CFRL ニュース No. 105 (2018. 6. 1)

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http://www.geocities.jp/hjrfq930/News/news.html/

常温核融合現象 CFP (The Cold Fusion Phenomenon)は、「開いた(外部から粒子とエネルギーを供給され、背景放射線に曝された)、非平衡状態にある、高密度の水素同位体(H and/or D)を含む固体中で起こる、核反応とそれに付随した事象」を現す言葉で、固体核物理学(Solid State-Nuclear Physics)あるいは凝集体核科学(Condensed Matter Nuclear Science) に属すると考えられています。

CFRL ニュース No.105 をお送りします。この号では、次の記事を掲載しました。

1. **ICAMRWT-2018 が May 17, 2018 に韓国の釜山で開かれました**
2. **ICAMRWT-2018 で発表された論文 "Nuclear Transmutations and Stabilization of Unstable Nuclei in the Cold Fusion Phenomenon" の Abstract を掲載しました。**
3. **Yuri Bazhutov が逝去しました**
4. **ICAMRWT で配布した"Introduction to CFRL and Neutron Drop Model"を掲載しました**

1. ICAMRWT-2018 on May 17, 2018 in Busan, Korea

The International Conference on the Application of microorganisms for the Radioactive Waste Treatment, May 18, 2018, Busan, Korea. が開かれました。会議のスケジュールは以下の通りです：

International Conference on the Application of Microorganisms for the Radioactive Waste Treatment

1. Venue; Pukyung National University,
   Jangbogo Hall 3rd floor. (Leaders club)
2. Date; May 18, 2018 (Friday)
3. Sponsors ; Green Life Intellectual Network,
   Korea Research Institute of Standards and Science,
   Pukyung National University,
   The State University of New York, Korea.
4. Program :

Time	Speaker	Title
9:30 Opening	(Organizer)	
Congratulatory 9:35 - 9:45	To be determined	
Opening Address 9:45 - 10:15	**Sanghi Rhee** (Chairman of Policy Research Committee, The Parliamentarian's Society of the Republic of Korea)	The meaning and impact of biological transmutation for the treatment of radioactive waste
Presentation 1 10:15 - 10:50	**Oleksander Tashyrev (**Zabolotny Institute of Microbiology and virology of the National Academy of Sciences of Ukraine)	Biotechnologies for bioremediation of ecosystems contaminated with radionuclides and toxic metals on the base of thermodynamic prognosis
Presentation 2 10:50 - 11:25	**Vira Govorukha (**Zabolotny Institute of Microbiology and virology of the National Academy of Sciences of Ukraine)	Novel biotechnologies for purification of radioactive wastewater
Presentation 3 11:25 - 12:00	**Kyu Jin Yum** (Coenbio R&D Center)	Bioremediation of radioactive and heavy metal contaminated soil and water
12:00 - 1:30	Lunch	
Presentation 4 1:30 - 2:05	**Jean Paul Biberian** (AMU university)	Biological transmutations, history and present results
Presentation 5 2:05 - 2:40	**Kojima Hideo** (Honorary professor, Shizuoka University)	Nuclear Transmutations and stabilization of unstable nuclei in the cold fusion phenomenon
2:40 - 3:00	**Break**	
Presentation 6 3:00 - 3:35	**Vladimir Vysotsky** (Ukraine Shevchenko University)	Nuclear transmutation of radioactive isotopes in biological systems
Presentation 7 3:35 - 4:10	**GunWoong Bahng** (SUNY Korea)	An experiment on the application of multi-complex microorganisms to reduce the radioactivity of Cs137
4:10 - 4:30	Discussions	

2. Abstract of the paper "Nuclear Transmutations and Stabilization of Unstable Nuclei in the Cold Fusion Phenomenon" by H. Kozima presented at ICAMRWT-2018

"***Nuclear Transmutations and Stabilization of Unstable Nuclei in the Cold Fusion Phenomenon***"

