

Observation of Anomalous Potential Electric Energy in Distilled Water Under Solar Heating

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Abstract

In this paper, we describe a very simple experiment with distilled water which could exhibit anomalous potential electrical energy with *very minimum preparation energy*. While this observed excess energy here is less impressive than [1][2] and the material used is also far less exotic than common LENR-CANR experiments, from the viewpoint of minimum preparation requirement –and therefore less barrier for rapid implementation–, it seems that further experiments could be recommended in order to verify and also to explore various implications of this new proposition.

Introduction

There has been a somewhat regained awareness in recent years for the alternative energy technologies based on *low-energy reaction and also chemical-aided reaction* [1]. This process includes various different methods ranging from the well-known gas discharge process until the exotic processes such as microwave-induced reaction.[2][3] Some theoretical explanation has also been proposed in recent years. [4][5]

Nonetheless, from the viewpoint that our Earth is presently seeking a rapid change to alternative energy, one could imagine that it is required to find a ‘less-exotic’ energy source, which can be generated with minimum preparation. Therefore, the ‘energy input’ term should also include the energy amount needed to make preparation for the source and also for the equipment.

In this regard, we re-visit a well-known process of finding excess electrical energy out of ‘distilled water.’ It can be shown via simple experiment setting, that with very minimum preparation one can obtain anomalous excess electrical energy from distilled water, in particular under solar (photon) exposure. The result is summarized in Table 1.

In the last section we will discuss a few alternative approaches to explain this observed anomalous effect, for instance using the concept of ‘zero point energy’ of the phion-fluid condensate medium. [6]

Nonetheless, further experiment is recommended in order to verify or refute our proposition as described herein.

Experimental preparation and result

The basic idea of this experiment comes from reading various papers related to chemical aided reaction [1][2]. There is also an abstract requirement for minimum preparation energy, so that it would be easier for rapid implementation (if chance permits).

Therefore we come to analogue to dc battery: *a used battery will re-gain part of its electric energy once it is put under exposure to the Sun light for a few hours*. This analogy leads us to hypothesize that the Sun light emits photon flux with sufficient 'zero point energy' which could trigger chemical reaction in the electrolyte. Then the re-gained electric energy of the used battery will last for a few more days.

Possible implication for this experiment could include usage of distilled water as an efficient method for *battery charger*, while possible future use in transportation etc. remains open. However, this simple experiment is merely at its very initial phase, so we haven't exercised thoroughly yet how it could be transformed into practical use. Our intention here is to explore another route which may have been forgotten in the plethora of CANR methods.

We also haven't made reasonable assumptions yet concerning the development of a commercial generator cell (for battery charger or other practical use), or what would be the expected electrical energy output per unit water volume per day.

Therefore, in this simple experiment we consider a few alternative scenarios, as follows:

- (i) ordinary water without exposure to Sun light or to external dc potential (as control for this experiment);
- (ii) ordinary water with exposure to Sun light;
- (iii) distilled water without exposure to Sun light or to external dc potential;
- (iv) distilled water with exposure to Sun light;
- (v) distilled water with exposure to carbon alkali (chemical inside battery);
- (vi) distilled water with exposure to external dc potential;
- (vii) distilled water with exposure to Sun light and carbon alkali (chemical inside battery);
- (viii) distilled water with exposure to carbon alkali and to external dc potential.

Distilled water is used in this experiment instead of heavy-water (deuterium) which is commonly used in various LENR-CANR experiments [1][2], with simple reason that it is easier to obtain almost anywhere. Therefore no excessive preparation for such water is needed. Of course, for better result it is recommended to repeat this experiment with heavy-water. (For instance, Belyaev *et al.* already reported various experiments with heavy-water.)

In the meantime, *carbon arc in water* experiments have been performed by a number of experimenters [2, p.1110], which may have similarity with type (viii) of our experiment.

The preparation for this experiment is described as follows. Distilled water which we use in this experiment was obtained from other sources (We don't distil water with our own process).

We use 20 mm-diameter aluminium tube and fill it with ordinary water for control, then we measure its electrical resistance and also its electrical voltage (Type iA experiment). Then we put this tube under the exposure of Solar daylight (high noon), and using a 60mm-diameter magnifying lens at its focal distance in order to focus the Solar's photon flux into our tube. Then we measure again the electrical resistance and also its electrical voltage. (Type iB experiment)

After around 1 hour, we use another 20 mm-diameter aluminium tube and fill it with distilled water, then we put these tubes under the exposure of Solar daylight (Type iiB).

