

## Renewable Energy: LENR Progresses and Cooperation Plans.

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## OUTLINE

- Overview (*my opinions!*) of experimental and theoretical activities on LENR field in: **Japan** (highly coordinated; *documents mainly by Y. Iwamura*); **China** (coordinated; *documents mainly by Y. Iwamura*); **India** (coordinated; *documents by M. Srinivasan*); **USA** (partially coordinated; documents by *D. Nagel*); **Europe** (mostly independent, several sources).
- Main scientific approaches/results previously shown by **Nicolas Chauvin** at this Conference.
- Few comments on ancillary activities: H-H-O unexpected behaviors and their applications.
- Cooperation plans *forecast (by FC)*: A) **Japan-China-India** joined with *few independent groups*; B) **Live Open Science** approach (*candidated at Nobel Peace Prize on 2014 and 2015*) is applicable?; C) **UN**, ad-hoc, new Agency??

# Report of SSICCF20 and the Status of Condensed Matter Nuclear Reaction Research in China, Korea and Japan

*Closing talk at: The 20th International Conference on Condensed Matter Nuclear Science;  
ICCF20, Oct 2-7, 2016, Sendai, Japan.*

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## SSICCF20; September 28-30, 2016 Xiamen, China

\*Co-chairs Zhong-QunTian, Xing-ZhongLi

\*2 Keynote Talks, 21 Invited Talks, 7 Posters

\*58 Participants, including 16 foreigners

**Comment (by FC): impressive, *VERY FAST* growing, wide-range activities in almost all LENR fields up to now identified.**



## Details on Chinese Speakers

	<b>Speaker</b>	<b>Organization</b>	<b>Title</b>
1	<b>Ping Chen</b>	<b>Dalian Inst. of Chem. Phys, Chin. Acad of Sci., China</b>	<b>Materials development for hydrogen storage</b>
2	<b>Song-Yuan Ding</b>	<b>Xiamen University, China</b>	<b>A hypothesis of stimulated surface phonon emission contributed to low-energy nuclear reactions</b>
3	<b>Gui-Song Huang</b>	<b>Tsinghua University, China</b>	<b>Hydrogen-lithium low energy resonant electron-capture and Bethe's solar energy model</b>
4	<b>Chang-Lin Liang</b>	<b>Tsinghua University, China</b>	<b>Anomalous Heat Effect in Gas-discharge Tube with Pd and D/H</b>
5	<b>Jian Tian</b>	<b>Changchun University of Science and Technology</b>	<b>CMNS (Cold Fusion) Research in CUST: Past, Present and Future</b>
6	<b>Zhong-Qun Tian</b>	<b>Xiamen University, China</b>	<b>Some thoughts on abnormal phenomena of condensed matters loaded with D<sub>2</sub> or H<sub>2</sub></b>
7	<b>Fa- RongWan</b>	<b>University of Science and Technology Beijing, China</b>	<b>Response of Gas Bubbles to Electron Irradiation</b>
8	<b>Tie-Shan Wang</b>	<b>Lanzhou University, China</b>	<b>Experimental study of sub-coulomb barrier fusion reaction of light nuclei in various environment</b>
9	<b>Wu- ShouZhang</b>	<b>Inst. of Chem. Chinese Acad. of Sciences, China</b>	<b>Excess Heat Measurements in Pd D<sub>2</sub>O+D<sub>2</sub>SO<sub>4</sub> Electrolytic Cells and Ni H<sub>2</sub> Systems</b>
10	<b>Hang Zhang</b>	<b>QiuranLab, China</b>	<b>Anomalous Heat Effect in Ni-H (LiAlH<sub>4</sub>) Systems</b>

## **No organized activities on Condensed Matter Nuclear Science.**

- **Some individual Companies are following the current activities.**
- **NFRI (National Fusion Research Institute)** has been following the current activities in this field since 2012.
- A Korean company has been licensed by **Brillouin (USA)** to make and distribute their products in Korea.

