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Utility of Hydrogen in Pico-sized Water for Plants, Deodorization Discussing with Oxidation/Reduction Potential

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Abstract

We are reporting pico-sized water which is formed by high pressure than 30 MPa. The original water is just H_2O. The pico-sized water consists of neither hydrogen nor ion. The water depicts the characteristics of reductive behavior avoiding oxidation, and proceed radiation reduction. We are discussing the mechanism of chemical reduction like sweetness of water melon and berry due to the size of the water. Furthermore, we develop deodorization under the activated LED lights in breeding room of mice. We can justify whether water becomes the activated one with the oxidation-reduction potential instrument. We report changing radioactive cesium to non-radioactive substance like barium by the water. The information of the pico-sized water transmits, then transcript to another substance in an air. We will make clear the essence in the infoton about information and transcription in the future.

Introduction

Water is an essential substance in our life, but many people don't consider deeply what water is. Many researchers report and discuss a macroscopic viewpoint of water.

H_2O, although we do not cite references here since there are so many researches.

The objects of water study are different fields and objectives, namely for human, plant, or animal. Furthermore, tools or instruments for water research involve with X-ray or neutron diffraction to investigate the structure and water arrangement. Their development of applications are macroscopic H_2O molecules.

Furthermore, their fields cover wide regions like biology, chemistry, medicine, physics even geology, namely, we can say water is interdisciplinary [1].

We can refer every publishment in a text book [2] and scientific magazine [3]. We are discussing about a water which is said to existing 60~70 % in our body and 80 % in the blood. We can cover various fields such as reduction of car exhausted gases, when we name it MICA water (Minimum Catalyst) at that time [4]. Then I consolidate to create the physical meaning of water from the different sense of water. I name it SIGN water--- Spin Information Gauge Network water--- after dissociation of hydrogen bonds of water as well as MICA.

We follow to develop the water research, such as maintaining foods fresh [5], change of radioactive cesium to stable barium [6, 7]. Then, we reported radiation reduction involving theoretical formula we found. The characteristics of SIGN water are possessing the as-

sumed particle, infoton, <$H^+ \sim e^-$> [8] oscillating with the frequency of far-infrared from terahertz wave with 10-12 m order (= 1/1000 nano meter). We estimate MICA includes infoton around 60% meanwhile SIGN water more than 90%. Therefore, we consider there is no essential difference. Therefore, we do not identify remarkably between them.

The particle's information may transfer to a common substance even living organism through emitting the electromagnetic wave in space. Light is also target to receive the infoton's information through the materials in LED, for instance.

Here, our purposes are the reports of deodorization by the activated LED lights, sweetness of watermelon and berry. Furthermore, we are discussing visualization of the water activeness using oxidation-reduction potential instrument. Another purpose is to develop radiation reduction of rice as the nuclear reaction.

Finally, we are discussing transmittance and transcription of infoton's information, although the information is essential to the pi-co-sized water and make clear in future.

Method

The starting material is ordinary tap water applied at higher pressure than 20 MPa without any added substances for 15 min in the facility (approx.3mφ x 5m depth) containing water, then water is activated water which we call minimal catalysis water (MICA). The photoluminescence light is put into the activated water so that the tube can be activated, and we call the MICA light. Another light is a control one which is an original. The medical department of Akita University measured the amount of ammonia with the passive Doji Tube.

First, we put a tap water under the MICA light for one day, then we can recognize whether the tap water is activated or not by Fourier Transmittance Infra-Red spectroscope (FT- IR) [9]. We use the hydrogen nuclear magnetic resonance (H-NMR) in which shows the relaxation time (T2) and free induction decay (FID) [9, 10]. We compare the values of relaxation time (T2) and fee induction decay (FID) with those of the tap water of the original one. Then, we estimate the smallness of water. We employ Oxidation-Reduction Potential (ORP) instrument to judge directly whether water becomes active water or not.

Results and Discussion

We focus on an agriculture of the water for the following items, and some details were discussed in the published manuscripts in 2009 through 2023.

Macroscopic water quality inspection

After 6 months keeping in a room temperature, Japan Food Analysis Center inspected the MICA water [11]. The results detected nothing of general bacteria, E. coli, Pb, and its compound, nitrite nitrogen, zinc, and its compounds etc., and odor in normal (2023/May). Some researches are still macroscopic viewpoints even if the study of a model study using OH-(H_2O) n [12]. And relationship between structural order and anomalies of liquid water is a study of molecular cluster [13]. Regarding water, agriculture and human heath have recently been studied much [14-16]. Therefore, we pay attention to chlorophyll formation [17], and a plant may adsorb CO_2 and from O_2 without sunlight [18] with discussion from the viewpoints of element bonding strength [19].

The results above are macroscopical inspection. Then, we show the microscopical viewpoints following.

