

Evidence that Femto-H₂ Exists Leads to the Correct Mechanism of Cold Fusion (Cold Fusion is Caused by Femto-D₂)

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Abstract:- Femto-H₂ is generated by compression of H-H bond of H₂ confined at expandable T site, and authors' mechanism of Cold fusion is that femto-D₂ created at expandable T site cause fusion of D+D due to the shielding of coulomb repulsive force because femto-D₂ has so dense electron between d-d that coulomb repulsive force is shielded to cause Fusion. One of the controversial heat generation reactors is QHe (Quantum Hydrogen Energy) developed by clean-planet, who explains that QHe is a heat-generating technology with hydrogen quantum diffusion. The diffusion is induced by heating a small amount of hydrogen saturated in nano-sized nickel-based composite material. Although they did not describe it cold fusion, it is commonly understood to be cold fusion. Therefore, this kind of Cold fusion debate is so confusing that no common standard theory has been established. Therefore, I would like to explain the mechanism of QHe based on author's Mechanism of Cold Fusion. with H₂ loading into multi-stacked Ni/Cu which has large number of reaction site of grain-boundary, where the hydrogen segregates to enhance the reaction of femto-H₂ generation. And femto-H₂ can fuse to Cu or Ni to be mainly Ze to generate 15~17MeV, which is comparable of energy by D+D=4He+24MeV. Because femto-H₂ is so small to fuse to the metal nucleus at room temperature, and at high temperature, the nucleus vibrates at high speed and femto-H₂ can fuse with the metal nucleus and once the heat generation start transmutation continues. Author also discovered phenomena that seems to be related to femto-H₂, which are transmutation reactor

by Dr. Ohmasa and car on H₂O (Water Fuel CELL) by Stanly A Meyer. Ohmasa's transmutation reactor uses Pd coating plate and loaded hydrogen by electrolysis generate femto-H₂ which enter into H₂O to transmute H₂O to be helium-3 and oxygen-18 clusters. Water Fuel Cell can generate huge heat by the transmutation of metal with femto-H₂. Therefore, author would like to request clean-planet to study the transmutation with femto-H₂ in QHe reactor to prove author's mechanism hypo, and Cold fusion community to start the discussion on the standard theory of Cold Fusion because author's mechanism is inconsistent with nucleus model.

Keywords:- Femto-D₂, Femto-H₂, Expandable T Site, Cold Fusion, Qhe, Transmutation, Brown Gas.

I. INTRODUCTION

Mechanism of Cold fusion is difficult to understand because of the variety of Cold Fusion reactor based on the various mechanism explanation. One of the controversial reactors is developed by clean-planet, which is called QHe (Quantum Hydrogen Energy); hydrogen diffusion through multi-stacked Ni/Cu layer can produce excess heat, which mechanism is unknown, however most researchers and journalists consider it to be cold fusion. which cause the confusion of mechanism discussion of Cold Fusion.

Therefore, author would like to publish mechanism hypo of QHe based on author's Cold Fusion Mechanism.

II. MECHSNISM OF COLD FUSION

A. Expandable T site

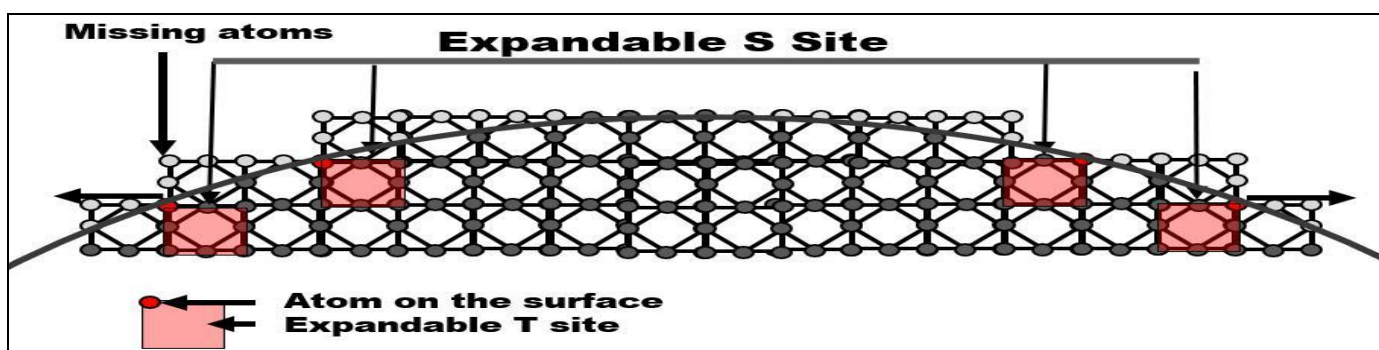


Fig 1: Expandable T Site on the Surface with Nano Roughness

B. Generation of Femto-D₂ and Femto-H₂

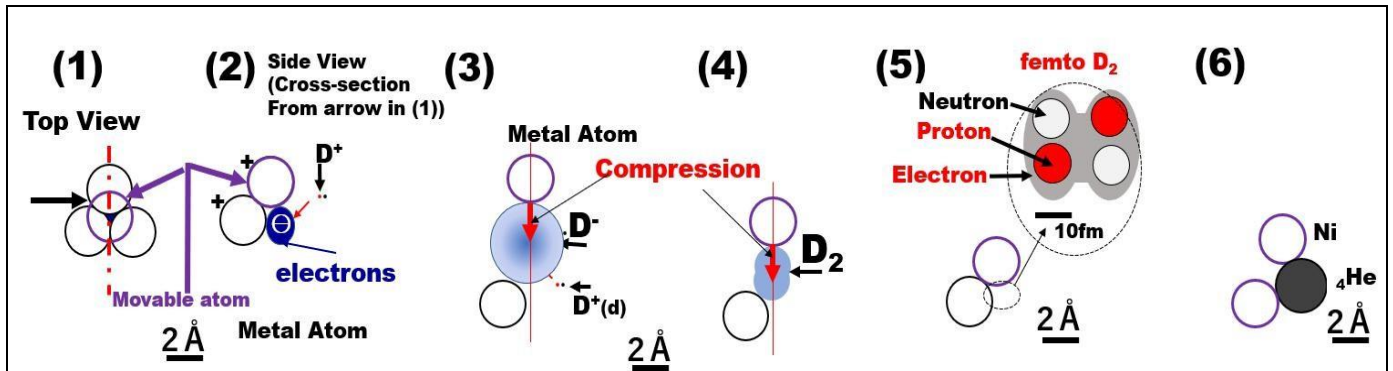


Fig 2: Mechanism of Cold Fusion by D-D Bond Compression to Generate Femto-D₂ to Cause Cold Fusion