## Statistics of ICCF20 in Sendai

→<sup>1</sup>Number of participants was 145 from **19 countries**. \*Japan 78; USA 34; France 8; China 4; Switzerland 4; Italy 3; India, Sweden, Ukraine 2; Belgium, Canada, Germany, Hungary, Iceland, Kazakistan, Korea, Poland, Spain, UK 1.





**Japan** (comment by FC: *Historically, the most active and coordinate Country on LENR field*).

## Companies

- **Mitsubishi Heavy Industries, Ltd.** (comment by FC: *the Laboratory, where were developed transmutation procedures by Y. Iwamura and Collaborators since 1999*).
- **Nissan Motor Corporation**
- **Technova, Inc.** (comment by F.C.: *Think-Tank related to Toyota*).
- **Clean Planet, Inc.**
- **HEAD**
- .....

## Universities & National Laboratories.

- Tohoku Univ.
- Kobe Univ.
- Nagoya Univ.
- Kyoto Univ.
- Iwate Univ.
- Waseda Univ.
- Kyushu Univ.
- **National Institute of Technology, Tokyo College**
- **National Institute for Materials Science**

## Government

**MEXT (Ministry of Education, Culture, Sports, Science and Technology)**

**METI (Ministry of Economy, Trade and Industry).**

- **India** (review by Prof. Mahadeva Srinivasan, consultant Bhaba Atomic Research Center).
- Most of us would agree that LENR field needs fresh insights – requires entry of more youngsters.
- In India a new generation of Researchers is beginning to take up the challenge.
- At a meeting held in the “National Institute of Advanced Studies” (NIAS) in Bangalore on March 19<sup>th</sup>, 2016 about a **dozen Institutes/Universities** agreed to initiate experimental studies.
- **Objective** is to conduct basic experiments which will help gain the attention of mainstream Science.
- To publish in peer reviewed journals ;
- **Would encourage International collaboration;**
- Are working to make LENR a Government project!

Indian Institutes interested/involved in LENR (after March 20016). *Comment by FC.: fast growing.*

1. IIT Bombay, Mumbai, (Maharashtra) - - Parkhomov replication ( $H_2$ , gas ,  $T > 1200^\circ C$ )
2. IIT Madras, Chennai (Tamil Nadu) - - Hydrogen Storage
3. IIT Kanpur, Kanpur, (Uttar Pradesh) - Transmutation
4. IIT Guwahati, Guwahati (Assam)- Hydrogen Storage
5. SRM University, Chennai (Tamil Nadu) - Electrolysis
6. Vyasa Yoga University, Bangalore (Karnataka) - Parkhomov replication
7. Amity University, Noida Campus, (Uttar Pradesh) - Biological
8. Amrita University, Kochi, (Kerala) – Hydrogen Storage
9. Bhabha Atomic Res. Centre (BARC), Mumbai (Maharashtra): high quality, nuclear measurements.
10. Indira Gandhi Centre for Atomic Res. (IGCAR), (T. Nadu): Up-to-date nuclear instrumentations
11. Thermax India Ltd., Pune (Maharashtra) -- Parkhomov replication

## Activities in USA

(by Prof. **David Nagel**; G. Washington University, Washington DC).

### **Companies** active in LENR studies.

1. Brillouin Energy Corporation

2. Coolecence

3 First Gate

4 Global Energy Corporation

5 High Mesa Technology

6 **Industrial Heat LLC** (*comment by FC.: the largest Society in USA active in LENR. Previously cross-linked with Andrea Rossi. Recently their own, large/wealthy, independent research groups is operating*). **Self-candidated to host the next ICCF21 (May 2018):** final decision on Spring 2017.

7 Jet Nanotechnology

8 Lenergy LLC

9 Leonardo Corporation (*Andrea Rossi company*)

10. Lenuco

11. NUCAT Energy LLC

12. Quantum Gravity Research

13. Quantum Potential Corporation

14. ReResearch

15. Seashore

16. **SRI International** (Comment by F.C.: one of the most active Laboratory in USA, since 1989, located in the area of Stanford Research Park, California).

