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CFP (Cold Fusion Phenomenon) stands for

“Nuclear reactions and accompanying events occurring in open (with external particle and energy supply), non-equilibrium system composed of solids with high densities of hydrogen isotopes (H and/or D) in ambient radiation” belonging to Solid State-Nuclear Physics (SSNP).

This is the *CFRL News* (in English) No.112 for Cold Fusion researchers published by Dr. H. Kozima, at the Cold Fusion Research Laboratory, Shizuoka, Japan.

This issue contains the following items:

- 1. Manuscripts of the three papers presented at JCF21 from CFRL was sent to the Editor. Their extended versions were published as *Reports of CFRL* Nos. 21-1, 21-2, 21-3, respectively, and uploaded to the ResearchGate.**
https://www.researchgate.net/profile/Hideo_Kozima
 - 2. On the Harry Collins’ article insulting Martin Fleischmann and Stanley Pons published in *Physics Today*(Feb. 17, 2021)**
 - 3. On the TV Program “The case of ‘the Dream Energy – Cold Fusion –’ Affair” broadcasted by NHK (Japan Broadcasting Corporation) on Feb. 25, 2021.**
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of CFRL Nos. 21-1, 21-2, 21-3, respectively, and uploaded to the ResearchGate.

As reported already by the CFRL News No. 111, we had presented three paper at the JCF21 held on December 11-12, 2020 in Kyoto (on the Zoom platform):

- (1) **JCF21-2** H. Kozima, “*Cold Fusion Phenomenon in the Composite CF Materials – Mixed Hydrogen Isotopes, Alloys, Ceramics and Polymers –*”
- (2) **JCF21-3** H. Kozima, “*Cold Fusion Phenomenon in the Compound CF Materials – Effects of Interfaces –*”
- (3) **JCF21-4** H. Kozima, “*Neutron Energy Bands in the Compound and Composite CF Materials – Speculation on the Bases of the TNCF and ND Models –*”

Their manuscripts for the *Proceedings of JCF21* had been sent to the Editor and the extended versions of these papers *Reports of CFRL* Nos. 21-1, 21-2, 21-, respectively were published and uploaded in the ResearchGate and uploaded in the page :

https://www.researchgate.net/profile/Hideo_Kozima

2. On the Harry Collins’ article insulting Martin Fleischmann and Stanley Pons published in *Physics Today* (Feb. 17, 2021)

Harry Collins (a sociologist of science, by Wikipedia) told about “the science today” and insulted Martin Fleischmann and Stanley Pons as not the right kind of scientists to be doing the work (scientific work) in his talk published in the Feb. 17 issue of the *Physics Today* (Feb. 17, 2021). It is clear that he is “ignorant of the today’s physics that changed drastically in the last half of 20th century by the inclusion of complexity in its.” [Kozima 2021a] from his talk cited below:

“In an area of serious dispute, you can’t tell who is right simply by repeating the experiments because scientists disagree about when replication has been done properly.

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For example, to debunk Weber’s detection claims, scientists had to get others to agree that Weber made mistakes in his statistical analysis and his handling of the data. ***And to debunk cold fusion, it had to be agreed that [Stanley] Pons and [Martin] Fleischmann were not the right kind of scientists to be doing the work. In neither case was it enough, at the time, simply to say the results weren’t replicated, even though that is how we describe it in retrospect.*** (Italicized and bold faced partially at citation.) [Collins 2021]. (Italicized, boldfaced and colored partially at citation.)

[Collins 2021] H. Collins, “On Acquiring and Using Scientific Knowledge,” *Physics Today*, 6.4.20210217a (2021). <https://physicstoday.scitation.org/doi/10.1063/PT.6.4.20210217a/full/>

[Kozima 2021a] H. Kozima, “Cold Fusion Phenomenon in the Compound CF Materials – Effects of Interface,” *Proc. JCF21*, **21-3** (2021), ISSN 2187-2260 (to be published).

