

SOCIETÀ ITALIANA DI FISICA

ATTI
DI
CONFERENZE

VOLUME 70

ICCF8

*Atti dell'8^a Conferenza Internazionale
sulla Fusione Fredda*

a cura di F. Scaramuzzi
Lerici (La Spezia), Italia 21-26 Maggio 2000

Centenario 1897-1997



Società Italiana di Fisica
Bologna- Italia

ITALIAN PHYSICAL SOCIETY

CONFERENCE
PROCEEDINGS

VOLUME 70

ICCF8

*Proceedings of the 8th International Conference
on Cold Fusion*

edited by F. Scaramuzzi
Lerici (La Spezia), Italy 21-26 May 2000

Centenary 1897-1997



Italian Physical Society
Bologna- Italy

Copyright © 2000, by Società Italiana di Fisica

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the copyright owner.

Technical Editing by Carmen Vasini

ISBN 88-7794-256-8

Proprietà Letteraria Riservata
Printed in Italy

Finito di stampare
nel mese di gennaio 2001
Compositori Ind. Grafiche - Bologna

The International Advisory Committee (IAC)

F. Scaramuzzi, Chairman

J.P. Biberian, France

T. Bressani, Italy

H. Ikegami, Japan

F. Jaeger, USA

J. Kasagi, Japan

X.Z. Li, China

M. McKubre, USA

G. Miley, USA

K. Ota, Japan

G. Preparata, Italy

N. Samsonenko, Russia

C. Sanchez, Spain

M. Srinivasan, India

A. Takahashi, Japan

The Scientific Program Committee (SPC)

F. Scaramuzzi, Chairman

J.P. Biberian, France

F. De Marco, Italy

A. De Ninno, Italy

D. Gozzi, Italy

J. Kasagi, Japan

X.Z. Li, China

M. McKubre, USA

G. Mengoli, Italy

G. Miley, USA

G. Preparata, Italy

C. Sanchez, Spain

V. Violante, Italy

Secretariat

A. De Ninno, Chairwoman

M.L. Ciceroni

S. Ferri

F. Vinciguerra

F. Simoni

CONTENTS

F. SCARAMUZZI - Foreword	page XIII
F. SCARAMUZZI - In memory of Giuliano Preparata	" XXI
M. FLEISCHMANN - Giuliano Preparata: An appreciation	" XXIII

1. DETECTION OF HELIUM, THOUGHT AS A NUCLEAR ASH

M. MCKUBRE, F. TANZELLA, P. TRIPODI and P. HAGELSTEIN - The emergence of a coherent explanation for anomalies observed in D/Pd and H/Pd systems: Evidence for ^4He and ^3H production	" 3
Y. ARATA and Y. C. ZHANG - Definitive difference among [DS- D_2O], [DS- H_2O] and [Bulk- D_2O] cells in the deuterization and deuterium-reaction	" 11
Y. ISOBE, S. UNEME, K. YABUTA, H. MORI, T. OMOTE, S. UEDA, K. OCHIAI, H. MIYAMARU and A. TAKAHASHI - Search for coherent deuteron fusion by beam and electrolysis experiments	" 17
M. MCKUBRE, F. TANZELLA, P. TRIPODI, D. DI GIOACCHINO and V. VIOLANTE - Finite element modeling of the transient calorimetric behavior of the MATRIX experimental apparatus: ^4He and excess of power production correlation through numerical results	" 23
A. DE NINNO, A. FRATTOLILLO, A. RIZZO, F. SCARAMUZZI and C. ALESSANDRINI - A new method aimed at detecting small amounts of helium in a gaseous mixture	" 29

2. EXCESS HEAT AND CALORIMETRY

M. BERNARDINI, C. MANDUCHI, G. MENGOLI and G. ZANNONI - Anomalous effects induced by D_2O electrolysis at titanium	" 39
E. DEL GIUDICE, A. DE NINNO, A. FRATTOLILLO, G. PREPARATA, F. SCARAMUZZI, A. BULFONE, M. COLA and C. GIANNETTI - The Fleischmann-Pons effect in a novel electrolytic configuration	" 47
E. STORMS - Excess power production from platinum cathodes using the Pons-Fleischmann effect	" 55
K. OTA, T. OKABE, H. KUDO, M. FUJII, N. MOTOHIRA and N. KAMIYA - Some experimental results on heat measurement during water electrolysis	" 63
E. G. CAMPARI, S. FOCARDI, V. GABBANI, V. MONTALBANO, F. PIANTELLI, E. PORCU, E. TOSTI and S. VERONESI - Ni-H systems	" 69
T. MIZUNO, T. OHMORI, K. AZUMI, T. AKIMOTO and A. TAKAHASHI - Confirmation of heat generation and anomalous element caused by plasma electrolysis in the liquid	" 75
U. MASTROMATTEO - An energy amplifier device	" 81
Z.-L. ZHANG, W.-S. ZHANG, M.-H. ZHONG and F. TAN - Measurements of excess heat in the open Pd/ D_2O electrolytic system by the Calvet calorimetry	" 91