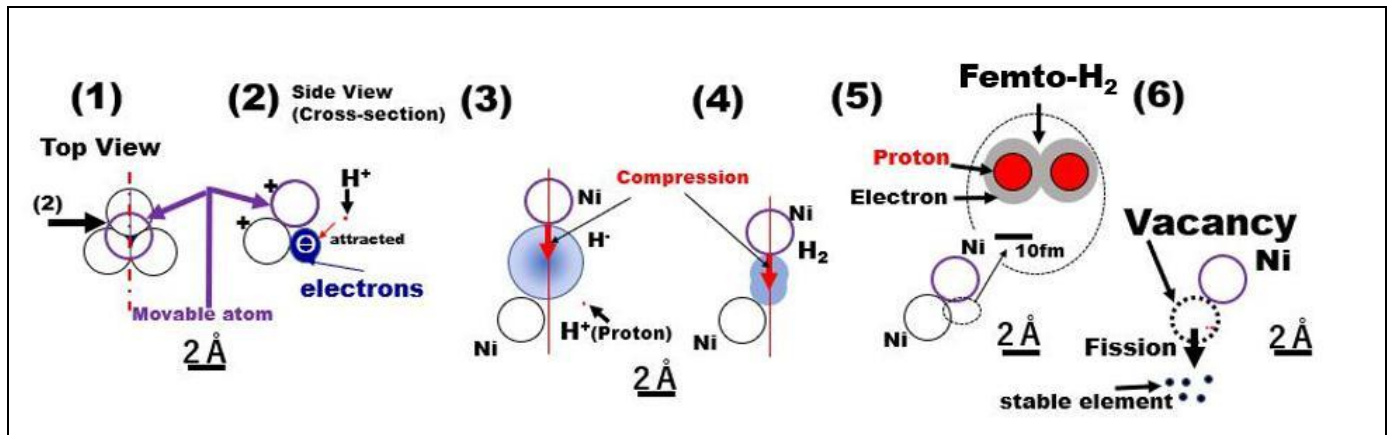


Fig 3: Mechanism of Cold Fusion by H-H Bond Compression to Generate Femto-H₂.

Author proposed the mechanism of Cold fusion based on femto-D₂ model as is shown in Fig 2 and Fig.3 in ref [1] and [2].

Author discovered the hydrogen embrittlement is caused by the mechanism of Cold fusion with H₂ loading into metal with FCC lattice structure which can cause Cold Fusion in ref [2], and discovered that current nucleus model

is incorrect based on transmutation experiment by Iwamura in ref [3] and [4]. Based on Iwamura's report in ref [5]. Transmutation with femto-D₂ increase the atomic number is 4, and because transmutation is by the fusion of femto-D₂ (2d) with target element and thus charge of d must be 2, which suggested that d is constituted only by protons and internal electron in ref [3].

III. MECHSNISM OF QHE

A. Multilayer Metal Stacks by Clean-Planet

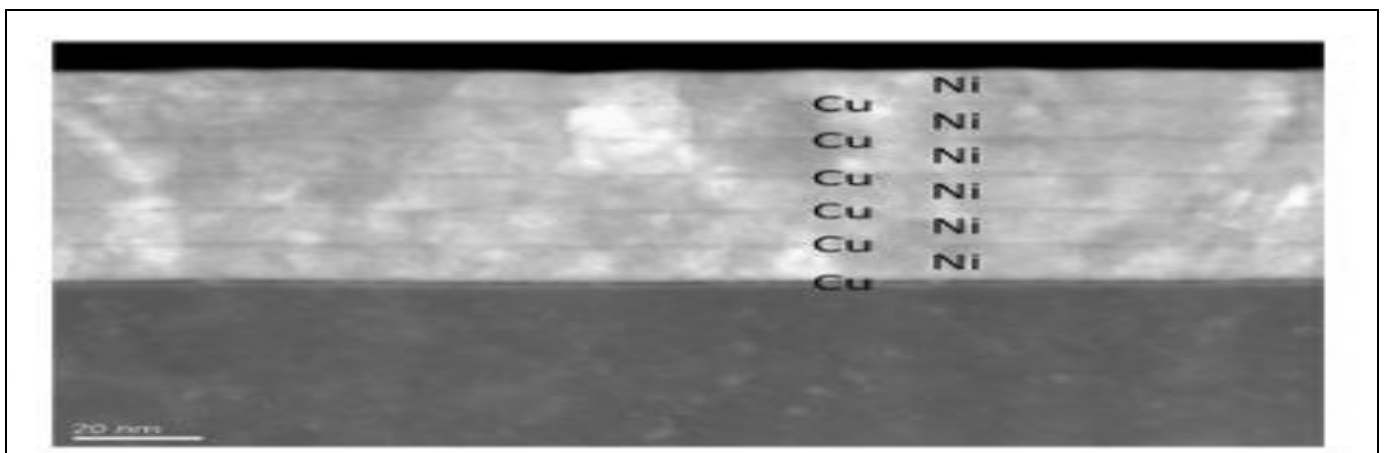


Fig 4: Nano-Structured Multilayer Metal Composites and Hydrogen Gas in ref [6].

