

Water is More Than Unusual on Earth

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Abstract

Many kinds of water research relate to the results in macroscopic conditions; they report H₂O molecules and hydronium ions in a solvent. Such conditions are also crucial for solubility due to the dielectrics of water. However, there are a few to discuss the hydrogen bonds, which are the critical parameter of water. Moreover, the conditions after the bond dissociation are attractive in water physics. We know the outer electron (s) of H₂O or H₂ in many discussions. At present, we put stress on the hydrogen atom after hydrogen bond dissociation. Although we can see the assumed particle, the particle shows interesting evidence, not only the outer electron but also the nucleus of a hydrogen atom, namely the proton. So, we must research water in physical chemistry here.

Keyword: dissociation of hydrogen bond; chemical reduction; electron and proton; oscillation; far IR and terahertz

Introduction

Basic sciences of water are not completely understood although water occupies 70% on the Earth and 80% in our blood. Some molecules of H₂O bound with hydrogen bonds each other and water is one of dielectric substances with dipole moment [1]. There is little basic research for water although many a study has been reported for a macroscopic viewpoint of water, H₂O molecule, and we use water as a solvent, lubricant, and surfactant (detergent) every day. So, we do not cite references of water ions like H₃O₂⁻ and H₃O⁺.

The structure and density of water, H₂O have been discussed with X-ray and neutron diffraction method (Mishima, 1998) and (Elington, 2001).

There are so many academic fields relating to water as well as the used area of water. Not only physics and chemistry fields but also biological one. All of them are just H₂O. However, a little bit different viewpoints of H₂O are the fourth phase of water [2] and interesting water bridge under high voltage like 25kV leading to the water flies between two beakers [3, 4]. Now, we have focused on the hydrogen bond of water, and we microscopically developed the specially-processed water more than ten years ago. The strength of the hydrogen bond has been reported in a textbook [5]. This water is unusual one dissociated hydrogen bonds which is assumption since no body looks the water itself. The specially-processed water which we developed is called MICA (Minimal Catalyst) water pressurized more than 2MPa. This water was found by the Hatanaka family and has been commercialized more than a half century.

Then, Sugihara developed SIGN water (Spin Information Gauge Network) since water might be employed to reduce radiation from the soils in Fukushima. The SIGN water can be formed under 100MPa resulting in function to a nucleus as well as outside of a nucleus. The characteristics of the activated water may possess a pico-sized particle like an elementary particle. We name the particle "infoton" involving <H⁺~e>, not hydrogen atom nor ion such as proton or electron [6]. So, we can recognize the nucleus transmutation, and chemical reduction through outside electron of an atom with infoton's work.

The purpose of the manuscript is to look at the function of the activated water at a bird's eye from the viewpoints both chemical reduction and nucleus changes. We introduce the experimental results with a piece of evidence for chemical reduction and nuclear change in physics. Then, we expect how people can recognize water daily life.

Materials and Method

Main material is MICA water or SIGN water (essentially same activated water), which is the high-pressurized water. There are two essential characteristics of water. One is the pico-sized particle and the other one is transformation of infoton's information to another material.

The transformation can be processed to contact to the activated water, then to change the material's property under an ordinary condition of temperature and pressure.

The changed material may be any kind of plants, animals even human being, plastic, cement, metal, oil, and fiber. We can use LED light as the objected material. The activated light plays a role for SIGN water as well.

Results and Discussion

Outline of infoton

An infoton is the assumed and extended particle that writes $\langle H^+ \sim e^- \rangle$, not a hydrogen atom nor ions such as proton and electron. The infoton shows a quantum physical behavior following equation 1 and oscillates between H^+ and e^- with a particular frequency in far infrared through terahertz. General Hamiltonian and Dirac relativistic equations are described in electromagnetic wave following;

$$\text{Equation 1.} \quad i\hbar \frac{\partial}{\partial t} \psi(\mathbf{r}, t) = H \psi(\mathbf{r}, t)$$

$$H = \int \psi^* \left[\omega \cdot (i\hbar \mathbf{c} \text{grad} + e\mathbf{A}) \psi - mc^2 \beta \psi \right] d\tau$$

$$+ \int \left[2\pi c^2 P_1^2 + \frac{1}{8\pi} (\text{curl } \mathbf{A})^2 \right] d\tau + \frac{1}{2} \iint \frac{\rho(\mathbf{r}, t) \rho(\mathbf{r}', t')}{|\mathbf{r} - \mathbf{r}'|} d\tau d\tau' \quad \mathbf{A} = \mathbf{A}_0 + \text{grad } \Psi$$

Transverse wave
longitudinal wave

Where; P: momentum, A: electromagnetic potential, ρ : electric charge, $\mathbf{r} - \mathbf{r}'$: the distance between nucleus and infoton, $\langle H^+ \sim e^- \rangle$.