Hideo Kozima
Cold Fusion Research Laboratory

Abstract

We summarize the nuclear transmutations observed in the cold fusion phenomenon (CFP) putting a weight on the biotransmutation, i.e. nuclear transmutations in biological systems. The CF materials, i.e. materials where occur the CFP are classified into three groups; (1) metallic materials include transition-metal hydrides (e.g. NiHx, AuHx) and deuterides (e.g. PdDx, TiDx), (2) carbonic materials including hydrogen graphite (CHx) and XLPE (cross-linked polyethylene) and (3) biological materials including bacteria, microbial cultures and biological tissues or organs. Each CF materials in each group have specific characteristics in the nuclear transmutations occurring there. We explain these characteristics briefly in this paper. The stabilization of unstable nuclei, including the decay-time shortening of radioactive nuclei, in the nuclear transmutation is especially interesting from the applicatory point of view in relation to the treatment of the hazardous nuclear waste accompanied to the nuclear power plant. A characteristic of biological systems where occurs selective adsorption of specific ions is especially useful for the application. If we have a bacterium or microbial culture absorbing an ion of a radioactive element selectively, we can remediate the radioactivity by the biotransmutation.

Proceedings of ICAMRWT-2018 が発行される予定で、そこには本論文が収録されるようです。

3. Dr. Yuri Nicholaevich Bazhutov が 70 歳で逝去しました

Dr. Yuri Nicholaevich Bazhutov passed away on March 10, 2018 in Moscow at his age 70. He had born April 1, 1947 in Okha, Sakhalin.

Yuri Nicholaevich Bazhutov　1947－2018

Bazhutov began organizing an annual Russian Conference on Cold Fusion and Nuclear Transmutation in 1993. He organized or chaired this conference every year for 24 years, with the last held in September 2017. He and Russian colleagues also organized the 13th International Conference on Cold Fusion (ICCF13) in 2007.

Yuri in my personal memory (Hideo Kozima)

ユーリとの20年にわたる個人的な交友からは、彼の大らかな人柄が懐かしく思い出されます。彼と最初に会ったのは、RCCFNT-3 (the 3rd Russian Conference on Cold Fusion and Nuclear Transmutation, on October 2 – 5, 1995 in Sochi) でロシアを訪れたときでした.この会議の内容については、Cold Fusion の次の号に報告しています. *Cold Fusion* **15**, pp. 18 – 22 (1996).

この会議は、夜行列車でモスクワからソチを往復する旅程のもので、車中ではロシア人との交流を深めました。モスクワでは、いくつかの研究所を訪ね、トリチウムの検出や過剰熱の測定を確認することができました。

ユーリ・バジュートフ Yuri Bazhutov

モスクワ大学物理学教授で、1992 年以来、ソ連崩壊後のロシアで、常温核融合に関する会議を毎年開き、ロシア圏の研究レベルの向上に努めてきた。彼は、エルジオン Erzion という仮想的な重粒子によって、常温核融合を説明しようとしている。ドンコサックの末裔であるというが、ロシア的壮大さとでも形容したい人物と理論である。(小島英夫、「常温核融合の発見」、大竹出版、1997 年、ISBN 4-87186-038-8. 口絵写真説明)。

ソチからモスクワへの列車の旅の途中駅で (September, 1995).
(左から Lev Sapogin, Bob Smith, Talbot Chubb, (二人おいて), Kenji Fukushima, Yuri, Bereshkov, Hideo)

モスクワへの列車のコンパートメントでのユーリ (September 1995)

モスクワを去る前の晩に、ユーリは我々を彼の家に招待して、ロシアの家庭料理でもてなしてくれました。

彼のあまりにも早い逝去を悼み、心から哀悼の意を表したいと思います。

なお、RCCFNT-4 (the *4th Fourth Russian Conference on Cold Fusion and Nuclear Transmutations* held on May 20 – 25 (1996) in Sochi)について *Cold Fusion* の次に号に報告しています。*Cold Fusion* #**18**, pp. 4 – 11 (1996). この会議も夜行列車でモスクワからソチを往復し、ロシア人との交流を深めました。

Infinite Energy がユーリの追悼記事をウェブページに掲載しています:
http://www.infinite-energy.com/resources/yuri-bazhutov.html