B. Mechanism of QHe

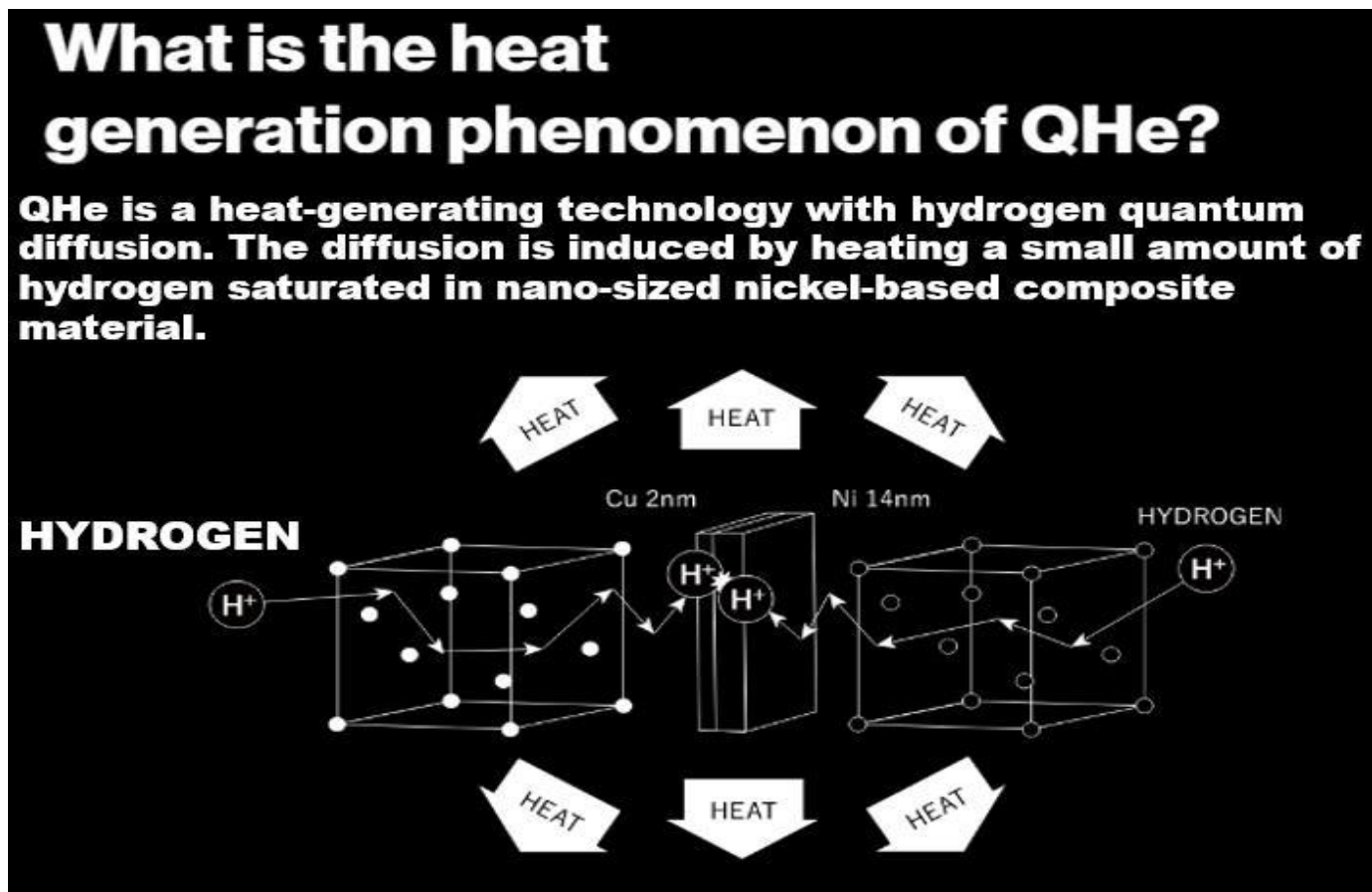


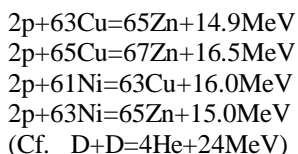
Fig 5: Mechanism of QHe in ref. [7]

Iwamura reported in ref [6] that the anomalous heat generation of nano-structured multilayer metal composite, and clean-planet also claims that their heat generator is based on the diffusion of hydrogen through the multitasked Ni/Cu layer as is shown in Fig.4 and Fig.5 in ref [7], which confuse the discussion on the mechanism of Cold Fusion.

Based on author’s study of Cold Fusion, their reactor produces larger amount of femto-H₂ to cause transmutation and it is possible to produce excess heat by the following transmutations.

Note that femto-H₂ has neutral 2 protons.

Possibility of fusion reaction is as follows.



Based on my estimation of heat generation by transmutation with femto-H₂, Author presumes that femto-H₂ transmutation can generate large amount of energy as is showed in the above calculation. Therefore, Author would like to request Clean-planet and Iwamura to study the possibility of transmutation with femto-H₂ generation in QHe reactor by their experiments to find the transmuted element in their metal stacks, which will prove the transmutation experiment in ref [6] to prove that current nucleus model is incorrect in ref [3].

In ref [6], they explained that by loading light hydrogen in a nickel-based composite material with nano-structured multilayers, and then diffusing the light hydrogen through the nano-multilayers by rapid heating. This method has led to a larger excess energy per hydrogen atom more than 10keV H⁻¹.

Author thinks that rapid heating raises the metal temperature to vibrate metal nucleus to cause fusion with femto-H₂. Once the heat generation start, transmutation continues.