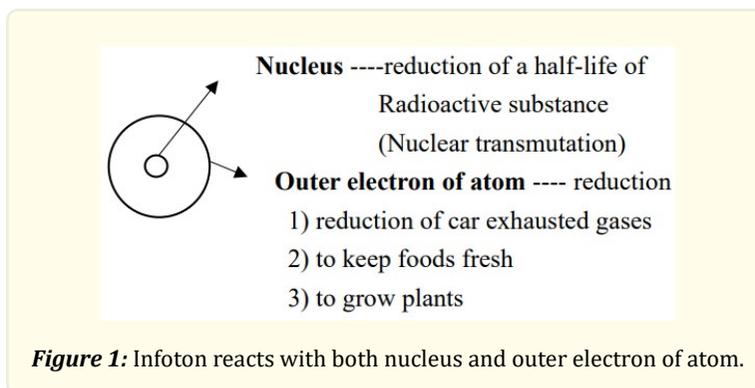
The transverse and longitudinal waves are essential to the particle, infoton. Then, the waves may relate to the information transfer from infoton to another substance.

Interaction of infoton with outer-electron and nucleus

Outer electron

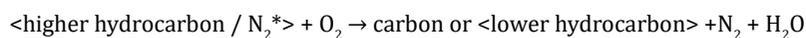
The functions of the active water (infoton) with the weak energy are depicted in the fields of applications and activities in Fig. 1. When the interaction with a nucleus, the infoton gets radiation energy from the radioactive material so that it can approach a nucleus due to the energy corresponding to nuclear bonding strength.

The interaction with the outer electron proceeds chemical reduction to other materials, even air (nitrogen mostly). And a plant can quickly grow bigger to absorb water easily through aquaporin proteins since infoton is a pico-sized particle.



Reduction of pollutants from car

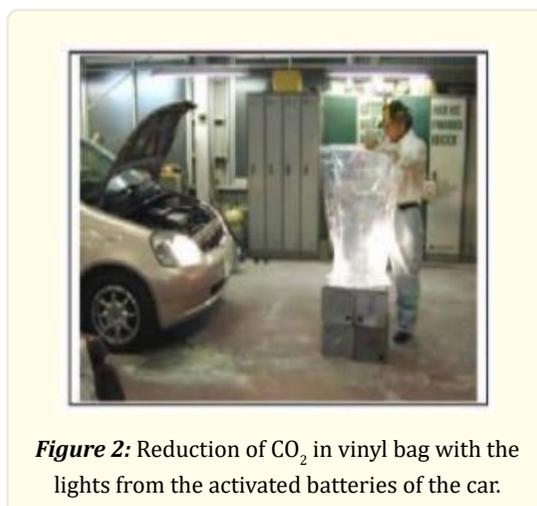
We reported CO₂ and NO_x reduction of the exhausted gases from a car with MICA water in 2009 [7] shown in Fig.2 and elucidated the results through the chemical reduction of hydrocarbon instead of oxidization. The essential point of the results might be the activation of nitrogen gas in the air to the engine, which works for chemical reduction of higher hydrocarbon in gasoline as below. Here is one of reaction's example;



The light from the activated battery can reduce CO₂ gases

We introduce that we can start the air through the MICA battery. We put CO₂ gases in a vinyl bag. First, we tested the non-activated battery, then used the activated one in which we may start the light. The light from the activated car functions resulting in CO₂ and CO reduction. Moreover, oxygen increases meaning photosynthesis like a plant. And higher hydrocarbons in a gasoline change to the lower one.

The small piece of device (6×5×0.5 cm) is put on the air absorption port in the car, then activated air goes to engine room so that nitrogen can be activated (we call MICA battery) shown above.



Another experiment is shown in Fig.3. Two cars were put into each tent for ordinary car, and activated car (same type and mileage; 20,000km) for one hour measuring the exhaust gases in real time.



Figure 3: Demonstration of the car exhaust gases test in the tents for one hour idling.

The result shows in Table 1. After the experiment, we put face into the tent. In the ordinary car, we could not put the face since the smell of the exhaust gases was too bad. However, our glasses were fog up because of humid (H₂O) in the MICA batteries.