In the beginning of the 21st century, we know well that there are only the qualitative or statistical reproducibility in such complex systems as the CF material where occurs the cold fusion phenomenon where the particles in the system are combined by the nonlinear interaction. The quantitative reproducibility is expected only in the system where components are governed by the linear interaction. The facts that the cold fusion phenomenon is characterized by the qualitative reproducibility have been pointed out more than 20 years ago and explained by a model about ten years ago [Kozima 1998, 2013]:

[Kozima 1998] H. Kozima, *Discovery of the Cold Fusion Phenomenon – Development of Solid State-Nuclear Physics and the Energy Crisis in the 21st Century* –, Ohtake Shuppan Inc., 1998, ISBN 4-87186-044-2.

[Kozima 2013] H. Kozima, “Cold Fusion Phenomenon in Open, Nonequilibrium, Multi-component Systems – Self-organization of Optimum Structure,” *Proc. JCF13*, **13-19**, pp. 134 - 157 (2013), ISSN 2187-2260.

Qualitative Reproducibility

Despite of the work cited above in the last sentence; it will be better to confirm the nature of the qualitative reproducibility in the cold fusion phenomenon.

Let us recollect the extensive experimental work by McKubre et al. [McKubre 1993]. [McKubre 1993] M.C.H. McKubre, S. Crouch-Baker, Riley, S.I. Smedley and F.L. Tanzella, "Excess Power Observed in Electrochemical Studies of the D/Pd System," *Proc. ICCF3*, pp. 5 – 19 (1993), ISBN 4-946443-12-6.

Fig. 1 shows the experimental result of the excess energy (Q_{ex} in W) vs. the (average) D/Pd ratio of the Pd wire as explained by them as cited below:

“A *1 mm diameter* and approximately 45 cm long *vacuum-annealed palladium wire cathode* (with *36 cm submerged in the electrolyte*).” (Italicized at citation)

The experimental result is summarized as follows:

“In addition, for the experimental configuration utilized here, the excess power is observed to vary systematically with current and *in a second order manner (approximately) with average loading*, above a loading threshold.” [McKubre 1993 (pp. 11, 17)]

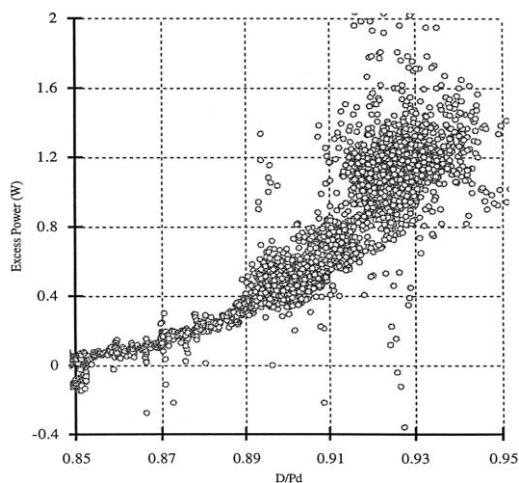


Fig. 1. Variation of excess power with loading ratio D/Pd observed by McKubre et al. [McKubre 1993 (Fig. 7)].

Let us check the qualitative reproducibility revealed by this extensive experimental data obtained by McKubre et al. in the SRL.

First, please look at the data Q_{ex} (W) in the range $D/Pd = 0.91 \pm 0.0025$. The values distribute widely from -0.4 W to $+2.0$ W. Suppose what Harry Collins says looking at this data. We cannot expect his correct response that the cold fusion phenomenon is governed by the qualitative reproducibility and the same macroscopic condition does not mean the same microscopic structure in the CF material that results in the same effect. We might be announced that the cold fusion phenomenon is not the science but an illusion! (How many times we had to hear such criticism as this for more than 30 years!)