17. Target Technology Corporation LLC (comment by F.C.: Company aimed to increase further their world-wide collaborations; nanomaterials with gas loading, main goal is *AHE stable*, home use <10 kW<sub>t</sub>).

## Other LENR Organizations in the United States.

### Universities:

1. MIT (*comment by F.C.: key people Prof. Peter Hagelstein, winner of E. O. Lawrence Award*)
2. University of Missouri (SKINR)
3. Texas Tech University (CEES)
4. The George Washington University.

### Independent Institutions/groups

- 5 Cold Fusion Now
- 6 Energy Institute
- 7 LENRIA Corporation
- 8 New Energy Foundation
- 9 New Energy Institute

## **USA Government:**

- a) National Science Foundation (NSF),**
- b) Department of Energy (DoE);**
- c) Department of Defense (DoD);**
- d) Department of Commerce**
- e) Environmental Protection Agency (EPA)**



## Activity in Europe

The activity in Europe, at the moment, is highly “scattered” among several independent groups. Some have real breakthrough ideas/experiments, at laboratory level. Some activities also in: **Switzerland** (Nicolas Chauvin); **Germany-Poland** collaboration (Armin Huke and Collaborators); **Ukraine** (V. Vistosky), focused mainly on biological transmutation. Sadly, the **Russian** Colleagues (historically extremely active, over 90 Res.) didn't join the ICCF20 Conference because of severe budget limitations. Recently Aarhus Univ., **Denmark**, started studies.

## Italy.

Historically Italy was one of the most active countries, after Japan and USA.

*From some years, sadly, happened a “heavy opposition to any kind of LENR studies” by some of the decision makers at scientific level (Director and/or President of Institutes). Scientific documents have even been destroyed, in a specific Laboratory, including “LogBook”, chemical reagents and ancillary instruments.*

*Luckily, several Politicians, independently from their political group affiliations, have become more open-minded! E.G.:over 8 “Parliamentary questions”, promoting LENR activities, were filed (in the last 3 years) both at Lower and Higher House of Italian Parliament.*

To reinforce one of the “Parliamentary questions”, 35 official “reminders” were filed in order to get a reply from the Ministry of Education/Research involved.

**Groups still now active (team leader, number of people involved, technical included, full time=FT, part-time: PT), methodologies and main field of interest, are as following:**

- a) F. Celani (3FT, 10PT), Gov. Agency (INFN, but no budget support) and Priv. Lab. Studied mainly Constantan ( $\text{Cu}_{55}\text{Ni}_{44}\text{Mn}_1$ ) thin/long wires with surfaces modified (submicrometric) and addition of several chemical elements (manly Fe doped by K-Mn deposited on glassy fibers) even at nanometric size, multilayer geometry. Gas loading ( $\text{H}_2$ ,  $\text{D}_2$ ) at low pressures (0.1-2bar) up to  $800^\circ\text{C}$ . Mainly looking for Anomalous Heat Excess (AHE). Firstly detected, on May 2014, anomalous macroscopic voltage/current on a Constantan wire kept unconnected with ends at the same temperatures, once it absorbed  $\text{H}_2$ ,  $\text{D}_2$ .**
  
- b) A. Carpinteri (4FT+6PT). Technical University of Turin. Looking to neutrons, charged particle emission and transmutation during fracture of macroscopic (several kg) samples of iron-rich natural rocks (granite, basalt, magnetite): fracto-emission phenomena. Hints to explain even Earth/Oceans formation and composition variations at their early stages.**

- c) U. Abundo (1FT, 11PT). Powders of nickel and several alloys. **Stimulation** of the reaction by external neutrons. Looking for AHE and direct conversion heat→current at macroscopic level (it remembers the “β-ray battery” procedure of current generation by β decay, i.e.  $^{90}\text{Sr}$ , well stabilised in niche applications).
- d) F. Cardone (1FT+10PT). Government Agency (CNR, ENEA), Italian Army (E.I.), University, private laboratories Cavitation by ultrasounds at wide range (2-120 kHz) and *localized* high power (up to 2 kW). Hints to produce AHE and “destroy”, by transmutation, industrial waste (especially Hg).
- e) U. Mastromatteo (2FT, 1PT). Private Laboratory also collaborating with an International, High-Tech, Company. Studies on powders, thin films and wires of Pd and Constantan. Stimulation by current and laser. Gas loading (0.001-2bar), max operating temperature 500°C. Goals are AHE and transmutations.