４．"*Introduction to CFRL and the Neutron Drop Model*" distributed at ICAMRWT-2018

ICAMRWT において、常温核融合現象になじみのない参加者のために、表記の冊子をお配りしました。以下にその内容を再現します。

Introduction to the CFRL and the Neutron Drop Model

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I. *Cold Fusion Research Laboratory (CFRL)*

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I. Cold Fusion Research Laboratory (CFRL)

Dr. Hideo Kozima, Director,

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II. Scheduled Presentations from CFRL

1. **AMRWT-2018** (*International Conference on the Application of Microorganisms for the Radioactive Waste Treatment,*), May 18, 2018, Busan, Korea.

We will present an invited paper at this Conference;

H. Kozima, "*Nuclear Transmutations and Stabilization of Unstable Nuclei in the Cold Fusion Phenomenon*."

2. ICANP-2018 (International Conference on Atomic & Nuclear Physics – *Cutting edge Advancements in Atomic & Nuclear Physics* –), July 23 – 25, Osaka, Japan**.**

The Scientific Federation website;

http://scientificfederation.com/atomic-nuclear-physics-2018/

We will present an invited paper at this Conference;

H. Kozima, "*Development of the Solid State-Nuclear Physics.*"

3. JCF19 (19th Annual Meeting of the Japan CF-Research Society), November 9 – 10, 2018, Morioka, Japan**.**

The JCF website: http://jcfrs.org/NEW.HTML

We will present a paper at this Conference;

H. Kozima, "*Inductive Logic and Meta-analysis in the Cold Fusion Phenomenon.*"

III. Abstract, Table and Figure of the paper to be presented at ICNWT-2018

International Conference on the Nuclear Waste Treatment by Biological Transmutation, May 18, 2018, Busan, Korea.

"Nuclear Transmutations and Stabilization of Unstable Nuclei in the Cold Fusion Phenomenon"

Hideo Kozima

Cold Fusion Research Laboratory

Abstract

We summarize the nuclear transmutations observed in the cold fusion phenomenon (CFP) putting a weight on the biotransmutation, i.e. nuclear transmutations in biological systems. The CF materials, i.e. materials where occur the CFP, are classified into three groups; (1) metallic materials include transition-metal hydrides (e.g. NiH_x, AuH_x) and deuterides (e.g. PdD_x, TiD_x), (2) carbonic materials including hydrogen graphite (HC_x) and XLPE (cross-linked polyethylene) and (3) biological materials including bacteria, microbial cultures and biological tissues or organs. Each CF materials in each group are composed of super-lattice with a sublattice of host elements and another of hydrogen isotopes and have specific characteristics in the nuclear transmutations occurring there. We explain these characteristics briefly in this paper. The stabilization of unstable nuclei, including the decay-time shortening of radioactive nuclei, in the nuclear transmutation is especially interesting from the applicatory point of view in relation to the treatment of the hazardous nuclear waste accompanied to the nuclear power plant. A characteristic of biological systems where occurs selective adsorption of specific ions seems especially useful for the application. If we have a bacterium or microbial culture

absorbing an ion of a radioactive element selectively, we can remediate the radioactivity by the biotransmutation.

Table 1 System and Obtained Evidence of the CFP: Host solids, agents, experimental methods, direct and indirect evidence, cumulative and dissipative observables are tabulated. *Q* and NT express excess energy and the nuclear transmutation, respectively. Direct evidence of nuclear reactions in the CFP are dependences of reaction products on their energy (ε) and position (***r***), decrease of decay constants of radioactive nuclides, decrease of fission threshold energy of compound nuclei.

