ICCF-7 INTERNATIONAL ADVISORY COMMITTEE (IAC)

ROTATING CHAIRPERSON FOR ICCF-7

Mr. F. Jaeger - USA

HONORARY CO-CHAIRPERSONS EMERITUS

Dr. Martin Fleischmann – United Kingdom Dr. Stanley Pons – France

COMMITTEE MEMBERS

Prof. T. Bressani – Italy Prof. H. Ikegami – Japan Mr. R. Machacek – Canada Dr. M. McKubre – USA Mr. K. Namba – Japan Prof. M. Okamoto – Japan Prof. G. Preparata – Italy Prof. N. Samsonenko – Russia Prof. C. Sanchez – Spain Dr. F. Scaramuzzi – Italy Dr. M. Srinivasan – India Prof. X. Z. Li – China

ICCF-7 LOCAL ORGANIZING COMMITTEE (LOC)

SCIENTIFIC CHAIRMAN

Prof. G. Miley - Univ. of Illinois

ORGANIZING CHAIRMAN

Mr. F. Jaeger - ENECO

Prof. P. Hagelstein – *M.I.T.* Prof Y. Kim – *Purdue* Dr. Y. Kucherov – *ENECO* Mr. R. Machacek – *Ontario Hydro* Dr. D. Nagel – *Naval Research Lab* Prof. R. Oriani – Univ. of Minnesota Dr. T. Passell – EPRI Dr. C. Storms – Los Alamos(retired) Dr. E. Storms – Los Alamos (retired) Dr. F. Tanzella – SRI

Assembled and published by ENECO," Inc. Salt Lake City, Utah USA

Copyright ©1998 ENECO,® Inc. All rights reserved

ENECO® is a registered service mark of ENECO,® Inc.

DISCLAIMER OF WARRANTIES AND LIMITATION OF LIABILITIES

This report was prepared by ENECO, Inc. ENECO makes no warranty or representation, express or implied, regarding the use of any information, apparatus, method, process, or similar items disclosed herein, including the merchantability, suitability, and fitness for any particular purpose or user's circumstance. ENECO further disclaims any liability for use of this document regarding infringement on or interference with privately owned rights, including any party's intellectual property rights.

ENECO assumes no responsibility for any damages or other liability whatsoever (including consequential damages, even if ENECO or any ENECO representative has been advised of the possibility of such damages) resulting from the selection and use of this report or any information, apparatus, method, process, or similar item disclosed herein.

Printed in USA

ORDERING INFORMATION

Copies of this publication may be obtained from:

ENECO, Inc. University of Utah Research Park 391-B Chipeta Way Salt Lake City, Utah 84108 USA Ph (801) 583-2000 Fax (801) 583-6245 e-mail: jaeger@ENECO-USA.com

THE SPIRIT OF VANCOUVER

間目

問

1

f

1

1

I would like to thank everyone who took the time, effort, and money to attend the Seventh International Conference on Gold Fusion in Vancouver on April 19-24, 1998. The substantial preparation and advanced work of all oral and poster presenters, combined with active audience participation, created a spontaneously constructive environment for discussion. I hope all participants returned from Vancouver with a renewed sense of purpose, a deeper insight to guide their research, and new perspectives to broaden their thinking.

The congenial atmosphere at ICCF-7 was a unique and rewarding experience. Perhaps the enlightened spirit was a result of the spectacular Vancouver scenery; or the realization, after nine years, that unity and cooperation among pioneering researchers may be more productive than competition. Over 200 people from 20 countries and all scientific disciplines gathered in Vancouver to share ideas in an attempt to understand the mechanisms responsible for the unequivocal laboratory results many have witnessed firsthand. Across cultural, linguistic and disciplinarian boundaries, scientists from widely divergent backgrounds worked together to pursue a common goal of trying to perfect a potentially new, clean, economical, and abundant energy source for the 21st century.

I believe ICCF-7 marked a crucial milestone of maturation of the field from the viewpoint of science, finance, and human resources that will support and sustain growth for a strong new generation.

The diversity and quality of the data presented at ICCF-7 has grown more compelling. A plethora of new, diverse results from a wide variety of second generation experiments help move the field closer to a better understanding of reaction mechanisms, and virtually eliminate the possibility that early electrochemical experiments were just some transient mistake.