Second, consider another case of two experiments done for samples in the range $D/Pd = 0.91 \pm 0.0025$; one I done by A and B another II by C and D. In the experiment I, they obtained several data around $Q_{ex} = -0.4$ and in II several data around $Q_{ex} = 1.2$. Then, we may obtain his response “*A and B were not the right kind of scientists to be doing the work.*”

This is a possible response of a person who do not know the concept of the qualitative reproducibility and is trapped in the world governed by the linear dynamics. However, it is possible that a scientist in the cold fusion field remains in the world of linear dynamics not caring about the nonlinearity in the CF materials. He will give us a response like follows.

Let us consider a researcher F who obtained several values of the excess energy around Q_{ex} (W) = 2.0 for samples with $D/Pd = 0.91 \pm 0.0025$ even if other researchers did not obtain any positive data for the excess energy. How do we should decide our opinion

about the strong insist of F for his rightness of his data? The right answer we should give may be a negative one destined by the statistical nature of the experimental result in the system governed by complexity. The data shown in Fig. 1 is the result obtained in a laboratory by a group of researchers in it. If we consider several data sets similar as that shown in Fig. 1 obtained in several laboratories, the statistical nature of the cold fusion phenomenon allows us to treat them on the same stance as we discussed the meta-analysis in our paper presented at ICCF19 [Kozima 2019].

[Kozima 2019] H. Kozima, “Inductive Logic and Meta-analysis in the Cold Fusion Phenomenon,” *Proc. JCF19*, **19-14**, pp. 85 - 111 (2019), ISSN 2187-2260.

On the other hand, the observation of tritium had been done by many researchers in various CF materials (Packham, Claytor, Romodanov, Srinivasan et al.) for many years and we can say that the generation of tritium in the deuterium system with the number ratio N_t/N_n of tritium/neutron around $10^8 - 10^9$ is a fact confirmed in the cold fusion phenomenon. (cf. [Kozima 2021a, 2021b]).

[Kozima 2021a] H. Kozima, “Cold Fusion Phenomenon in the Composite CF Materials – Mixed Hydrogen Isotopes, Alloys, Ceramics and Polymers –,” *Proc. JCF21*, **21-2** (2021), ISSN 2187-2260, (to be published).

[Kozima 2021b] H. Kozima, “Cold Fusion Phenomenon in the Compound CF Materials – Effects of Interface –,” *Proc. JCF21*, **21-3** (2021), ISSN 2187-2260, (to be published).

Considering this fact, the insult on the tritium detection by Packham et al. [Packham 1989] done in the NHK broadcast (cf. the next item in this News) is an unjust blame neglecting the scientific situation confirmed after several years of investigation.

[Packham 1989] N.J.C. Packham, K.L. Wolf, J.C. Wass R.C. Kainthla and J.O’M. Bockris, “Production of Tritium from D₂O Electrolysis ant a Palladium Cathode,” *J. Electroanal. Chem.*, **270**, 451 – 458 (1989), ISSN 1572-6657.

3. On the TV Program

“The Case of ‘the Dream Energy – Cold Fusion –’ Affair”

Broadcasted by NHK (Japan Broadcasting Corporation) on Feb. 25, 2021.

It will be interesting for cold fusion researchers in the world to know the NHK (the Japan Broadcasting Corporation) broadcasted a TV program on the cold fusion phenomenon by a title **“The Case of ‘the Dream Energy – Cold Fusion –’ Affair”** as

one of the one-hour programs in their series “*Dark Files in the History of the Sciences.*”

(N.B. There are many talks by Foreigners in English shown on the screen as captions in Japanese (translated into Japanese from English by the program staffs). The Japanese captions are translated into English by this writer (H.K.) which will express only rough meanings of the original talks spoken in English.)

At first, I give a summary of this one-hour program for the convenience of the reader who read the following incomplete explanation of this program which reports the complicated social affairs containing a truth of the nuclear reactions in the specific solids at near room-temperature mixed with several mistakes committed by researchers looking for the truth lead by a biased presumption and by a fantasy of the success in the world.