M. H. MILES - Calorimetric studies of palladium alloy cathodes using Fleischmann-Pons Dewar type cells.....	page 97
M. H. MILES, M. A. IMAM and M. FLEISCHMANN - "Case studies" of two experiments carried out with the ICARUS systems.....	" 105
 3. TRANSMUTATIONS	
X. Z. LI, Y. J. YAN, J. TIAN, M. Y. MEI, Y. DENG, W. Z. YU, G. Y. TANG, D. X. CAO and A. DE NINNO - Nuclear transmutation in Pd deuteride.....	" 123
T. O. PASSELL and R. GEORGE - Trace elements added to palladium by exposure to gaseous deuterium.....	" 129
V. I. VYSOTSKII, A. A. KORNILOVA, I. I. SAMOYLENKO and G. A. ZYKOV - Experimental observation and study of controlled transmutation of intermediate mass isotopes in growing biological cultures.....	" 135
Y. IWAMURA, T. ITOH and M. SAKANO - Nuclear products and their time dependence induced by continuous diffusion of deuterium through multi-layer palladium containing low work function material.....	" 141
T. HANAWA - X-ray spectrometric analysis of carbon arc products in water.....	" 147
J. DUFOUR, D. MURAT, X. DUFOUR and J. FOOS - Hydrex catalyzed transmutation of uranium and palladium. Experimental part.....	" 153
 4. LOADING OF H(D); MATERIAL SCIENCE	
J. WARNER and J. DASH - Heat produced during the electrolysis of D ₂ O with titanium cathodes.....	" 161
G. H. MILEY, G. SELVAGGI, A. TATE, M. OKUNIEWSKI, M. J. WILLIAMS, D. CHICEA, H. HORA and J. KELLY - Advances in thin-film electrode experiments.....	" 169
R. G. AGOSTINO, R. FILOSA, V. FORMOSO, G. LIBERTI, A. DE NINNO, F. D'ACAPITO and S. COLONNA - Electronic fingerprint of D site occupation in Pd deuterate.....	" 177
F. CELANI, A. SPALLONE, P. MARINI, V. DI STEFANO, M. NAKAMURA, A. MANCINI, S. PACE, P. TRIPODI, D. DI GIOACCHINO, C. CATENA, G. D'AGOSTARO, R. PETRAROLI, P. QUERCIA, E. RIGHI and G. TRENTA - High hydrogen loading into thin palladium wires through precipitate of alkaline-earth carbonate on the surface of cathode: Evidence of new phases in the Pd-H system and unexpected problems due to bacteria contamination in the heavy water.....	" 181
A. SPALLONE, F. CELANI, P. MARINI and V. DI STEFANO - New electrolytic procedure for the obtainment of very high H/Pd loading ratios. Preliminary attempts for its application to the D-Pd system.....	" 191
D. AZZARONE, F. FONTANA and D. GARBELLI - Hydrogen/deuterium loading in thin palladium wires.....	" 199
W.-S. ZHANG, Z.-L. ZHANG and X.-W. ZHANG - Effects of temperature on loading ratios of hydrogen (deuterium) in palladium cathodes under the galvanostatic condition.....	" 205
E. DEL GIUDICE, A. DE NINNO, A. FRATTOLILLO, G. PREPARATA, F. SCARAMUZZI and P. TRIPODI - Loading palladium with deuterium gas while lowering temperature.....	" 211