Although most research activities are still critically undercapitalized, as evidenced by approximately two-thirds of ICCF-7 participants paying for their own attendance, decentralized self-funded research leads to highly focused lab activities. The self-supported fervor and dedication of current researchers provides a grass-roots resiliency and enthusiasm that can not be easily extinguished by adverse, external events.

Approximately one-third of the ICCF-7 audience was new. Nine students were present, some of whom gave their very first presentation at an ICCF conference. One new student was elected as a "Top Ten" presenter. New and younger persons entering the field provide vital fresh perspectives that are crucial to continuation and growth. An entire second generation of scientists and managers are now carrying on the bulk of the work that was formerly performed by early pioneers.

In closing, I would like to thank the International Advisory Committee for providing the opportunity for me to help organize ICCF-7. It was very satisfying to be able to help contribute to the growth and advancement of this important new field of research.

Until we meet again at ICCF-8 in Italy, best wishes to all and good luck with your pursuits.

Sincerely,

Fred Jaeger Organizing Chairman T

DEDICATION

This publication is dedicated to all ICCF-7 participants, their predecessors and colleagues, whose hard work and perseverance made the Vancouver conference possible.

THE

Im

alling)

The enclosed papers provide a collective state-of-the-art glimpse of a new and emerging field of energy research known as low energy induced nuclear reactions in solids. Each participant makes a unique and valuable contribution to the collective effort to better understand these new phenomena. Hopefully, history will judge these manuscripts and the ICCF-7 conference as an important step to future success.

ACKNOWLEDGMENT

Thanks to all International Advisory and Local Organizing Committee members for their experience, wisdom, suggestions and advice regarding the organization of ICCF-7. Special thanks to Professor George Miley and Ms. Hallie Coppedge, Fusion Studies Lab – University of Illinois; Ms. Liz Trythall, ENECO; and Dr. Carol Storms for their endless hours of work behind the scene.

We gratefully acknowledge ENECO for its direct financial sponsorship of ICCF-7, as well as its indirect assistance by allowing employees to work on ICCF-7 affairs.

IN MEMORIAM

Special dedication in memory of Professor Okamoto who died on May 4, 1998, at age 60. Professor Okamoto was the Organization Chairman of ICCF-6, and a world renown leader in the research field for cold fusion. He obtained his Ph.D from the Tokyo Institute of Technology, and was a professor of graduate engineering at Tohoku University in Sendai, Japan. He constantly strove to improve the quality and rigor of experimental design and data interpretation for this emerging field. His knowledgeable encouragement, contribution, cooperation, and friendship will be sorely missed by the entire international cold fusion community. Our deepest and most sincere condolences go to his family and close colleagues.

TABLE OF CONTENTS

PART I. VANCOUVER PRESENTATIONS (Listed alphabetically by last name of the main author)

Page 11 ... 424

Page 425 ... 494

PART II. CONTRIBUTED PAPERS NOT PRESENTED AT VANCOUVER (Listed alphabetically by last name of the main author)

PART III. PARTICIPANTS

101

1

(Name and address by country)

Page 495 ... 512

TABLE OF CONTENTS

PART I. VANCOUVER PRESENTATIONS

(Listed alphabetically by last name of the main author)