The program is divided into two parts, (1) one with the episodes around the paper published in 1989 by Fleischmann et al. told by Gary Taubes, Steven Jones, Nathan Lewis, William Happer and James Mahaffy along the Taubes’ book and (2) another with “modern cold fusion” research in the new materials containing nanoparticles progressing at present. (“modern cold fusion” is the words used in the program without any explanation).

【First half of the Program】

As you suppose from the above brief explanation, the first half of this Program is full of negative materials showing as if the paper by Fleischmann et al. [Fleischmann 1989] is a work written by false data and evil intention having no scientific value at all. The narration by the director of the program at the end of the first half clearly shows this explanation:

“Almost all positive results obtained in confirmation experiments had been denied as spurious ones due to the mistakes in experimental process, misunderstanding by biased conviction, or errors in the operation of instruments.”

[Fleischmann 1989] M. Fleischmann, S. Pons and M. Hawkins, "Electrochemically induced Nuclear Fusion of Deuterium," *J. Electroanal. Chem.*, **261**, pp. 301 – 308 (1989), ISSN 1572-6657.

After reading the first half (about 45 minutes) of this program, the listener will be convinced that the cold fusion is a past story as almost all programs in this Series “*Dark Files in the History of the Sciences.*” However, the program proceeds in the different way.

【Second half of the Program】

In the beginning of the second half of this program, we are introduced a US patent* issued in 2015 to a paper “*Excess Enthalpy upon Pressurization of Nanosized Metals with Deuterium*” by D.A. Kidwell (US 2011/0077145 A1). In addition to the above patent for

the experiment upon the nanosized metal, the program introduces the work by Dr. Y. Iwamura et al. in Tohoku University; Dr. Iwamura shows his laboratory and explains his experimental results of excess energy generation of more than 1000 times over the input energy lasted for several weeks. Now, the program explains the cold fusion is a living research theme (completely forgetting the “scandal” and the denial of the discovery in 1989 introduced in the first half of the program). One of the Japanese commentators Dr. S. Narita is titled by the program “Researcher of Modern Cold Fusion” showing the intention of the program to divide the cold fusion into the old one denied in the first half and the modern one revived for some reason or other.

*This patent is shown on the end of this item (page 13).

[As a whole]

Therefore, the first and the second parts of this program are inconsistent; the first half attacked the pioneering work by Fleischman et al. [Fleischmann 1989] using the two main mistakes (gamma-ray spectrum and one of excess energy data) committed by them and sentenced the death of the cold fusion and the second half proclaimed the revival of the *modern* cold fusion research. We will show that the inconsistency in this story is induced by the total denial of the work by Fleischmann et al. as a whole depending on the apparent mistakes in the paper discovered soon after its publication .

It will be advisable to cite my paper the *Reports of CFRL (Cold Fusion Research Laboratory)*, **19-1**, pp. 1 – 19 (2019) [Kozima 2019] published at the 30th anniversary of the discovery of the cold fusion phenomenon and uploaded at the ResearchGate on the following page:

https://www.researchgate.net/profile/Hideo_Kozima

[Kozima 2019] H. Kozima, “On the 30th Anniversary of the Discovery of the Cold Fusion Phenomenon – Development of my Research –,” *Reports of CFRL (Cold Fusion Research Laboratory)*, **19-1** pp. 1 – 19 (March 2019).