- f) PhD Student (1PT) at Turin University. Basic studies and characterization of nanomaterial preparation by Melt Spinning and Quenching Procedure (MSQP), following the innovative studies of Yoshiaki Arata (Osaka Univ. Japan) using Pd-Zr alloy at nano-size and Deuterium gas (300°C). **Arata** firstly detected (about 2008) **macroscopic transmutation** of  $D_2$  to  $^4He$ . The apparatus for MSQP has been operative, since a long time, at the University of Turin.
- g) MCNI (Metallurgical Company in the North of Italy; 1FT, 2PT). Constantan wires with surface modified. High quality, and fully automatized, studies on correlation between AHE and the (fully unexpected) spontaneous voltage. Pressure of  $H_2$  or inert gases: 0.01-1.5 bar, max temperature at low pressures = 600 °C.
- h) V. Violante group (quite large), at the best of my knowledge, is now collaborating with the (large and well equipped/wealthy) group of Industrial Heat in **USA**.

- i) G.Vassallo (3 PT). University of Palermo. Theoretical hypotheses on Ultra Dense Deuterium and LENR based on the Zitterbewegung model of the electron.
- j) About new, revolutionary in some aspects, theoretical models of electron structure, there are several studies performed since 1994 by “**pioneers**” **F. Santandrea** and **P.L. Cirilli** (both working at Ministry of Industry “Mines Laboratory-Department” at that time). The original documents (in Italian language) were officially deposited/registered at the “Department of Information” of “Presidenza del Consiglio dei Ministri” (*i.e. Prime Minister office*). Further work is in progress.

## Swedish-Island-Norway

Main group is lead by Prof. Leif Holmlid at Gothenburg University (SE). They introduced the idea of clusters of **Ultra Dense Deuterium** (so called ultra-dense Rydberg matter) using proper catalyst ( $\text{Fe}_x\text{O}_y$  doped by K, on Pt-Ir “substrate”). Local density of clusters is up to  $10 \text{ kg/cm}^3$ , equivalent to an interatomic distance of about 2.3pm. Table-top high peak power Laser for controlled stimulation. Some experimental results really intriguing and in agreement with observations made by other Researchers using different methodologies or approaches.

*NB. All the Researchers, using  $\text{Fe}_x\text{O}_y$  doped by K, were “inspired” by the several procedures (most of them fully reproducible) developed during 1920-1945 from Prof. Fischer-Tropsch (in Germany; later WWII in other Countries) to produce synthetic liquid gasoline starting from C,  $\text{H}_2$ , water and iron based catalyst.*

Apart from the very useful systematic work by *Mathieu Valat* and his Collaborators to debunk/improve experiments made from third parties (Martin Fleischmann Memorial Project), in the framework of *Live Open Science* approach, other active Researchers are:

\* J.P.Biberian (and Collaborators): nanomaterials at “mean” (200-400°C) temperatures and in-deep analysis/reproduction/improvement of some historical experiments of the field (e.g. Icarus-9 test, made by Fleischmann-Pons around 1998).

\* J. Dufour (and Collaborators). He was one of the first Researcher to introduce, more than 15 years ago, the idea of Picno-deuterium, i.e. *ultra dense*. Some results, about AHE density (W/g), quite impressive. Further works needed to increase reproducibility of the nice results obtained.



