33 (1998): 476-492.
33. Iwamura Y, Sakano M and Itoh T. "Elemental Analysis of Pd Complexes: Effects of D2 Gas Permeation". *Jpn. J. App. Phys* 41 (2002): 4642-4650.
34. Fermi E. *Nuclear Physics*; Univ. of Chicago Press: Chicago, Illinois, U.S.A., 1953 (translated into Japanese, pp. 91-116 for β -decay, pp. 37-72 for interaction between Radiation and Substances, pp. 184-232 for nuclear interaction).
35. Halliday D. *Introductory Nuclear Physics* (Chapter 6, beta decay), 2nd edition; John Wiley & Sons, Inc.: New York (1955).
36. J Emsley. *The Elements*, 3rd Ed (Clarendon Press, Oxford, 1998).
37. <https://atom.kaeri.re.kr/nuchart/>
38. Konopinski EJ. "Reviews of Modern Physics". *Beta-Decay* 15-4 (1943): 209-245.
39. CODATA Values of the Fundamental Physical Constants, 1998, P.J. Mohr and B.N. Taylor, Jr. of *Physical and Chemical Reference Data*. 28, 1713 (1999). *Rev. Mod. Phys.* 72, 351 (2000). *Physics Today*. 56, No. 8, BG6 (2003).
40. Yukawa H. "Quantum Theory of Non-local Fields". Part I, Free Fields. *Phys. Rev* 77 (1950): 219-226.

Volume 6 Issue 6 June 2024

© All rights are reserved by Sunao Sugihara., et al.