Outline of the NHK Program “The Case of ‘the Dream Energy – Cold Fusion –’ Affair”

American commentators in the program:

Gary Taubes, Journalist, Author of the book “Bad Science”

Marvin Hawkins, University of Utah, Electrochemistry, Coauthor of the paper by Fleischmann-Pons-Hawkins published in 1989

Steven Jones, Brigham Young University, Physics of the piezo-nuclear fusion and muon-

catalyzed fusion

Nathan Lewis, California Institute of Technology, Electrochemistry

William Happer, A Member of the DOE Cold Fusion Committee

James Mahaffy, Georgia Tech Research Institute, Nuclear physics (neutron detection experiment)

Japanese Researchers and Commentators in the Program

Researchers

N. Koyama, Tokyo Agricultural and Technical University, Observed excess energy and gamma ray in 1989.

Y. Iwamura, Tohoku University, observed large and sustaining excess energy with nano-scale samples recently.

Commentators, affiliations, “titles” (given by the program director).

R. Kasada, Tohoku University, “Researcher on the thermonuclear fusion machine”

S. Narita, Iwate University, “Researcher on the modern cold fusion”

I suppose that many readers of this News have enough knowledge about the “scandals” around the cold fusion in 1989 reported through the books written by G. Taubes and J.R. Huizenga and can guess by the list of American commentators what they told in this program. So, I tell you only key points of this program and explain the truth behind them.

In the beginning, I would like to express my sympathy to the pioneers of this field who put the first stone of the science of the cold fusion phenomenon, i.e. the science of nuclear reactions in solids composed of transition elements and hydrogen isotopes (CF materials) in such a cruel situation that they and their institution had to be eager to get financial supports from outside and the emergence of a surprising rival for their object even if the mistakes committed by them in the preparation of the first paper [Fleischmann 1989]. They had to publish their paper as soon as possible not caring much about consistency and adequacy of their data.

It should be noted that their data published in 1989 has consistency among themselves and with other data obtained afterward if we remove the mistakes pointed out by many as shown e.g. by our paper [Kozima 1997].

[Kozima 1997] H. Kozima, S. Watanabe, K. Hiroe, M. Nomura, M. Ohta and K. Kaki, “Analysis of Cold Fusion Experiments Generating Excess Heat, Tritium and Helium,” *J. Electroanal. Chem.*, **425**, pp. 173 – 178 (1997), ISSN 1572-6657.

Difficulty in Doing Science

The logic developed in the first half of the TV program is summarized as follows; the researchers were in a difficult situation and therefore they committed an offense unintentionally. It is possible to consider they had made several mistakes to put uncertain materials in the concrete data they had obtained in several months in the illusion forced by their imminent situation we know well now.

We may understand difficulty in doing science from the Dr. Medawar's metaphor. My friend Peter Gluck, a Rumanian chemist, one wrote an essay on the difficulty working in the cold fusion field using the metaphor told by Dr. P.W. Medawar as follows.

“Peter Brian Medawar, Nobel Prize for medicine 1960, has defined an optimal zone in the coordinates, the degree of difficulty vs. the profitability of a research theme. For too low a degree of difficulty, the solutions are almost trivial, and it is not in accordance with a professional researcher's dignity to waste time with easy problems. On the opposite, the right side of the Medawar zone the obstacles are too great, the risks are too high, and the associates are too few. And the hostility of the scientific community toward those daring too much, aiming too high, is overwhelming. At the right side of the Medawar Zone, it is a "Terra incognita" or a kind of Far West with other rules or without the usual scientific rules.” (Peter Gluck, **“A Message from the Right Side of the Medawar Zone”** <http://www.kozima-cfml.com/FTEssay/Essays/Gluck.htm>)

We can imagine the situation around the cold fusion researchers in 1989; they were excited by supposition of discovery of an evidence of the fusion reactions of two deuterons in PdD_x and of a possibility to get financial support from US government. The anticipation of their organization and the appearance of unexpected rival disturbed their minds very much and made them commit several mistakes in the preparation of their paper. We can sympathize their situation but cannot believe their wicked act in the handling of their experimental data as a whole except several silly data mixed by their *mistake*. The story of conspiracy is entertaining for general readers but is far from truth in science in the right side of Medawar zone.