Outline of function by pico-particle water

1. the size is 1/1000 of nano like atom.
2. Reduction.
3. Photosynthesis.
4. Transmission and transcription.

5. Change of nucleus.

The number 1) relates to the following number, 2) through 5), which means we must basically discuss in terms of physics. The number 2) and 3) should describe in the chemical forms and/or chemical formula to understand what the phenomena happen. We show the deodorization associating with the number 2) which we did not introduce recently. Here we discuss the deodorization which really possesses characteristics of the number 4).

We showed the number 3) previously, and analyzed in physics besides biology. The number 4) relates to the number 5) as well. We will discuss it here.

Sweetness of Watermelon

Watermelon under MICA LED becomes sweeter like the values of 10.8 to 13.8, and we can taste when we eat them. The same experiment proceeds berry changing 11.0 to 14.5. The reason is due to the pico-sized water which can be easily absorbed into plant so that glucose, $C_6H_{12}O_6$ what we discussed in "Formation of O_2 and CO_2 reduction without Sunlight using Weak Energy of Water with pico-sized Particle" [18].

We can compare two chemical reactions following;

i) usual photosynthesis like $CO_2 + H_2O \rightarrow 1/6\ C_6H_{12}O_6$ (glucose) + $1/2O_2$.
ii) with infoton, $CO_2 + 2 <H^+ \sim e^-> \rightarrow 1/6\ C_6H_{12}O_6$ (glucose) + *O*.

In the last equation, an oxygen may take 2 electrons into the *P*-orbital from the infoton since oxygen atom configurates in $2S^{22}P^4$.

Deodorizing by activated LED

The deodorization describes in Figure 1. The experiment conditions proceed in the room of 20 m^2 where the 800 mice are kept for 10 days. The compared the amount of ammonia under the control light and MICA light.

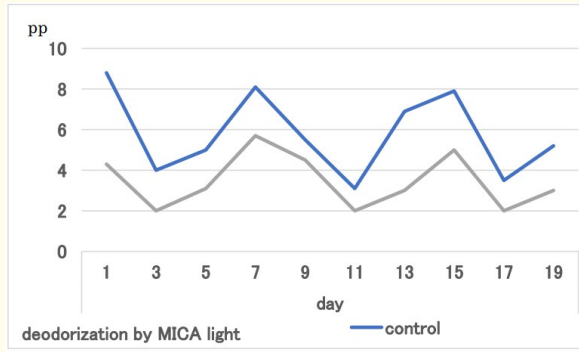

Figure 1: Deodorization of ammonia in a breeding room of mice.

We estimate the mechanisms by the following chemical formula; $NH_3 + <H^+ \sim e^-> \rightarrow 1/2\ N_2 + <H^+ \sim e^->$

We calculate the pico-sized particle with the kinetic energy of 47 keV, then ammonia molecule (both N-H and C-H bond strength; 0.3eV) can be dissociated.

We also experienced the hospital room of 6 patients under MICA light and a control. Nurses reported no odor in the MICA light room compared with control one.

The deodorizing mechanism is basically due to the decomposed organic compounds causing odor like toluene and xylene (Figure 2).

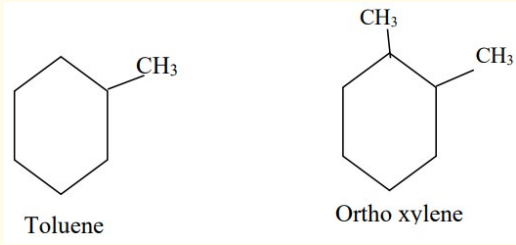

Figure 2: Organic compounds causing typical odor.

The binding energy of methyl radical is an order of infrared (IR) which is stronger than benzene ring, far IR (one tenth of methyl radical), so the benzene ring may dissociate with the activated LED resulting in deodorization of the organic solvents. We may assume the reason why the light can activate is giving the glass and semiconductors in fluorescent tube MICA water information.

Oxidation-Reduction Potential (ORP) spectra

Before the discussion of ORP, we introduce how white LED is activated with MICA Water briefly, although detail mechanism is abbreviated here. Gallium nitride (GaN) emitting blue light is covered with photoluminescence, Yttrium Aluminum Garnet ($Y_3Al_5O_{12}$), then the composite functions the white LED. These compounds and glasses outside are activated by MICA water atmosphere leading to the light from the white LED. Now, ORP of the water is the novel and visualization equipment to judge whether water and other substance (like a ceramics) are chemically reductive or not at present.

Judgement of MICA LED light using ORP changes according with Nernst equation as following;

$$E = E^0 + \frac{RT}{F} \ln \frac{a_{H+}}{(p_{H2}/p^0)^{1/2}}$$

E^0; standard hydrogen electrode (V), R; gas constant (=8.3144^{-1} mol^{-1}), T = Kelvin, F; Faraday constant (=9.64853×10^4 C mol^{-1}), a_{H+}; hydrogen activity, p_{H2}; hydrogen partial pressure (Pa) and p^0; hydrogen standard pressure (=101.3×10^3 Pa).