IV. TRANSMUTATION REACTOR BY DR. OHMASA

A. Gas Generated by Transmutation Reactor Developed by Dr. Ohmasa

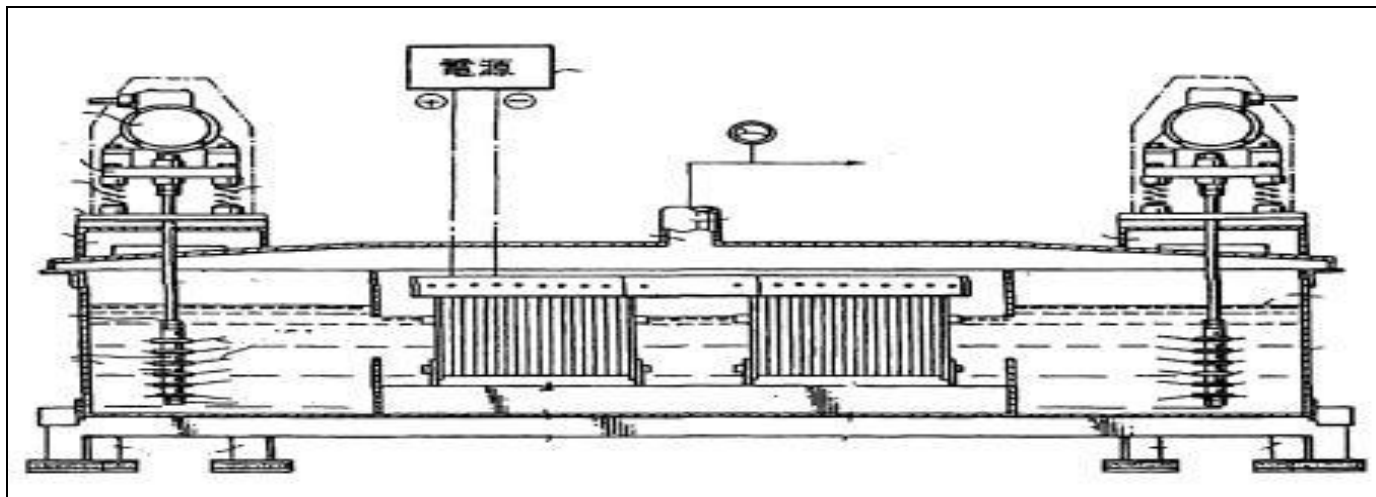


Fig 6: OHMASA GAS Generator with low Frequency H2O String to Improve Electrolysis Rate. In ref [8]

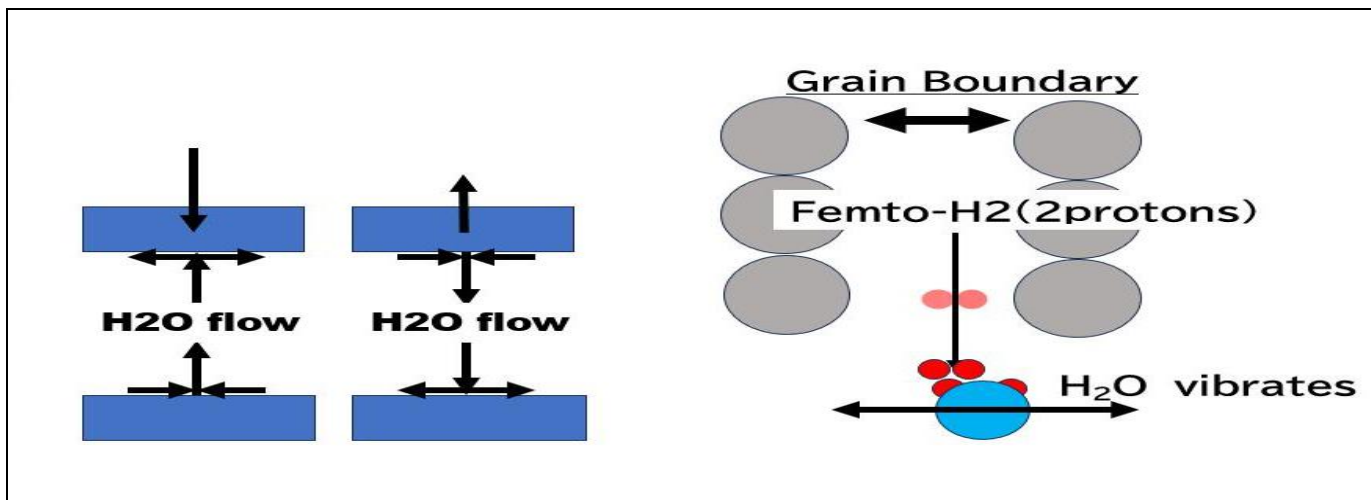


Fig 7: Mechanism of Transmutation Reactor to Vibrate Metal Plate Vertically in ref [9],[10]