Thereafter we repeat the procedure once again after introducing an external 1.5V DC potential into the electrolytes. Then we measure again the electrical resistance and also its electrical voltage. (Type iiC) After around 5-10 minutes, we release the external potential (1.5 DC volt) and put the tube again under solar light exposure. (Type iiD)

We repeat the procedure after filling the tube with carbon alkali from used-batteries 1.5V DC. Then we measure again the electrical resistance and also its electrical voltage. (Type iiiA) Thereafter we repeat the procedure once again after introducing an external 1.5V DC potential into the electrolytes. Then we measure again the electrical resistance and also its electrical voltage. (Type iiiC) After around 5-10 minutes, we release the external potential (1.5 DC volt) and put the tube again under solar light exposure. (Type iiiD).

The experimental configuration is shown in the following diagrams, both with and without external 1.5Volt DC potential.

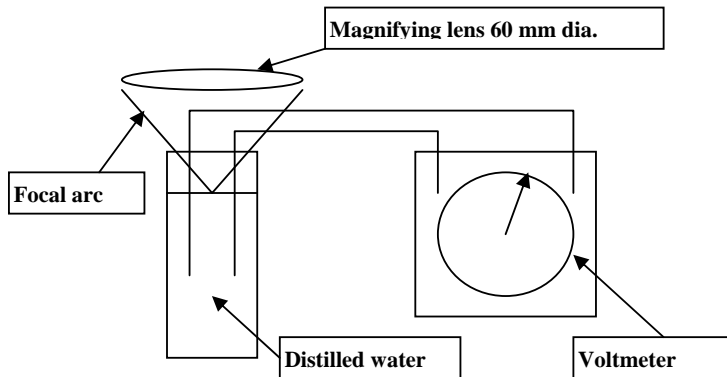


Diagram1. Experiment with distilled water and no external DC (Type iiA)

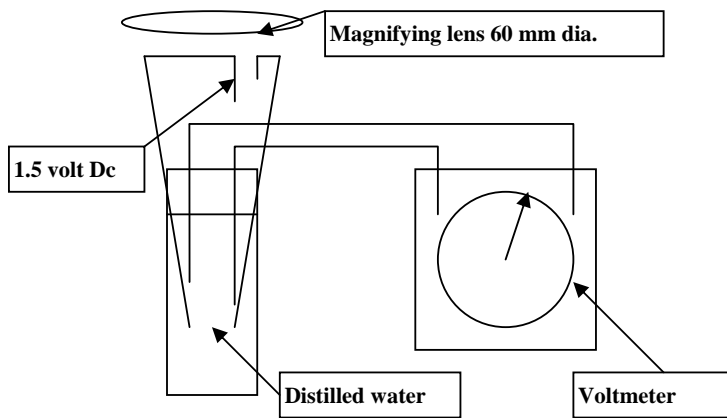


Diagram2. Experiment with distilled water and external 1.5V DC (iiC)

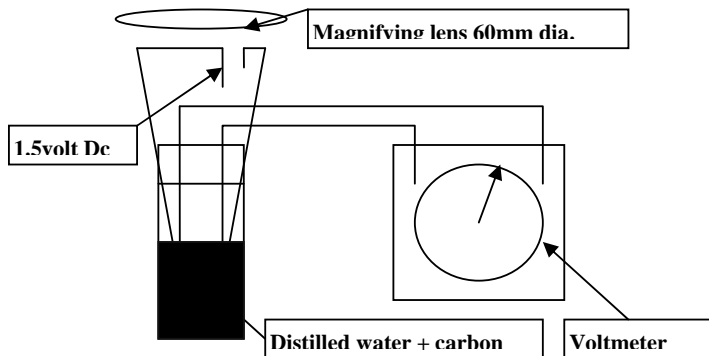


Diagram 3. Experiment with distilled water with carbon alkali and external 1.5Volt DC (Type iiiC + iiiD)

In simple words, in this experiment we want to know whether the effect of Solar heating (photon flux) is similar with introducing carbon alkali material or introducing 1.5V DC potential into the electrolytes. As shown in Table 1 below, it turns out that both photon flux and external 1.5V DC potential could induce significant impact to the observed anomalous potential, while carbon alkali almost has no further effect (at least to the experimental configuration as described herein).

In each experiment, we fill the 20mm-diameter tube with 100mm high of distiller water, meaning that we use more or less ~ 120cc of distilled water for each phase of experiment.

The experiment was conducted in the backyard, around 21st Aug. 2006.