Host solids	C, Pd, Ti, Ni, Au, Pt, KCl + LiCl, $ReBa_2Cu_3O_7$, Na_xWO_3, KD_2PO_4, TGS (triglycine sulfate), $SrCe_aY_bNB_cO_d$, XLPE (cross linked polyethylene), Biological Systems (microbial cultures)
Agents	*n, d*, *p*, $^{6}_{3}Li$, $^{10}_{3}B$, $^{12}_{6}C$, $^{39}_{19}K$, $^{85}_{37}Rb$, $^{87}_{37}Rb$
Experiments	Electrolysis, Liquid contact, Gas discharge, Gas contact
Direct evidences of nuclear reaction	Gamma ray spectrum γ(ε), Neutron energy spectrum *n*(ε), Space distribution of NT products NT(***r***), Stabilization of unstable nuclei (Decrease of decay constants), lowering of fission threshold energy
Indirect evidences of nuclear reaction	Excess energy *Q*, Number of neutrons N_n, Amounts of tritium atom N_t, helium-4 atom* N_{He4}, NT products (NT_D, NT_F, NT_A), X-ray spectrum X(ε)
Cumulative observables	NT(***r***), amount of tritium atom N_t, helium-4* N_{He4},
Dissipative observables	Excess energy *Q*, neutron energy spectrum *n*(ε), number of neutrons N_n, Gamma ray spectrum γ(ε), X-ray spectrum X(ε),

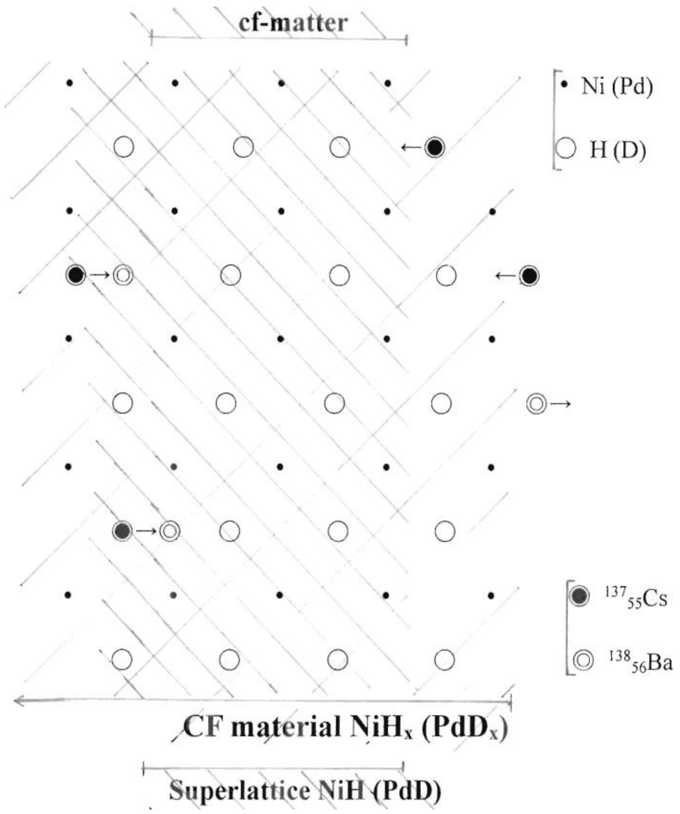

Fig. 1 Schematic explanation of nuclear transmutations at the surface region of a CF material (e.g. NiH$_x$ (PdD$_x$) in this figure). $^{137}{}_{55}$Cs is adsorbed on and absorbed in the surface region of a CF material NiH$_x$ (PdD$_x$) and reacts with a neutron in the cf-matter to be transmuted into $^{138}{}_{56}$Ba.

The reaction occurs in free space and in CF materials as follow;

[In free space] $^{137}{}_{55}\mathrm{Cs} \rightarrow {}^{137}{}_{56}\mathrm{Ba} + e^{-} + \underline{\nu}_e$, $(\tau = 30.07\ \mathrm{y})$ (1)

[In CF material] $^{137}{}_{55}\mathrm{Cs} + n \rightarrow {}^{138}{}_{55}\mathrm{Cs}^*$, $(\sigma = 0.113\ \mathrm{b})$ (2a)

$^{138}{}_{55}\mathrm{Cs}^* \rightarrow {}^{138}{}_{56}\mathrm{Ba} + e^{-} + \underline{\nu}_e$. $(\tau = 33.41\ \mathrm{m})$ (2b)

IV. Books and papers on the Cold Fusion Phenomenon from CFRL with (*Brief Explanations*).

[Kozima 1996] H. Kozima, K. Hiroe, M. Nomura and M. Ohta, "Elemental Transmutation in Biological and Chemical Systems," *Cold Fusion*, **16**, pp. 30 – 32 (1996), ISSN 1074-5610.