## Oxy-hydrogen

- Gas HHO, according to a current theory, is a mixture of monatomic and diatomic hydrogen and oxygens produced by a similar design of the electrolyser that splits water into its various components. Effects are fully reproducible.
- Oxy hydrogen has a plethora of *unusual characteristics* that seem to *defy current chemistry*. It has a cool flame (130 °C), but indeed it is able to melt steel, brick, many other metals or ceramics. In other words, although its apparent temperature is just 130 °C, it can melt elements with fusion temperatures of over 3000 °C!!!
- One of the most active Researcher in Italy is Prof. Renato Burri (Perugia University). *Because of the STRANGE behaviour of HHO, there are several similarities with LENR effects/problematics: we collaborate to solve some common problems.*

## Cooperation Plan

Due to the innovative and revolutionary nature of such discovery, the cooperation plan has to consider also the specific interest, both economic and strategic, of each Country involved.

*In my opinion*, at the moment, there are 3 possibilities:

- 1) Collaboration between Japan-China-India because of geographical location. Main field could be the **transmutation of even radioactive isotopes** (at the moment Japan is the most advanced, see experiments at Mitsubishi) and AHE utilization. To such 3 Countries Researchers worldwide (e.g. Italy, USA, ...., ) can be added because of both previous fruitful collaborations or new “offers”.
- 2) Extension of the concept of **Live Open Science** to ALL the researches (at a voluntary/no-profit basis) in the **AHE** field, considering the, extremely urgent, problem of *Climate Change* due to the use of Carbon-based fuel (Carbon, Oil, Methane, LPG,...): in these days we got definitive information that CO<sub>2</sub> concentration in the atmosphere was >400 ppM in year 2015.
- 3) Similarly to methodologies of 2) but under the sponsorship of a new, specific, **UN Agency**.

# Live Open Science (LOS), a Good Fit for LENR Research

As Practiced by the Martin Fleischmann Memorial Project (MFMP) at QuantumHeat.org

Ryan Hunt - MFMP Facilitator and R&D Manager at Hunt Utilities Group, Pine River, MN USA

Mathieu Valat - MFMP Facilitator, Ales, France

With many thanks to the innumerable contributors and followers, also, via [www.QuantumHeat.org](http://www.QuantumHeat.org)

## MFMP MISSION

- Replicate LENR experiments openly
- Provide open access to all data and entire process to assuage skeptics
- Distribute and promote replicable experiments
- Help overcome institutional bias against the field

It really comes down to promoting a cultural change to allow a reasonable investment in LENR research.

## Open Science Trends

There are several new Open Science initiatives, recently

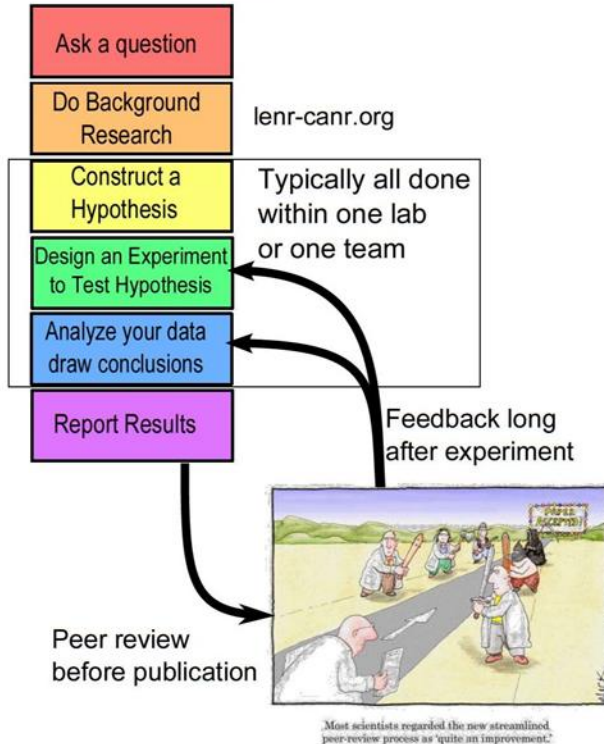
- Mozilla Science Lab
- SciStarter.org
- OpSci.org
- OpenScienceFramework.org

Open Source Software is the most powerful force in the evolution of the internet. The goal of science is to develop and share knowledge. Doing it openly and rapidly is a *natural*.