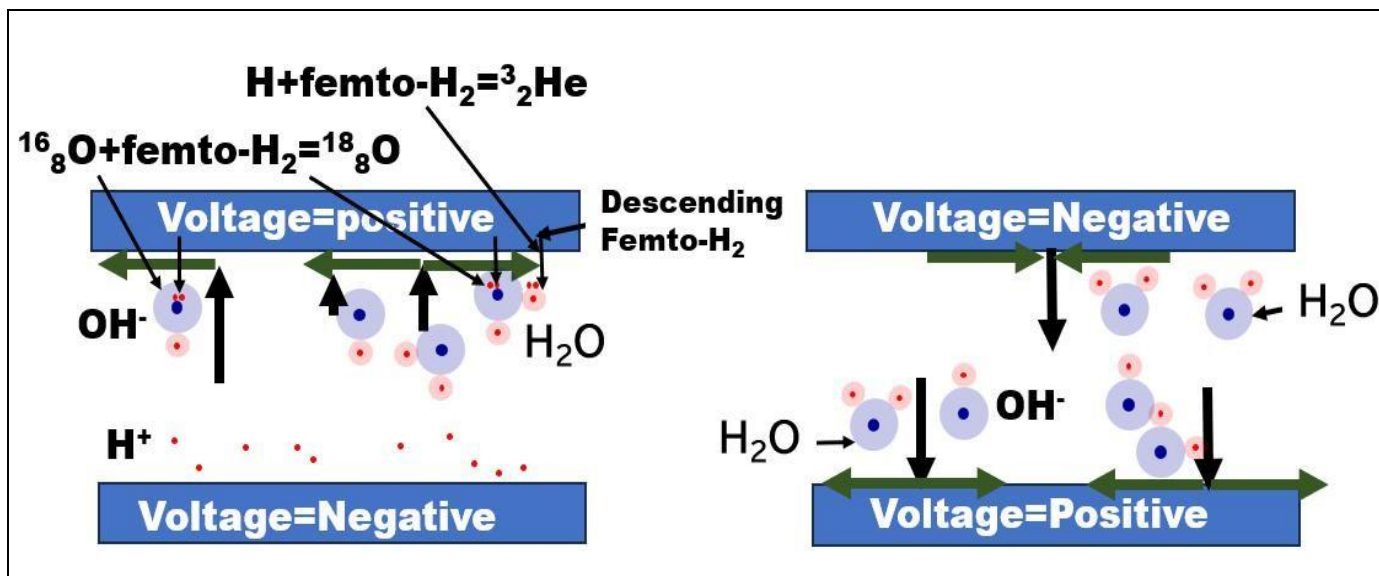


Fig 8: Brown Gas Generation by Transmutation Reactor with Positive Pulsed Voltage

Dr. Ohmasa invented transmutation reactor to transmute tritium from Fukushima nuclear power plant in ref [9], and I discovered the mechanism of transmutation with femto-H2 generated in metal by loading H from water by electrolysis, and it simultaneously produces helium-3 in ref [10]. Lateral metal plate vibrates vertically to move H₂O

between the plates and along the plate to cause transmutation with femto-H₂ descending from the grain-boundary.

In case of Brown gas generation, pulsed positive voltage is used to vibrate H₂O/OH⁻ shown in Fig.8.

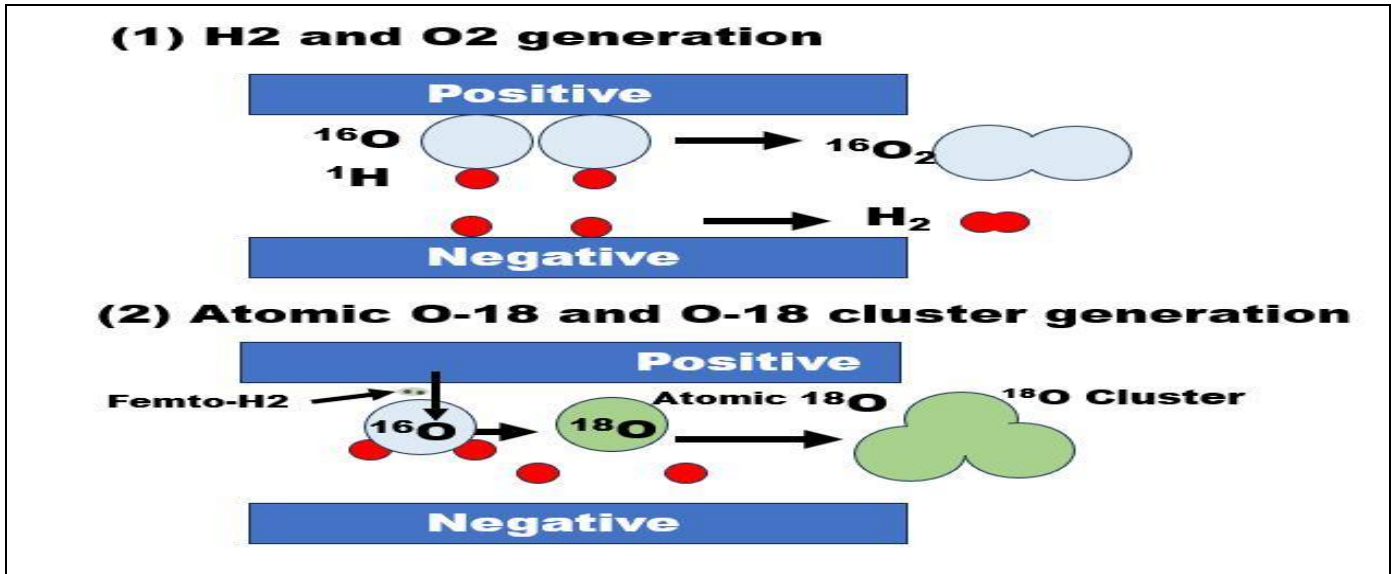


Fig 9: Mechanism of Atomic Oxygen-18 and Oxygen-18 Cluster Generation

By the transmutation of oxygen-16, O-H bond break and oxygen16 is transmuted to atomic oxygen-18, and they cluster.