Table 1. Observation result with distilled water

Description	Without solar exposure	With solar exposure (magnifying lens)	Before external 1.5V DC. Without solar exposure	After external 1.5V DC. With solar exposure (magnifying lens)
	A	B	C	D
Ordinary water [i]	V=0 Volt; R>>1000 Ω	V=0 Volt; R>>1000 Ω		
Distilled water [ii]	V=0 Volt; R>>1000 Ω	V=0.2 Volt; R=600Ω ~1000Ω	V=0.8-1.0 Volt; R=600Ω ~1000Ω	V=0.6-0.8 Volt; R=100Ω ~600Ω
Distilled water with carbon alkali material [iii]	V=0.2 Volt; R>>1000 Ω	V=0.6 Volt; R=600Ω ~1000Ω	V=0.6-0.8 Volt; R=600Ω ~1000Ω	V=0.6-0.8 Volt; R=100Ω ~600Ω

From Table 1 we can observe a few interesting results, as follows:

- (i) That *within bounds of experimental precision limits* we observe that there is anomalous potential energy in distilled water as much as 0.6-0.8 Volt (DC) after sufficient exposure to solar light, and after a few minutes introducing external 1.5Volt (DC) potential into the electrolytes. (Type iiC)

- (ii) Using carbon alkali material will add no further effect into this anomalous observed potential energy (Type iiiC). The exact source of this observed anomalous potential energy remains unknown.
- (iii) Furthermore, it is also interesting to note here that after around two hours (the external 1.5Volt DC potential has been released), measurement reading for configuration [iiD] remains showing anomalous potential electric energy ~ 0.4-0.6 Volt and resistance $R \sim 100\Omega$.
- (iv) After around 24 hours (the next day), measurement reading for configuration [iiD] remains showing anomalous potential electric energy ~ 0.1-0.2 Volt and resistance $R \sim 100\Omega$.
- (v) Therefore we can conclude to summarize this experimentation, that a small DC potential and photon flux (Solar light) could play significant role in the LENR/CANR-type processes which so far this effect has been almost neglected in reported LENR/CANR experiments.[1][2]

For clarity, we draw diagram showing observed anomalous potential energy (the lower bound value) in experiment type iiA, iiB, iiC, iiD for the first 24 hours of this experiment (Table 2 and Diagram 4). It is clear here that the peak of anomalous potential energy was observed after introducing external 1.5Volt DC potential, and its impact not last yet after 24 hours.

Table 2. Observation result in each step of experiment Type ii

Step	Hours	Observed potential (volt)
Without solar light	0	0
After solar light	0.2	0.2
With external 1.5Volt	0.4	0.8
Without external 1.5Volt, after solar light	0.5	0.6
After 2 hours	2.5	0.4
After ~24 hours	24	0.1

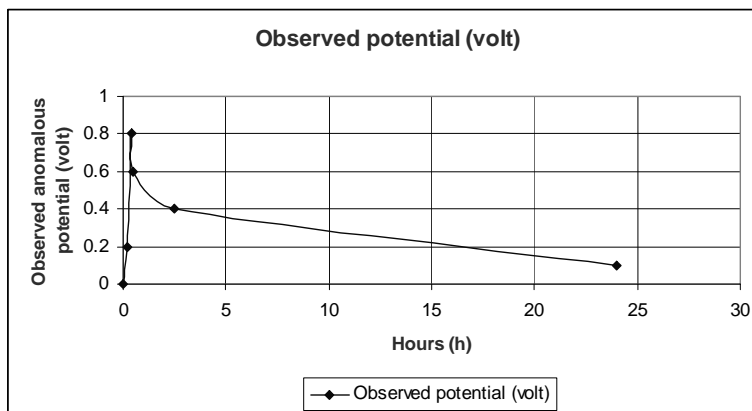


Diagram 4. Observation result in each step of experiment Type ii

In our opinion, it is very likely that this *photon flux* could trigger effect just like in '*photo-synthesis*' process which is known in various biological forms of life. However, this proposition requires further theoretical considerations.

If this proposition corresponds to the facts (concerning the role of photo-synthesis), then perhaps this experiment does not belong to typical LENR-CANR experiments [1][2], instead it is perhaps more convenient to call it PSCR (PhotoSynthesis-catalyzed Chemical Reaction).

We also note here that the energy dissipated by an electric field flowing through the water resistance could waste low-grade heat. However, it shall also be noted that in our experiments as described above, the photosynthesis process seem to affects the distilled water resistance, down to as low as $R \sim 100\Omega$ after 24 hours. Therefore it is recommended to find out how likely is the chance to transmit electromagnetic field via distilled water in this low resistance condition.

