

## PREFACE

### Shot History of the ICCF Conferences

The International Conferences on “CONDENSED MATTER NUCLEAR SCIENCE» originate from the notorious press-conference in March 1989 at the University of Utah where Martin Fleischmann and Stanley Pons announced about their experiments with electrolyzing heavy water resulted in registration of excess heat yield. Since their interpretation of the phenomenon observed related it to a possibility of running nuclear reactions at normal temperature which contradicted to the system of academic nuclear physics knowledge this discovery agitated the whole worldwide scientific community and actually initiated a new direction in modern physics – Condensed Matter Nuclear Science.

The new direction got supported by a great number of research groups and qualified researchers in more than 30 countries and in some of the countries those research activities immediately got state support as well as participation of small and medium business and sometimes also funding from the part of big business groups.

It can not be said that the optimistic expectations of fast solving energy problems based on the newly discovered physical principles have already been justified. But at the same time it should not be ignored the fact that the process of developing those research efforts with implementation of a wide variety of different methods now has resulted in appearing strong belief in that a new field of scientific activities has opened before modern science with quite reasonable expectation of finding not only new solutions of a number of fundamental problems about origination and interaction of matter and energy in the Universe but also development of a number of breakthrough technologies that would make capable to provide noticeable influence on the global technical civilization. Even nowadays a number of research groups pass from laboratory investigations of the phenomena of low energy nuclear reactions in condensed matter towards developing practically valuable technologies and technical projects. Evident recognition by the business community takes place regarding the commercial perspectives of implementing the results of scientific achievements in this field.

The present Conference is the 13<sup>th</sup> international forum in this new field of science. According to the opinion of the Organizing Committee the main subjects and goals of the Conference should incorporate consolidation of the results obtained by the scientists of many countries in investigating the physical phenomenon with the achievements in some other fields of science and technology such as nuclear engineering, mechanical engineering, electrical engineering, laser science and engineering, material science, nano-technology, bio-technology, etc. for the sake of fast solving valuable application problems.

The special aspect of the ICCF13 is that according to the tradition of the Russian National annual conferences the scope of the problems to be considered incorporates also the theoretical and experimental research related to the phenomena of nuclear transmutations not only in condensed matter but also in gaseous and plasma media which relates to another important problem of modern science – the nature and likely implementation of Ball Lightning phenomenon.

We believe that the physics of low energy nuclear reactions in condensed matter will take one of the leading roles among the brand new directions of developing science and technology in XXI century. The future shall definitely come! It is just crucial not to fall behind with realization of it reality and importance!

**The following topics were discussed in the conference:**

- **Analysis and Diagnostic Techniques (AD)**
- **Processes in Gaseous and Plasma Media (GP)**
- **Excess Heat and Related Nuclear Products (HP)**
- **Innovative Engineering and Projects (IP)**
- **Materials and Conditions (MC)**
- **Nuclear Transmutation (NT)**
- **Social, Political and Philosophical Issues (SP)**
- **Theoretical Models and Result Interpretation (TM)**

## **INTERNATIONAL ADVISORY COMMITTEE (IAC)**

**Yuri Bazhutov, IZMIRAN RAS, Russia, IAC Chairman, (ICCF-13 chairman);**

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**Tullio Bressani, Dept. di Fisica Sperimentale, Universita di Torino, Italy;**

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**William Collis, ISCMNS Secretary;**

**Igor Goryachev, Russian Research Center "Kurchatov Institute", Russia;**

**Antonella De Ninno, ENEA, Frascati, Italy;**

**Peter Hagelstein, MIT, USA (ICCF-10 chairman);**

**Yasuhiro Iwamura, Mitsubishi Heavy Industries, Japan;**

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**Andrei Lipson, Institute of Physical Chemistry, RAS, Moscow, Russia;**

**Michael McKubre, SRI International, USA (ICCF-3 chairman);**

**George Miley, Fusion Studies Laboratory, University of Illinois, USA;**

**Ken-ichiro Ota, Dept of Energy and Safety Engineering, Yokohama, Nation. Univ., Japan;**

**Nikolai Samsonenko, People Friendship University, Russia;**

**Francesco Scaramuzzi, ENEA, Frascati (retired), Italy, (ICCF-8 chairman);**

**Mahadeva Srinivasan, BARC (retired), India;**

**Edmund Storms, Lattice Energy, LLC, USA;**

**Akito Takahashi, Osaka University, Japan, (ISCMNS President, ICCF-12 chairman).**

## **LOCAL ORGANIZING COMMITTEE**

- Bazhutov Yu.N.** (Chairman), Institute of Terrestrial Magnetism, Ionosphere and Radiowave Propagation, Russian Academy of Sciences (IZMIRAN), Erzion Center;
- Samsonenko N.V.** (Deputy Chairman), Department of Theoretical Physics, Russian Peoples Friendship University, Moscow;
- Mozzhegorov A.A.** (Deputy Chairman), Representative of Local Business Community;
- Goryachev I.V.** (Scientific secretary), Russian Research Center "Kurchatov Institute";
- Savvatimova I.B.** (Executive secretary), Scientific and Industrial association "LUCH";
- Berkova M.D.** (Web Site Editor), Institute of Applied Mechanics, RAS;
- Stakhanova I.G.** (Web Site Co-editor), IZMIRAN, Russian Academy of Sciences;
- Starostin V.A.** (Web Site Co-editor), Russian Research Center "Kurchatov Institute";

### **Committee members:**

- Baranov D.S.**, Institute for High Temperatures, Russian Academy of Sciences;
- Bychkov V.L.**, Department of Physics, Lomonosov Moscow State University,
- Famina N.V.**, Moscow Technical University (MADI);
- Kornilova A.A.**, Department of Physics, Lomonosov Moscow State University,
- Nikitin A.I.**, Institute of Energetic Problems of Chemical Physics, RAS;
- Sarkisov V.I.**, Firm "Svitaks".