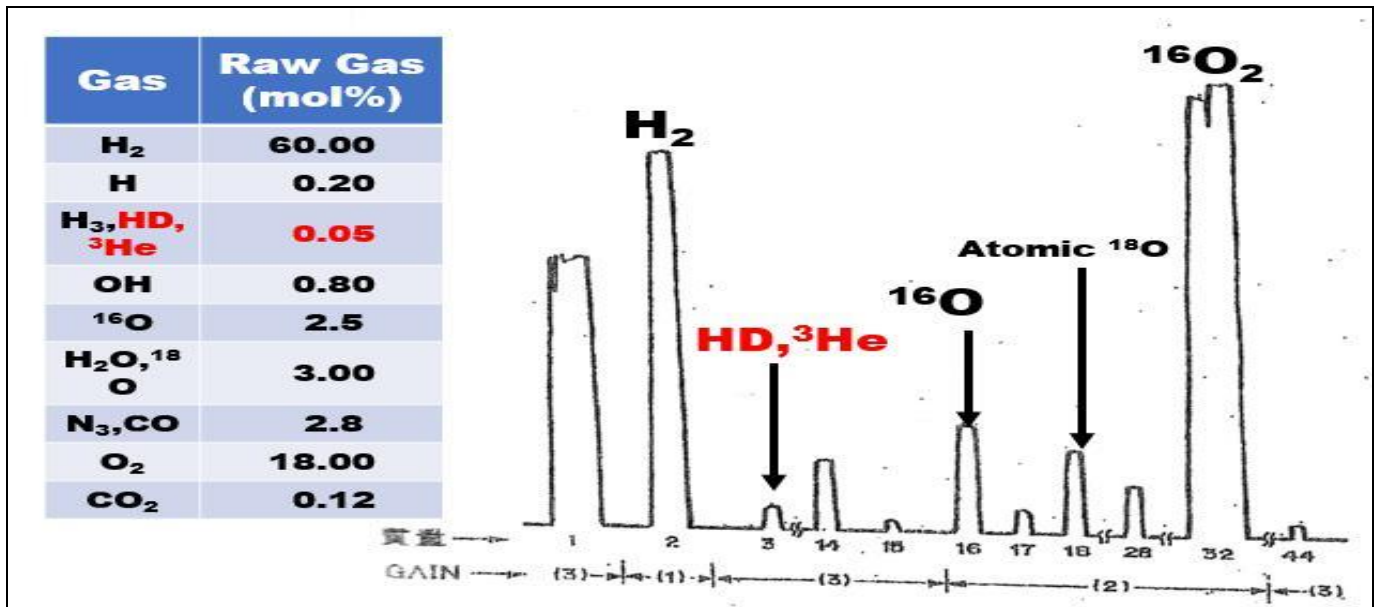
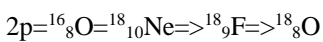
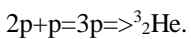


Fig 10: ICP-MS Histogram of gas Generated by Transmutation Reactor

Based on transmutation with femto-H₂, the following fusion reaction occurs based on its mechanism.

=> is electron capture



As is shown in Fig.10, mass=18 exists, which is impossible mass numbers by electrolysis. And mass=3 is not clear by conventional ICP-MS due to the interfering ions of HD.

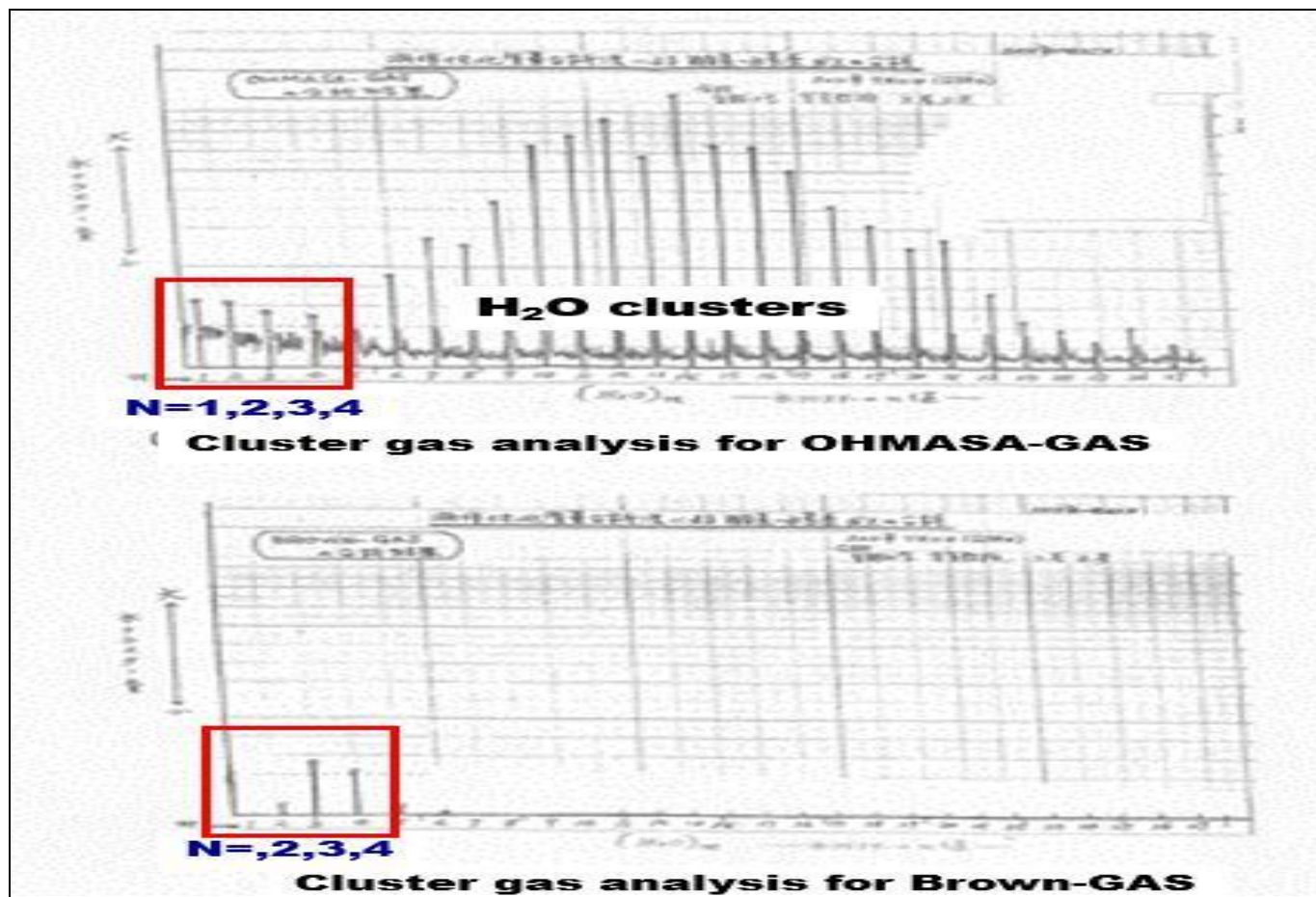


Fig 11: Cluster Gas Analysis of OHMASA GAS in ref [11]

Since Ohmasa has not understood the difference between OHMASA GAS and Brown Gas. OHMASA GAS generated by conventional electrolyzer by stirring H₂O to improve electrolysis rate is conventional H₂/O₂ mixed gas (HHO gas). Gas generated by transmutation reactor is Brown gas, which mechanism is similar; both vibrates H₂O between metal plates.