(*This is the first paper which took up the biotransmutation as an event in the CFP*.)

This paper is reproduced in the following page of the CFRL website;

http://www.geocities.jp/hjrfq930/Papers/paperc/paperc.html

[Kozima 1998] H. Kozima, *Discovery of the Cold Fusion Phenomenon,* Ohtake Shuppan

Inc., Tokyo, Japan, 1998. ISBN: 4-87186-044-2.
(Chapter 9 Nuclear Transmutation Occurs in Solids, Also, (pp. 109 – 128) *gives many data on the nuclear transmutation.* Section 10.1 Biotransmutation (pp. 130 – 133) *gives a brief introduction to the biotransmutation data from M. Kushi and V.I. Vysotskii.*)

[Kozima 2000] H. Kozima, "Electroanalytical Chemistry in Cold Fusion Phenomenon," in *Recent Research Developments in Electroanalytical Chemistry*, pp. 35 – 46, Ed. S.G. Pandalai, Transworld Research Network, 2000, ISBN 81-86846-94-8.
(*Nuclear transmutations in the CFP are explained by the TNCF model. Existence of the preference for combination of a cathode metal (Pd, Ni, Ti), an electrolyte (Li, K) and a solvent (D_2O, H_2O) to induce the CFP is pointed out as* [Pd, Ti; D_2O; Li] *and* [Ni; H_2O; K, Na, Rb])

[Kozima 2006] H. Kozima, *The Science of the Cold Fusion Phenomenon*, Elsevier Science, 2006, ISBN-10: 0-08-045110-1.
(Section 2.5 Nuclear Transmutation (pp. 35 – 46) *gives extensive data sets of the nuclear transmutation w*hich have been explained by the TNCF model introduced in Sections 3.7.6 and 3.7.7. Section 2.5.1.1 Decay Time Shortening (p. 40) *gives examples of stabilization of unstable nuclei observed in the CFP*. Section 3.7 cf-matter and Neutron Drop Model (pp. 102 – 110) *gives a quantum mechanical explanation of the formation of the cf-matter as a source of the trapped neutrons assumed in the TNCF model*.)

[Kozima 2008] H. Kozima, "An Explanation of Nuclear Transmutation in XLPE (Crosslinked Polyethylene) Films with and without Water Trees," *Proc. JCF8* (Kyoto, Japan, Nov. 29 – 30, 2007), pp. 44 – 50 (2008), ISSN 2187-2260,
http://jcfrs.org/proc_jcf.html.
(*The nuclear transmutations observed in XLPE are explained by the TNCF model as events in the CFP.*)

[Kozima 2010] H. Kozima and H. Date, "Nuclear Transmutations in Polyethylene (XLPE) Films and Water Tree Generation in Them," *Proc. ICCF14* (August 10 – 15, 2008, Washington D.C., U.S.A.), pp. 618 – 622 (2010), ISBN 978-0-578-06694-3.
http://jcfrs.org/proc_jcf.html.
(*The nuclear transmutations observed in XLPE are explained by the TNCF model as events in the CFP*.)

[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), ISBN 978-0-578-06694-3. http://jcfrs.org/file/proc_jcf.html. This paper is the most read one in our papers by the statistics of the ResearchGate.
(*An extensive explanation of the TNCF model (and its extended Neutron Drop Model)*