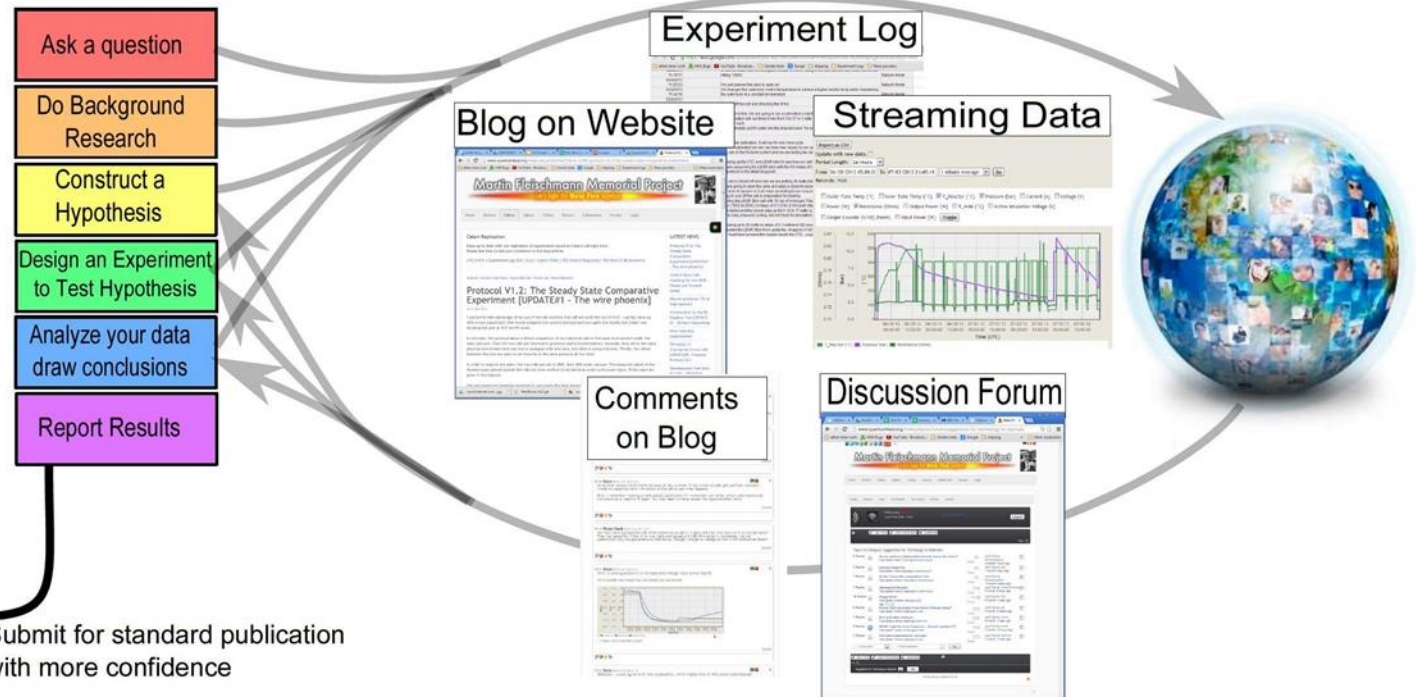
## LOS Benefits

- Faster feedback and shorter iteration time
- Early and dynamic exchange of ideas and designs
- Improvements suggested from many observant, diverse minds
- Greater accountability, less chance of falsification
- Experiment details better conveyed
- Results are available to other researchers immediately
- More research per dollar with help from enthusiasts

## Traditional Science Process



## Live Open Science Process - Harnessing the Power of the Crowd



Most scientists regarded the new streamlined peer-review process as "quite an improvement."