We understand the MICA LED plays reductive function according to the equation above, and the spectra (Figure 3).

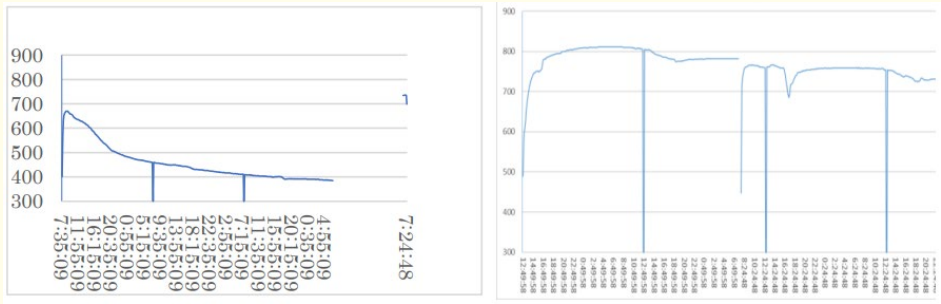

Figure 3: ORP graphs of activated crystal (left) and control one (right).
Vertical axis shows a potential voltage and abscissa means time (first, second and third day).

The crystal (size; 60×60×2 mm, main content; SiO_2) is remarkably reduced with the light of MICA LED shown in Figure 1 and we can confirm reduction for one day. The value of pH was 7.6 (tap water; 7.4). We can recognize that MICA water is reductive remarkably.

Transmission and transcription in rice contaminated with cesium

Oscillation of between H^+ and e^- in the infoton, $<H^+ \sim e^->$ emits the energy corresponding to the far-IR and THz wave. Therefore, the infoton may transfer resonating in space.

The characteristics of the infoton will transcript to another substance although we carry out the information the infoton has as well.

We analyzed two water molecule electronic structures relating to hydrogen bonding dissociation [5, 20].

We found the nuclear change in the Fukushima contaminated soils by cesium 134 and 137 which are beta-decay [21, 22]. We develop the mechanism how infoton play a role the nuclear reaction. We must consider how the nucleus changes is supposed to be the filed of an elementary particle physics [23, 24]. Then, we report nuclear transmutation by pairs of electron and proton in the water [25, 26].

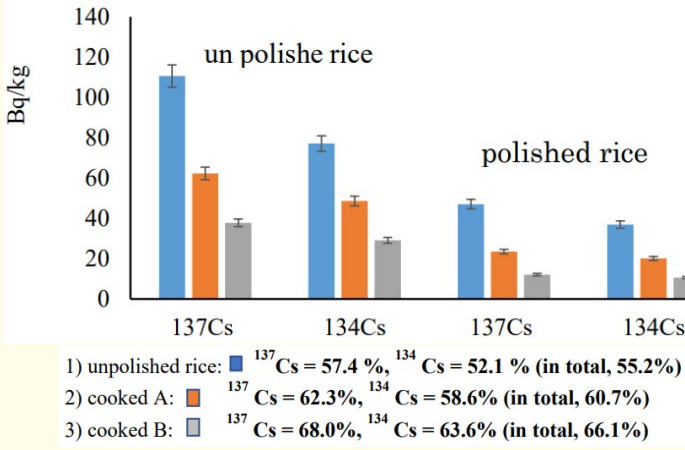

Figure 4: reduction rate of cesium radiation (polished/unpolished rice).
cooked A: cooked with a tap water, cooked B: cooked with activated water.

Figure 4. shows interesting results of rice relating to radiation reduction with MICA water.

Firstly, there are some differences between unpolished rice and polished rice. The cause indicates chaff (rice hull) involves radiation from Cs134 and Cs137.

Secondly, the amount of radiation reduction in cooked rice by tap water is smaller than in the rice cooked by the activated water. Namely the activated water changes radioactive cesium to non-radioactive substances due to the kinetic energy of infoton from **γ**- radiation of cesium.

We regard the information from the infoton transmits to the contaminated chaff, and transcripts to inside rice through chaff. We presume what infoton's information is, although it maybe momentum as one possibility.

Conclusion

We report the SIGN water depicts the characteristics of reductive behavior avoiding oxidation of green peppers, and faster germination of soybeans in the activated bottle. And we show the changes of sweetness watermelon (27.8% up) as well as berry (31.8% up). We discuss the mechanism of chemical reduction like sweetness due to the size of the water. We discuss to activate the LED light resulting in decreasing deodorization of ammonia in a breeding room of mice. We develop deodorization under the activated LED lights immersing the pico-sized water. We can justify whether water becomes the activated one with the oxidation-reduction instrument (ORP measurement). Furthermore, we report radiation reduction (cesium 134 and 137) of the rice in the Fukushima with the activated water. We reduce radioactive cesium to form non-radioactive substance like barium by the water. The information of the pico-sized water transmits, then transcript to another substance in an air as well.