based on the complexity and n-p or n-d interactions in the CF materials. The cf-matter (cf-material in this paper) is the source of the trapped neutrons assumed originally in the TNCF model.)
[Kozima 2014a] H. Kozima, "Nuclear Transmutation in Actinoid Hydrides and Deuterides**,"** *Proc. JCF14,* **14-6**, pp. 77 – 94 (2014), ISSN 2187-2260, http://jcfrs.org/proc_jcf.html.
(*A unified and consistent explanation is given for the decay-time shortening (or stabilization of unstable nuclei) observed in uranium (and thorium) hydrides and deuterides prepared by the implantation in a glow discharge or by the absorption in electrolysis*.)
[Kozima 2014b] H. Kozima, "Nuclear Transmutations (NTs) in Cold Fusion Phenomenon (CFP) and Nuclear Physics," *Proc. JCF14,* **14-15,** pp. 168 - 202 (2014), ISSN 2187-2260, http://jcfrs.org/proc_jcf.html.
(*The TNCF and neutron drop models which were successful for explanation of the nuclear transmutations observed in the CFP are justified by the recent knowledge of nuclear physics*.)
[Kozima 2015] H. Kozima, "From the History of CF Research – A Review of the Typical Papers on the Cold Fusion Phenomenon –,*" Proc. JCF16,* **16-13,** pp. 116-157 (2016), ISSN 2187-2260, http://jcfrs.org/proc_jcf.html.
(Section 3.7 Nuclear Transmutations in Carbon-Hydrogen Systems–Biotransmutation, Hydrogen Graphite, and XLPE (Cross-Linked Polyethylene) – *gives a summary of our explanation on the nuclear transmutations observed in C-H systems*.)
[Kozima 2016a] H. Kozima, "Nuclear Transmutations in Polyethylene (XLPE) Films and Water Tree Generation in Them (2)," *Proc. JCF16,* **16-17,** 210 – 215 (2016), ISSN 2187-2260, http://jcfrs.org/proc_jcf.html.
(*The new observation of the γ-ray emitted from ^{214}Pb and ^{214}Bi in XLPE is explained by the TNCF model. The NT found in XLPE may have a direct relation with the NT's found in biological systems (biotransmutations).*)
[Kozima 2016b] H. Kozima, "Biotransmutation as a Cold Fusion Phenomenon," *Proc. JCF16,* **16-18,** 216 - 239 (2016), ISSN 2187-2260, http://jcfrs.org/proc_jcf.html.
(*Extensive data sets obtained by Vysotskii and Kornilova have been explained consistently by the TNCF model*.)
[Kozima 2017] H. Kozima, T. Ohmori and M. Ohta, "Nuclear Transmutations in Critical and Supra-critical Electrolysis with Graphite, Pd, W, Re, Pt and Au Cathodes Analyzed by the TNCF Model," *Proc. JCF17,* **17-12,** pp. 89 -147 (2017), ISSN 2187-2260, http://jcfrs.org/proc_jcf.html.

(*Nuclear transmutations observed in specific CF materials other than rather ordinary transition-metal hydrides and deuterides have been successfully explained by the TNCF model*.)

[Kozima 2019a] H. Kozima, "Development of the Solid State-Nuclear Physics," *Proc. JCF19* (2019) (to be submitted).

(*The Solid State-Nuclear Physics, the interdisciplinary physics between solid state physics and nuclear physics, developed by the investigation of the cold fusion phenomenon is investigated from a new point of view based on the reconstruction of the logical induction-reduction structure in modern science where the reduction has overwhelmed over the induction. The science of complexity demands us to esteem the induction above the deduction when we have no solid principles in such fields as the cold fusion phenomenon governed by complexity. The meaning of the meta-analysis in the CF research is discussed in relation to the Astronomy in 18^th^ century and EBM at present.*)

[Kozima 2019b] H. Kozima, "Inductive Logic and Meta-analysis in the Cold Fusion Phenomenon," *Proc. JCF19* (2019) (to be submitted).

(*Our phenomenological approach with a model based on the experimental facts has been able to give a consistent explanation of experimental data sets obtained in various CF materials.* [Kozima 1998, 2006, 2015, 2016a, 2016b, 2017] *The logic used in the explanation of the CFP in these works may be explained by the historically proven logics, the inductive logic and the meta-analysis. In this paper, the methodology used in our explanation of the CFP by our TNCF model is discussed from general point of view in logics*.)