The lack of understanding of the qualitative reproducibility in the science world governed by the nonlinear dynamics may be the main cause of accusation against the pioneers who made several unintentional mistakes (cf. Item 2 in this News). It was difficult to ask right understanding of the difference in quantitative and qualitative reproducibility which is not well understood even now.

Value of the Fleischmann-Pons-Howkins Paper

Two main mistakes in the paper by Fleischmann et al. [Fleischmann 1989] are (1) the

incomplete spectrum of the gamma ray (pointed out by R. Petrasso) and (2) the false data 1224 of excess energy in Table 2 (pointed out by N. Lewis). About these mistakes, G. Taubes commented as follows:

“In short, Pons and others *forged the experimental results* (to meet the supposition they had beforehand).

The two mistakes pointed out above are too simple to find out. There are two ways from here to start. One is the way many scientists have took hitherto and stayed there; they abandoned the pursuit of truth hidden in the residue after the removal of the mistakes from the extensive experimental data. Very many scientists took this way and remains there after 30 years bound in the spell developed by Taubes and Huizenga (and others). However, a few scientists had been eager to find out truth in the experimental data obtained by Fleischmann et al. backed by their scientific spirit and belief in their friend scientists. In reality, they have been able to find out the evidences of nuclear reactions in the materials including H or/and D (CF materials) immediately in 1989 and following years even if the data did not necessarily in consistent with the suppositions imagined by the pioneers at first (e.g. [Kozima 2019]).

[Kozima 2019] H. Kozima, “On the 30th Anniversary of the Discovery of the Cold Fusion Phenomenon – Development of my Research –,” *Reports of CFRL (Cold Fusion Research Laboratory)*, **19-1** pp. 1 – 19 (March 2019).

By ICCF3 held on October 1992, many positive data on excess energy, tritium and neutron were reported despite of the narration in the NHK program “Almost all data obtained in the confirmation experiments with the positive data were mistakes of the observation, simple suppositions and malfunctions of the instruments.”

By ICCF6 held on October 1996, much more data were reported on the nuclear transmutation in addition to the data on excess energy, tritium and neutron in deuterium and hydrogen systems.

In 1997, we analyzed the controversial paper by Fleischmann et al. [Fleischmann 1989] and the data on Helium by Morrey et al. [Morrey 1990] and had shown a consistent explanation for them [Kozima 1997].

[Fleischmann 1989] M. Fleischmann, S. Pons and M. Hawkins, "Electrochemically induced Nuclear Fusion of Deuterium," *J. Electroanal. Chem.*, **261**, pp. 301 – 308 (1989), ISSN 1572-6657.

[Morrey 1990] J.R. Morrey, M.R. Caffee, H. Farrar, IV, N.J. Hoffman, G.B. Hudson, R.H. Jones, M.D. Kurz, J. Lupton, B.M. Oliver, B.V. Ruiz, J.F. Wacker and A. Van, "Measurements of Helium in Electrolyzed Palladium," *Fusion Technol.*, **18**, 659 – 668 (1990), ISSN: 0748-1896.

[Kozima 1997] H. Kozima, S. Watanabe, K. Hiroe, M. Nomura, M. Ohta and K. Kaki, “Analysis of Cold

Fusion Experiments Generating Excess Heat, Tritium and Helium,” J. Electroanal. Chem., 425, pp. 173 – 178 (1997), ISSN 1572-6657.

Finally, the research in this field has developed until now cultivating new materials and techniques. Almost every year, there are international conferences over the world and many papers on the experiment and the theory are published. As our work, we published a paper summarizing the development of the cold fusion research until now at JCF19 [Kozima 2019]:

*H. Kozima, “Development of the Solid State-Nuclear Physics,” *Proc. JCF19*, **19-15**, pp. 112 – 147 (2019), ISSN 2187-2260.

(JCF = Japan CF-Research Society: Homepage http://jcfrs.org/proc_jcf.html).