Dr. Ohmasa claims that upper mass histogram in Fig8 and Fig.7 are Ohmasa Gas. However, it must be brown gas based on authors mechanism of transmutation.

Note that Brown gas has no H₂O cluster because Ohmasa's Transmutation reactor vibrates the entire water in the tank, gas contains moisture, which was detected in upper mass histogram in Fig.11, and no H₂O cluster in Brown gas and both has oxygen-18 clusters with cluster number is 2,3,4.

Dr. Ohmasa generate brown gas in his transmutation reactor with pulsed voltage and its Brown gas contains (mass=18) n; cluster(n=2,3,4).

B. Brown Gas can be a Real Free Energy

Because femto-H₂ is generated without extra energy, oxygen-18 by transmutation with femto-H₂ can be generated without extra energy. If oxygen-18 is completely

combusted, its output energy can be higher than the input energy by electrolysis. For the reasons above, we should study the nature of oxygen-18 cluster. This is more academically interesting than practical application.

C. Femto-H₂ Exists

Author studied the experiments by Dr. Ohmasa's transmutation reactor and discovered that existence of femto-H₂ is probed by him as in ref [12]: adding 2protons to base metal transmute to the precious metal. Author proposed that transmute tritium and simultaneously produce helium-3 in ref [13]. All of the reported experiment is based on transmutation with femto-H₂. Therefore, author is sure of the existence of femto-H₂.

V. WATER FUEL CELL BY STANLEY A MEYER

A. History of water Fuel Cell in ref [14],[15],[16],[17]

The water fuel cell is a "perpetual motion machine" developed by Stanley Allen Meyer (August 24, 1940 – March 20, 1998). Meyer claimed that a car retrofitted with Water Fuel Cell could use water as fuel instead of gasoline. Meyer's claims about his "Water Fuel Cell" and the car that it powered were found to be fraudulent by an Ohio court in 1996.

B. Mechanism of Heat Generation

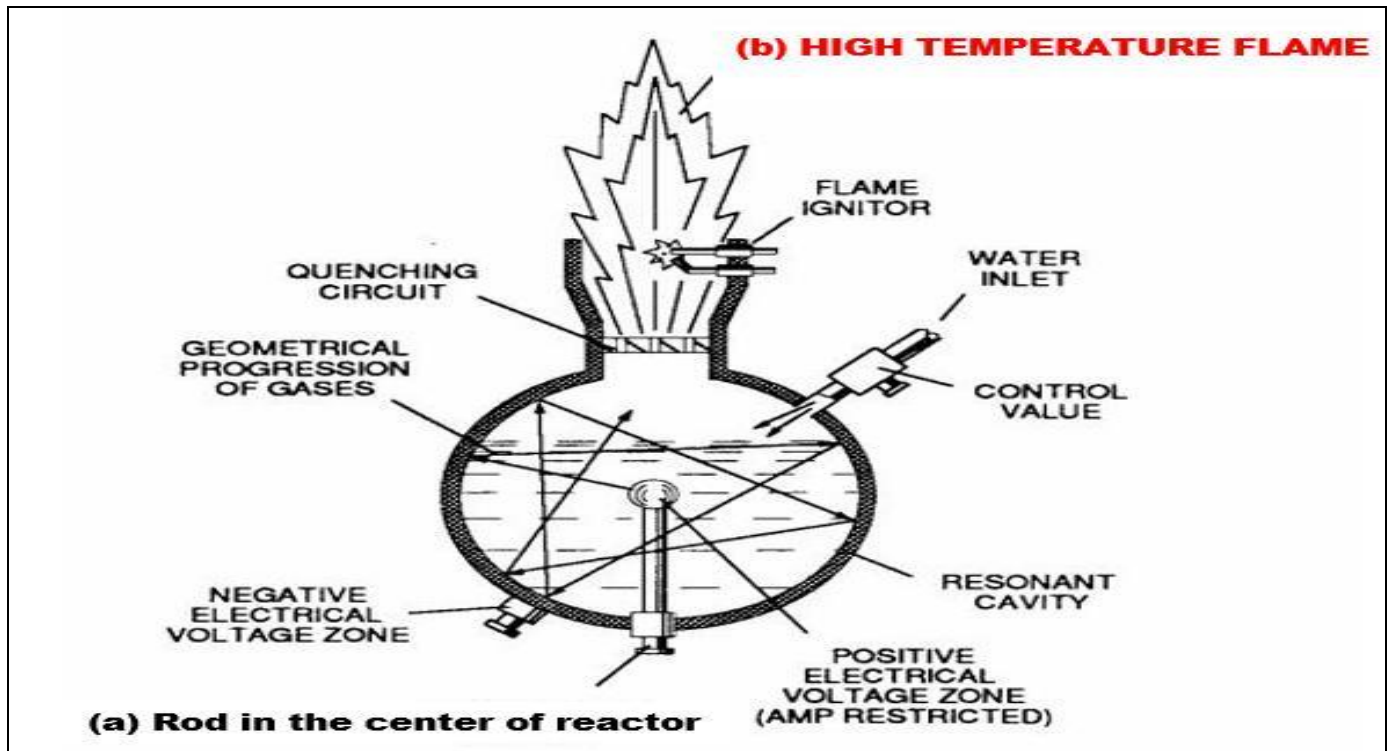


Fig 12: Water Fuel Cell in ref [17]

The lattice of SUS304 has a face-centered cubic (fcc), called the gamma phase.