We will make clear the essence of the information and transcription in the future.

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References

1. Pauling L. "The Nature of Chemical Bond". 3rd ed, George Banta Company Inc, translated in Japanese, Tokyo (1960).
2. Pollack Gerald H. The Forth Phase of Water beyond Solid, Liquid, and Vapor. Ebner & Sons Publishers. Seattle, WA98105, U.S.A (2013).
3. Graphic Science Magazine Newton. "Miracle substance", Water, Special issue, Newton Presse, Tokyo (2017).
4. Sugihara S and Hatanaka K. "Photochemical Removal of Pollutants from Air or Automobile Exhaust by Minimal Catalyst Water". Water 1 (2009): 92-99.
5. Sugihara S. The DV-Xα Molecular-Orbital Calculation Method (eds. by T Ishii et al.) (Kagawa University), Switzerland: Springer International Publishing (2015): 257-89.
6. Oda H. Ryodoraku Textbook, Naniwa sha Publishing Inc., Osaka, (1989).
7. Sugihara S, Maiwa H and Hatanaka K. "Save of Environment and living organisms with weak energy of the water". MC Agriculture & Environmental Sciences. 1.2 (2021): 02-09.
8. Sugihara S. Japanese trademark patent (2009)
9. Sugihara S, Maiwa H and Hatanaka K. "Effect on Agriculture Science of Chemical Reduction and Element Changes with Infrared and Terahertz Wave". MC Agriculture & Environmental Sciences 1.3 (2021): 03-08.
10. Sugihara S, Maiwa H and Hatanaka K. "Novel Method for up-cycle of used Salad Oil by Minimal Catalyst Water". Medicon Agriculture & Environmental Sciences 4.2 (2023): 06-12.
11. A general incorporated association Japan Food Research Laboratories Water quality inspection report "6-month room temperature storage of MICA water" (2023).
12. Novoa JJ., et al. "Structure of the first solvation shell of the hydroxide anion: A model study using OH-(H_2O) n (n=4,5,6,7,11,17) clusters". J. Phys. Chem. A101 (1997): 7842-7848.
13. Errington JR and Debenedetti PG. "Relationship between structural order and anomalies of liquid water". Letter to Nature 409 (20019 318-321.
14. Padma SR. "Conservation agriculture". Medicon Agriculture & Environmental Sciences 4.6 (2023): 01.
15. Suhas Shripati Mane., et al. "Status of Environmental Degradation in India". Medicon Agriculture & Environmental Sciences 4.1 (2023): 01-04.
16. Sugihara S and Maiwa H. "How to keep Farm Products and Soils Healthy in Agricultural Chemicals as well as a Human Body". Medicon Medical Sciences 2.5 (2022): 21-27.

17. Sugihara S and Maiwa H. "Why Chlorophyll Exists in a Plant from Viewpoints of Water". Medicon Agriculture & Environmental Sciences 3.1 (2022): 39-46.
18. Sugihara S. Hatanaka K and Maiwa H. "Formation of O_2 and CO_2 reduction without Sunlight using Weak Energy of Water with pico-sized Particle". Medicon Agriculture & Environmental Sciences 2.2 (2022): 13-20.
19. Emsley J. The Elements, the 3rd edition, Clarendon Press, Oxford (1998).
20. Sugihara S. "Microscopic Approach to Water by Using the DV-Xα Method, and Some Innovative Applications". The DV-Xα Molecular- Orbital Calculation Method. (ed. Wakita, H.) chap.10 (2015): 257-289.
21. Sugihara S. "Model for Transmutation of Elements using Weak Energy of Water Leading to Faster Disintegration of Radionuclides". Water 10 (2018): 82-98.
22. Halliday D. Introductory Nuclear Physics (Chapter 6, beta decay), 2nd edition; John Wiley & Sons Inc.: New York, 1955.
23. Yukawa H. "Quantum Theory of Non-Local Fields, part I, Free Fields". Phys. Rev. 77 (1950): 219-226.
24. Yukawa H. "Quantum Theory of Non-Local Fields, part II, Irreducible Fields and their Interaction". Phys. Rev. 80 (1950): 1047-1052.
25. Sugihara S and Maiwa H. "How Element Changes Proceed with Nuclear Transmutation by Pairs of Electron and Proton in Hydrogen Atom of Water". Medicon Engineering Themes 5.2 (2023): 25-35.
26. Yukawa H. "Models and Method in the Meson Theory". Rev. Mod. Phys. 21 (1949): 474-479.

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