We describe the results of the exhaust gases in Table 1.

	19:55	19:59	20:05	20:11	20:15	20:25	<u>change/ rate</u>
CO ₂	7.10%	6.80%	6.50%	5.80%	6.00%	6.00%	<u>-15%</u>
O ₂	11.30%	11.50%	12.10%	13%	12.80%	12.80%	<u>+13%</u>
CO	0.06%	0.06%	0.06%	0.05%	0.05%	0.05%	<u>-16.7%</u>
HC	51ppm	56ppm	59ppm	60ppm	62ppm	66ppm	<u>+29.4%</u>
Nox	0ppm	0ppm	0ppm	0ppm	0ppm	0ppm	<u>0%</u>

Table 1: The reduction rates of car exhausted gases for 30 min. (Ref. 7).

To keep foods fresh

Fresh vegetables can stay fresh in the activated zip-rocked film for more 3day than in the usual bag [Sugihara, 2011]. The reason is to form active N₂* in the contacted air of the foods due to the information of reduction from the activated film. We reported to keep mushrooms fresh in the wrapping film of the normal and the activated one, and measured the emitted CO₂ and O₂ at the room temperature for five days [8]. In the normal film, only CO₂ was detected in the film. Meanwhile, 10% O₂ emitted and half of CO₂ (15%) in the activated one compared with the normal one.

Up-cycle of used salad oil

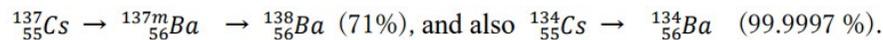
This theme is another evidence of the reduced added value of the used salad oil.

The technique is to contact the container for the used oil to the MICA water so that the container changes to the activated one due to the infoton resulting in the used oil can be reduced, meaning a fresh oil [9].

Nucleus

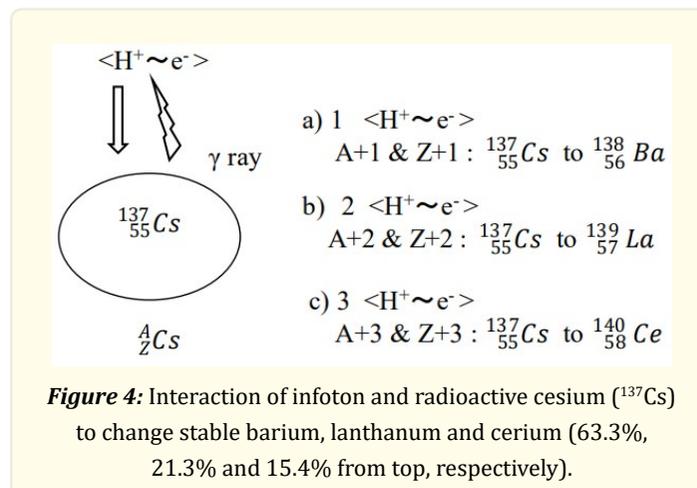
We limited cesium transmutation, which we experienced in Fukushima (2011).

Nuclear change of radioactive cesium to the stable barium element with β - decay.



The infotons obtain the kinetic energy from cesium radiation leading to access the nucleus, then infoton may react with cesium nucleus.

We found other elements, such as lanthanum and cerium, besides barium with interaction with infoton [10], shown in Figure 4. Here is just the case of ${}^{137}_{55}\text{Cs}$ which half-life is a pprox.30 years, and we abbreviate another radionuclide which is ${}^{134}_{55}\text{Cs}$ (a half-life is approx. 2.1 years). In the case of ${}^{134}\text{Cs}$, we expect to form other barium like ${}^{135}\text{Ba}$, ${}^{136}\text{Ba}$ and ${}^{138}\text{Ba}$ along with the number of infoton. In case of an odd number, ${}^{137}\text{Ba}$ (stable), once the radioisotope of ${}^{133}\text{Ba}$ might generate, then four infotons, $\langle \text{H}^+ \sim \text{e}^- \rangle$ may react with ${}^{133}\text{Ba}$. We do not analyze and discuss the rest of electrons here.



Conclusion

The information of infoton may transfer and proceed the reduction to car engine through the air, vinyl bag, metal, and plant, for example, from the electron in an atom. Then, the original quality may change as an added value, even air. Moreover, a nucleus can change another element with infoton (s). We must regard water in physics, chemistry, and biology, although we do not report the human body in which aquaporin protein is essential to water. We want to progress in the microscopical understanding of water to people in everyday life.

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