## **Sponsors of the ICCF-13**

- Andrew Mozzhegorov**, private Russian Sponsor;
- International Society of Condensed Matter Nuclear Science**;
- Steve Krivit**, private American Sponsor, Senior Editor of "New Energy Times" Internet magazine;
- "Dagomys" Health Improvement Complex at Russian President Department**

## **Resolution of the 13<sup>th</sup> International Conference on Condensed Matter Nuclear Science (ICCF-13)**

The 13<sup>th</sup> International Conference on Condensed Matter Nuclear Science (ICCF-13) was held in the city of Sochi ("Dagomys" Health Improvement Complex at Russian President Department, Dagomys settlement) during June 25 through July 1, 2007.

The Conference was arranged by the ICCF-13 Local Organizing Committee in accordance with presentation of Russian Coordinating Committee on the Problems of Cold Nuclear Transmutation & decision of the International Advisory Committee (IAC). It was held under the auspices of International Society of Condensed Matter Nuclear Science, Russian Physical Society, Nuclear Society of Russia and Committee on the Problems of Ball Lightning at Russian Academy of Sciences.

Conference organization, edition of the "Program and Abstracts" & Proceedings of the ICCF-13 and also partial financial support of several ICCF-13 participants were provided by sponsorships of private Russian Sponsor Andrew Mozzhegorov, International Society Condensed Matter Nuclear Science & private American Sponsor Steve Krivit, "New Energy Times" Internet magazine Senior Editor.

Totally 80 scientists and specialists took part in the Conference including 46 persons from Russian Federation and 34 foreign representatives from United State of America (12), Japan (5), Israel (5), France (4), Great Britain (2), Italy (3), India (1), Ukraine (1) and Kazakhstan (1).

Russia was presented from different regions: Moscow – 23 representatives, Moscow region (Dubna – 2, Podolsk – 3, Troitsk -1), Ryazan – 1, Krasnodar region (Sochi – 2, Armavir – 2), Leningrad region, Gatchina – 2, Novosibirsk – 1, Tomsk – 3, Ufa – 1, Nizhniy Novgorod region, Sarov – 2, Rostov region, Volgodonsk – 3.

At the ICCF-13 opening participants were welcomed by President of Russian Physical Society Vitaliy Mikhailin, Russian ICCF-13 Sponsor Andrey Mozzhegorov, Deputy General Director of "Dagomys" Health Improvement Complex at Russian President Department Valeriy Shkuratov, President of the International Society Condensed Matter Nuclear Science Akito Takahashi and International Advisory Committee member Mahadeva Srinivasan.

Vladimir Bychkov, on behalf of Vitaliy Mikhailin, the President of the Russian Physical Society, granted with certificates of honorable members of Russian Physical Society the following foreign CMNS scientists (D.Nagel, F.Celani, J.Kasagi, M.Srinivasan, A.Takahashi, J.Fisher, M.McKubre, J.Dash, S.Chubb and P.Hagelstein).

Executive Secretary of the International Society Condensed Matter Nuclear Science William Collis awarded 2 Russian Scientists, Alexander Karabut & Andrey Lipson, by Giuliano Preparata Medal.

75 reports were presented and considered at the Conference, including 45 oral reports & 30 poster reports. Most of them (47) based upon the results of experimental investigations, 25 reports were theoretical works included in the "Theoretical Models & Results Interpretation

session (TM)” and 3 Reviews was in the field of “Social, Political & Philosophical Issues (SP)”. 7 of those presentations were dedicated to the problems of “Analysis & Diagnostic Techniques (AD)”, 12 – to “Processes in Gaseous & Plasma Media (GP)”, 13 – to “Excess Heat & Related Nuclear Products (HP)”, 7 – to “Innovative Engineering & Projects (IP)”, 3 – to “Materials & Conditions (MC)” and 5 presentations were dedicated to the problems of “Nuclear Transmutation (NT)”. Though sometimes such division turned out to be definitely conditional since the subject of those reports related to both problems simultaneously.

Among all those experimental reports dedicated to Cold Nuclear Transmutation there were evidenced regular registration of Excess Heat, Nuclear Products (neutron fluxes, generation of Tritium, X-radiation and gamma-radiation), transmutation of nuclei, various structural changes in solid and liquid substances & etc.

In the experimental reports presented on the problems of Cold Nuclear Transmutation implementation of different methods of initiating the processes of Cold Fusion was shown which is typical for Russian & foreign investigations. There were implemented as usual electrolysis, so electrolysis with gas discharge (both on cathode and on the anode), glow discharge, hydrodynamic & ultrasonic cavitations, electrical blast of metal wires and others.

In the 25 theoretical reports relating to Cold Nuclear Fusion a wide variety of original simulation author models was presented. Within the frames of some of those models new structures of substances & elementary particles were proposed based on strong theoretical understanding.

The reviews presented relating to the problems of Cold Nuclear Transmutation turned out to be very interesting and informative as well as the presentation about the mission and role of the international Society of Scientists on the problems of Cold Nuclear Transmutation (ISCMNS) in innovation input of Science & Business Community that arise their common activities & success.

In the conclusion of the Conference all ICCF-13 participants unanimously expressed their opinion about the reasonability to continue investigations of the problems of Cold Nuclear Transmutation, publishing of ICCF-13 Proceeding this year and supported the proposal of the International Advisory Committee to hold next 14<sup>th</sup> International Conference on the Problems of Cold Transmutation of Nuclei of Chemical Elements (ICCF-14) in next 2008.

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Dagomys, Sochi, Russia,  
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