Comments on the Narrations in the NHK Program.

[Narration 1]

“Almost all positive data obtained in the confirmation experiments were finally denied as results of **mistakes of the observation, simple suppositions and malfunctions of the instruments.**”

[Narration 2]

“Nigel Packham was suspected in the false treatment of the data, while J. Bockris did not accept the accusation while N. Packham was removed from the member. **It had been supposed that there were unfair acts in their research.**

And the experiment by S. Jones, the rival of S. Pons et al., **did not observe neutrons** in the confirmation experiment.”

[Narration 3]

“After a while, S. Pons and M. Fleischmann disappeared from U.S.

The dream of the Dream Energy – the Cold Fusion – had vanished.”

(Numbered according to the order of appearance.)

On the Narration 1

As we know well, this narration is entirely false. Many researchers have continued their experiments to confirm the evidence of the nuclear reactions in the CF materials as we briefly surveyed in the page before. However, it is probable that the lack of recognition of the qualitative reproducibility in this field might be influenced the interpretation of the results of the confirmation experiments. Anyway, this narration is spoken dogmatically who do not know details of the experimental data in the cold fusion phenomenon.

On the Narration 2

We can now accept the experiment by Packham et al. where observed tritium as a sound data putting it in the series of experiments that measured tritium. The data by Packham et al. is consistent with others as we shown in our paper [Kozima 2000].

[Kozima 2000] H. Kozima, K. Yoshimoto and K. Arai, “First Reliable Tritium Data by Packham et al. Analyzed by TNCF Model.” Int. J. of Hydrogen Energy, 25, pp. 505 – 507 (2000).

The experimental data by Jones et al. in 1994 was done in entirely different experimental condition and should not be compared simply with their experiment published in 1989. The relation between their two experiments were explained by our model [Kozima 1998 (Section 8.1)].

[Kozima 1998] H. Kozima, *Discovery of the Cold Fusion Phenomenon – Development of Solid State-Nuclear Physics and the Energy Crisis in the 21st Century –*, Ohtake Shuppan Inc., 1998, ISBN 4-87186-044-2.

On the Narration 3

This narration is reflecting the narration 2 and concludes the end of the cold fusion research while in the second half of this program they introduce “*the modern*” cold fusion as if this is a different research field from the denied old cold fusion.

The science did not proceed by a dream but by the intellectual desire to build a consistent world view. The history of the cold fusion research in these 30 years illustrates clearly the fruits of the pursuit of the wonderful phenomenon of nuclear reactions in the CF material which have observed only in the higher energy region of about million electron volts in free space.

Marvin Hawkins Talks

We know Marvin Hawkins as a coauthor of the first paper by Fleischmann et al. published in 1989.

In the NHK program, he told about his collaborator Stan Pons directly and this is very precious facts about one of the pioneers of the cold fusion phenomenon. We cite his talk below (in English translated from Japanese caption).

M. Hawkins

“I think S. Jones was eager to show that he is the first researcher who started the research on the cold fusion. I joined with the group (cold fusion research group in U-o-U) at around the time S. Pons sent the Application Documents to the Government. When the letter from the Government returned, I remember that they were talking ‘something is curious.’”

“The suspect of S. Pons et al. is that someone (S. Jones) is trying to steal our research schedule from our Application Documents to the Government. The anxiety in our group is that the researcher who asked details of our research has an intention to use our schedule in his research.”

“I don’t know someone who are in contact with Stan Pons. He might not want to have any contact with anybody after receiving persistent critics for many years.”

In relation to the second comment of M. Hawkins, we cite a comment by G. Taubes on the relation between S. Pons et al. and S. Jones.

G. Taubes told:

“When they visited S. Jones, S. Pons and his coworkers convinced their suspect is not mistaken. The instruments S. Jones settled in his laboratory seemed to them that they did not worked for more than several months. Furthermore, these instruments are very similar to theirs as if they are copied from their Application Documents.”