Nonetheless, it should also be noted here that there is shortcoming of this experimentation, for instance we don't exactly measure how much carbon alkali material has been introduced into the electrolyte, nor how long the solar light exposure shall be maintained (it could take 5-10 minutes). It is because this experiment is merely to assess the viability of the idea, instead of becoming a rigorous experiment. Further experiments are of course suggested to verify this proposition with better precision.

Furthermore, as precaution, it is worth noting here that perhaps the tube material (aluminium, in this experiment) may have contributed significantly to the anomalous effects reported here. Repeating this experiment with different tube material may affect the result.

A few alternative interpretations of the above anomalous effect

In order to explain the above anomalous potential energy, we consider a few possible alternative interpretations, as follows:

- photon magnified energy;
- photon Hall effect;
- photon condensate's zero point energy;
- photon condensate's Gross-Pitaevskii energy.

The rationale for each of these alternatives is discussed as follows:

- (a) Photon Magnified Energy. It can be shown by the use of special relativity that the energy momentum relation actually also depends on the 'scale' of the frame of reference. Therefore the use of magnifying lens that focuses photon energy in the electrolyte will be not the same again with $E=p.c$ for the area of magnifying lens, but:

$$E_{\text{focused}} = n^2 . E_{\text{photon-flux}} \quad (1)$$

Where n represents scaling factor, similar to refractive index.

- (b) Photon Hall effect. It is known that photon takes the form of boson [10]. Now it is possible also to assume that the photon condensate will induce Hall effect [8][9],

therefore we could use total particle momentum expression instead of conventional momentum [9]:

$$p = mv + m\Omega \times r + qA \quad (2)$$

Therefore the energy-momentum relation becomes:

$$E = pc = (mv + m\Omega \times r + qA).c \quad (3)$$

If we neglect the first term (assuming photon is massless), then:

$$E = pc = (qA).c \quad (4)$$

We shall note here that Vigier and others suggested photon has mass.

- (c) Photon condensate's Zero Point Energy. Starting with the assumption that photon is Bosonic, then we could also use zero point energy of Bose condensate for photon [10]. It is also known that zero point energy could play significant role in LENR experiments [2]. The zpe for Bose condensate could be expressed as follows [10, p.13]:

$$\epsilon = \frac{1}{V} \langle \hat{H}_{QFT} \rangle_{vac} \quad (5)$$

Nonetheless it is not yet clear, how zpe could trigger anomalous effect. This zpe could have linkage with interpretation of Dirac's negative energy [5].

- (d) Phion condensate's Gross-Pitaevskii energy. We could also start with assumption that there exists phion fluid medium which is unobserved [6][12]. Recent paper by Moffat [6a] has shown that phion condensate model is at good agreement with CMBR temperature and also with galaxies rotation curve data. It could also be shown that using Gross-Pitaevskii equation one could derive Schrödinger equation, also planetary quantization.[7] Using the mechanism of photon-photon interaction [6], the solar's photon flux interacts with the surrounding phion condensate medium. And therefore the energy collected by the magnifying lens is not only its own 'photon flux' energy but also includes the energy of the phion condensate medium. This energy then triggers chemical reaction in the electrolyte. It is known that Ginzburg-Landau (Gross-Pitaevskii) equations have free energy term due to its nonlinear effect [13], therefore it perhaps could explain why the effect on the electrolyte remains quite significant (more than 0.2volt) after a few hours.

Further experiments are of course recommended in order to verify or refute these alternative explanations.

Concluding remarks

We have described here an experiment which could exhibit anomalous electrical energy in distilled water with *very minimum preparation energy*. While this observed excess energy here is less impressive than [1][2] and the material used is also far less exotic than common LENR/CANR experiments, from the viewpoint of minimum preparation requirement –and therefore less barrier for rapid implementation--, it seems that further experiments could be recommended in order to verify and also to explore various implications of this new proposition.

Practical implication of this experiment could include possibility to use distilled water+carbon alkali for battery charger, as an alternative to polymer electrolyte charger (PEFC) method introduced by DoCoMo in July this year (2006). Nonetheless, this simple experiment is merely at its very initial phase, so we haven't exercised thoroughly yet how it could be transformed into practical use.

Furthermore, as precaution, it is worth noting here that perhaps the tube material (aluminium, in this experiment) may have contributed significantly to the anomalous effects reported here.

We shall note here that perhaps this experiment does not belong to 'standard' LENR-CANR experiments [1][2], instead it is perhaps more convenient to call it PSCR (Photo-Synthesis-catalyzed Chemical Reaction). Nonetheless, the present simple experiment was reported merely to encourage further experiments along similar line of thought.

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Simplified Biographies

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