Author	Title	Page
Asami	Material Behavior of Highly Deuterated Palladium	15
Bertolotti	Nondestructive Evaluation of the Thermal Properties of Palladium-Hydrogen Compounds by Photo Thermal Techniques	22
Biberian	Electrolysis of LaAlO ₃ Single Crystals and Ceramics in Deuteriated Atmosphere	27
Bressani	Nuclear Physics Aspects of Cold Fusion Experiments	32
Bush, B	Methods of Generating Excess Heat with the Pons and Fleischmann Effect	38
Cain	Thermal Power Produced Using Thin-Film Palladium Cathodes in a Concentrated Lithium Salt Electrolyte	43
Case	Catalytic Fusion of Deuterium Into Helium-4	48
Cavicchio	New Energy Partners	51
Celani	Preliminary Results with "Cincinnati Group Cell" On Thorim "Transmutation" Under 50 Hz AC Excitation	56
Celani	The effect of y-B Phase on H(D)/Pd Overloading	62
Chen	Observations of Cell Temperature Drops and High Vapor Temperatures in H ₂ O Electrolysis of Ni and in D ₂ O Electrolysis of Pd	68
Chubb, S	Periodic Order, Symmetry, and Coherence in Cold Fusion	73
Chubb, S	Really Cold, Cold Fusion	78
Chubb, T	Deuteride Induced Strong Force Reactions	83
Claytor	Tritium Production from Palladium Alloys	88
Collis	ENSAP Software Tool to Analyze Nuclear Reactions	94
Dash	Thermal Imaging During Electrolysis of Heavy Water with a Ti Cathode	98
De Ninno	Material Science Studies Aimed at Improving the Reproducibility of the Heat Excess Experiments	103
De Ninno	Cold Fusion at Enea Frascati: Progress Report	108
Dufour	Formation & Properties of HYDREX and DEUTEX	113
Fleischmann	Cold Fusion: Past, Present, & Future	119
Forsley	Analyzing Nuclear Ash from the Electro catalytic Reduction of Radioactivity in Uranium and Thorium	128
Frisone	Can Impurities Within Deuterated Crystalline Lattice Have an Effect Favoring Cold Fusion?	133
Hagelstein	Models for Anomalous Energy Transfer	140
Hora	Nuclear Shall Magic Numbers Agree With Measured Transmutation By Low-Energy Reactions	147
Hrushovetz	Particles, Primes, and "Cold Fusion"	152
lazzi	Correlated Measurements of D ₂ Loading and ⁴ He Production In Pd Lattice	157
Isobe	Simultaneous Measurements of Neutrons, X-rays, Excess Heat and D-Load Ratio Using Open D ₂ O Electrolysis System	162

Induced By hode (Pd/CaO/Pd)	
	167
Under Water	172
	175
Observed At	180
anisms in	186
	192
) System	197
be Cells	202
	206
Heating	210
how High	215
ments in the	220
	225
the Association	230
1	236
ysis Experiments	241
e Induced by	247
ments from a Solutions	253
-H System	259
, Uranium	264
Nickel and	269
neet Implanted	274
i, and ht Water	279
Energy and	285
is	292
sing Pd Cathode	297
en	302
	309
Pd	
Pd em	314
Pd em	314 319
	the Association ysis Experiments e Induced by ments from a Solutions -H System , Uranium Nickel and heet Implanted h, and ht Water Energy and is Ising Pd Cathode en Pd

Author	Title	Page
Romodanov	Nuclear Reactions In Condensed Media and X-Ray	330
Savvatimova	Comparative Analysis of Heat Effect in Various Cathode Materials Exposed to Glow Discharge	335
Savvatimova	Transmutation Effects in the Cathode Exposed Glow Discharge. Nuclear Phenomena Or Ion Irradiation Results?	342
Silver	Surface Studies of Palladium After Interaction With Hydrogen Isotopes	351
Storms	Relationship Between Open-Circuit-Voltage and Heat Production In a Pons-Fleischmann Cell	356
Stringham	Predictable and Reproducible Heat	361
Sugiura	Calorimetric Analyses of the Excess Heat Generated From Pd:D And Pd:H by the 'In-Vacuo' Method	366
Swartz	Optimal Operating Point Characteristics of Nickel Light Water Experiments	371
Takahashi, A	Results of Experimental Studies on Excess Heat vs. Nuclear Products Correlation and Conceivable Reaction Model	378
Takahashi, R	Proposal of Microdrop-In-Bubble Model For Cold Fusion And Related Phenomena	383
Takahashi, R	Excess Heat Caused by Electrolysis For Drilled Charcoal Cathode And Heat Without Power Input By Immersion Of charcoal In Heavy Or Light Water At Elevated Temperatures	388
Tanzella	Methods for Observing Anomalous energy Transfer in Solids	393
Ueda	Study of Excess Heat and Nuclear Products with Closed Electrolysis System and Quadrupole Mass Spectrometer	398
Violante	Extended Analysis of the Lattice Radio-Frequency Trap As Possible Collision Mechanism Between Nucleus In Condensed Matter	403
Waber	The Synthesis of Nuclear Theory of dd Fusion with Solid State Theory of Bipolarons	409
Waisman	The Pathway to Commercial Applications	414
Yamaguchi	Excess Heat and Nuclear Products From Pd:D/Au Heterostructures by the 'In-Vacuo' Method	420