It is interesting to notice the style of the Taubes’ talk as this as if he is sitting with the people in conversation. In Japan, there is a senryu, a 17-syllable satirical poem, in which a famous one “Story-tellers are story-tellers” (translated into English by Dr. Hidesaburo Saito).

About terminology

Cold Fusion had been used as the name to call the supposed $d - d$ fusion reactions in the transition metal deuteride in the early days of the cold fusion investigation. The first experiment done by Fleischmann et al. was intended to show the occurrence of these nuclear reactions but failed to get its evidence.

We have confirmed in these more than 30 years from 1989 that there are nuclear reactions in the CF materials composed of transition metals and alloys containing a large quantity of hydrogen isotopes. To call this phenomenon, we have several candidates without a definite name used commonly. Following are two candidates.

Cold Fusion Phenomenon

This is the name (or sometimes the **cold fusion phenomena**) used several times in the early days to call the whole events observed in the cold fusion experiments. To keep the relation with the original supposition, we recommend “the cold fusion phenomenon” for the phenomenon including the whole events in addition to the nuclear reactions in the CF material. Also, the **CF material** (used already in the above sentences) is recommended as

convenient word for the name of materials where occurs the cold fusion phenomenon.

Condensed Matter Nuclear Reaction

This is the name used mainly by European researchers for the cold fusion phenomenon defined above.

One deficit of this name is the cold fusion phenomenon occurs only in solids but not in liquids while the **condensed matter** means both solid and liquid altogether as defined in the dictionary:

“**Condensed matter physics** is the field of physics that deals with the macroscopic and microscopic physical properties of matter, especially **the solid and liquid phases** which arise from electromagnetic forces between atoms.” (Wikipedia, partially bold faced at citation)

*** A patent issued to David A. Kidwell in 2015**

US Patent No.: US 2011/0077145 A1

David A. Kidwell, Alexandria, VA (57) (US)

Sep. 29, 2010

ABSTRACT

Excess enthalpy upon pressurization of nanosized metals with deuterium, a method for producing excess enthalpy by impregnating metallic precursors on an oxide support that reduces sintering temperature where the particle growth is minimal; reducing the metallic precursors at a second temperature where the particle growth results in supported metallic particles 2 nm or less in size; and pressurizing the supported metallic particles in the presence of deuterium. The metal particles may comprise palladium, platinum, mixtures thereof, or mixtures of palladium and/or platinum with other elements. Also disclosed is a method for measuring excess enthalpy by placing a test material in a pressure vessel; heating the pressure vessel; evacuating the pressure vessel; introducing deuterium, hydrogen, or both into the pressure vessel; measuring the enthalpy generated during pressurization; again evacuating the pressure vessel; and measuring the enthalpy used during depressurization.

【Comment on this patent】

It is not clear from the Abstract of this patent whether the excess enthalpy generated in the proposed manner is due to nuclear reactions or to chemical reactions. To clarify the cause of the excess enthalpy of this paper, it is desirable to confirm the nuclear byproducts

accompanying to the excess enthalpy.

There are many patents issued to the papers related to the cold fusion phenomenon, hitherto. One of these patents is that to the so-called Patterson Power Cell:

United States Patent [19] ‘USOO5628886A

[11] Patent Number: 5,628,886

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ABSTRACT

An electrolytic system for heating water containing a conductive salt in solution. An electrolytic cell in the system includes a non-conductive housing having an inlet and an outlet and spaced apart first and second conductive foraminous grids positioned within the housing. A plurality of conductive particles each including a conductive metal which is readily combineable with hydrogen or an isotope of hydrogen to form a metallic hydride are positioned within the housing in electrical contact with the first grid adjacent the inlet. An electric power source in the system is initially operably connected across the first and second grids whereby electrical current flows between the grids within the water solution to charge the system after which the system is self-sustaining.