Author thinks that the electrodes(a) were likely made of SUS because SUS is commonly used for this kind of reactor.

When a metal with an FCC lattice is used for the positive electrode (a) of electrolyzer in Fig12, femto-H₂ is

generated to transmute H₂O. The generated gas is mixture of H₂ and O₂ by H₂O electrolysis, and helium-3 and oxygen-18 clusters.

As author explained in sec IV, Water Fuel Cell can be real free energy if various factors as is explained below come together.

C. Mechanism of Brown Gas Generation

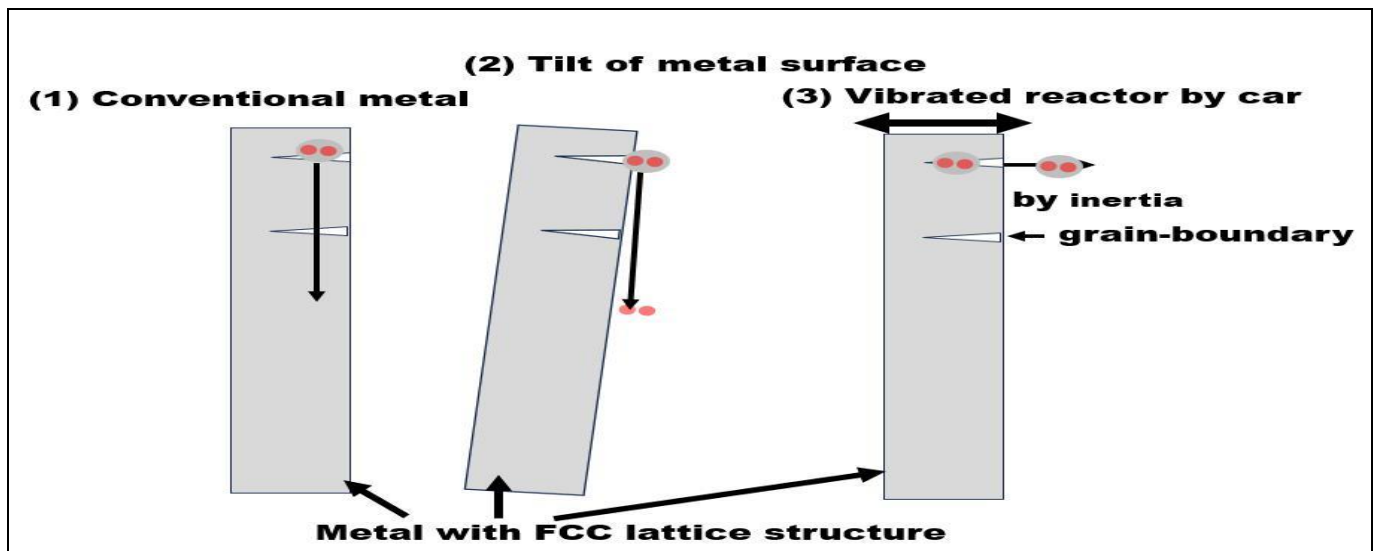


Fig 13: Mechanism of Water Fuel Cell

Because femto-H₂ is generated inside the metal and it descends by the gravity, femto-H₂ stay inside the metal shown in Fig.13(1). Therefore, Water Fuel Cell is installed in the car, it is vibrated by the vibration of the car in Fig.13(3), and angle of tilt is not adjusted and it can change by the tilt of the car in Fig.13(2), and it may produce large amount of oxygen-18 cluster to improve combustion efficiency.

Author thinks that experiment was conducted in laboratory without vibration and without angle of tilt.

VI. SUMMARY

Author discovered the unexplained phenomena related with hydrogen is explained mostly by femto-H₂ and author also discovered the mechanism of QHe developed by clean planet; Clean-planet explain that QHe is a heat-generating technology with hydrogen quantum diffusion. Author thinks the mechanism that the transmutation with femto-H₂ of metal can produce excess heat of ~15MeV, which is comparable of the heat of “D+D=4He+24MeV”. Thus, author would like to request clean-planet to prove my mechanism hypo. Therefore, author concluded that Cold Fusion is caused by femto-D₂ generation in the metal because femto-H₂ exists proved by many experiments and Unexplained phenomena, QHe by clean-planet, Brown Gas by Stanly A Meyer.

VII. DISCUSSION

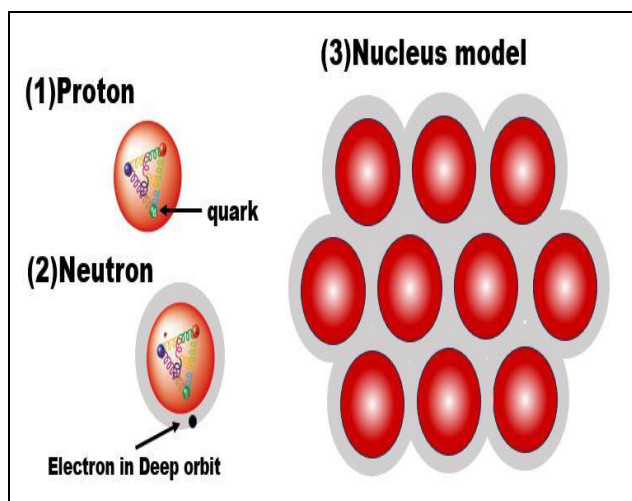


Fig 14: Correct Nucleus Model in Ref [3]

After the verification of author's mechanism hypo of QHe by clean planet, I will request the Cold Fusion Community to discuss the mechanism of Cold Fusion based on femto-D₂. Author thinks that mechanism of Cold Fusion will affect the nucleus model and particle physics because the current nucleus model is incorrect and no neutrino exists, which is proved by the experiments of Cold Fusion.

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