5. DETECTION OF NUCLEAR EMISSIONS

V. D. DOUGAR-JABON, V. I. KARIAKA and N. V. SAMSONENKO – Study of the neutron and γ -emission from the palladium-deuterium system in the process of the transformation of the crystalline structure.....	page 219
V. I. VYSOTSKII, A. A. KORNILOVA, A. A. SOROKIN, V. A. KOMISAROVA, S. I. REIMAN and G. K. RIASNII – Direct observation and experimental investigation of the process of gamma-decay controlling in quantum nucleonics.....	» 225
A. G. LIPSON, B. F. LYAKHOV, A. S. ROUSSTESKY and N. ASAMI – Evidence for DD-reaction and a long-range alpha emission in Au/Pd/PdO:D heterostructure as a result of exothermic deuterium desorption.....	» 231
H. YAMADA, S. NARITA, I. INAMURA, M. NAKAI, K. IWASAKI and M. BABA – Tritium production in palladium deuteride/hydride in evacuated chamber.....	» 241
D. CHICEA and D. STOICESCU – Experimental evidence of nuclear reactions in deuterated titanium samples under non-equilibrium conditions induced by temperature variation.....	» 247
A. S. ROUSSETSKI – Application of CR-39 plastic track detector for detection of DD and DT-reaction products in cold fusion experiments.....	» 253
V. A. ROMODANOV, N. I. KHOKHLOV and A. K. POKROVSKY – Registration of superfluous heat at sorbtion-desorbition of hydrogen in metals.....	» 259
V. A. ROMODANOV, YA. B. SKURATNIK and A. K. POKROVSKY – Generation of tritium for deuterium interaction with metals.....	» 265
YU. N. BAZHUTOV – Erzion discovery in cosmic rays and its possible great role in nature in framework of erzion model of cold nuclear transmutation.....	» 269
I. SAVVATIMOVA – Reproducibility of experiments in glow discharge and processes accompanying deuterium ions bombardment.....	» 277

6. EXPERIMENTS WITH STIMULATION: ENERGETIC PARTICLES, E.M.-RADIATION, ULTRASOUNDS

A. CASTELLANO, M. DI GIULIO, M. DINESCU, V. NASSISI, A. CONTE and P. P. POMPA – Nuclear transmutation in deuterated Pd films irradiated by an UV laser.....	» 287
Y. ARATA and Y.-C. ZHANG – Sono implantation of hydrogen and deuterium from water into metallic fine powders.....	» 293
R. STRINGHAM – The cavitation micro accelerator.....	» 299
J. KASAGI, H. YUKI, T. BABA and T. NODA – Low energy nuclear fusion reactions in solids.....	» 305
N. KUBOTA, A. TANIKE and A. KITAMURA – Production of high energy charged particles during deuteron implantation of titanium deuterides.....	» 311
T. WANG, Y. ZHU, Z. WANG, S. LI and S. ZHENG – Nuclear phenomena in $P + T^2H_x$ experiments.....	» 317
T. WANG, B. DING, Z. WANG, S. ZHENG, Y. JIANG and W. LI – Study of the deuterated titanium Ti^2H_x sample by using nuclear reaction analysis (NRA) and material analysis methods.....	» 323

A. B. KARABUT - Analysis of experimental results on excess heat power production, impurity nuclides yield in the cathode material and penetrating radiation in experiments with high-current glow discharge.....	page 329
A. B. KARABUT, A. G. LIPSON and A. S. ROUSSETSKY - Correct measurement of DD-reaction yield and X-ray in a high-current deuterium glow discharge operating at 0.85-1.20 kV voltage applied	» 335
K. KAMADA, Y. KATANO, N. OOKUBO and I. YOSHIZAWA - Anomalous heat evolution of deuterium implanted Al upon electron bombardment IV - Trial to observe the nuclear reaction.....	» 341
 7. THEORIES	
M. COLA, E. DEL GIUDICE, A. DE NINNO and G. PREPARATA - A simple model of the "Cöhn-Aharonov" effect in a peculiar electrolytic configuration.....	» 349
X. Z. LI, M. Y. MEI, J. TIAN, D. X. CAO and C. X. LI - Coherence in cold and hot fusion: Nuclear physics for nuclear fusion	» 357
P. L. HAGELSTEIN - A unified model for anomalies in metal deuterides.....	» 363
K. P. SINHA and P. L. HAGELSTEIN - Electron screening in metal deuterides	» 369
Y. E. KIM and A. L. ZUBAREV - Ultra low-energy nuclear fusion of Bose nuclei in nano-scale ion traps.....	» 375
S. R. CHUBB and T. A. CHUBB - Theoretical framework for anomalous heat and ⁴ He in transition metal systems	» 385
T. A. CHUBB and S. R. CHUBB - Deuteron fluxing and the ion band state theory.....	» 391
A. TAKAHASHI, M. OHTA and T. MIZUNO - A model analysis on low-energy photo-fission of Pd isotopes under dynamic condition of PdH(D) _x	» 397
M. OHTA and A. TAKAHASHI - Possible mechanism of coherent multibody fusion	» 403
V. VIOLANTE, C. SIBILIA, D. DI GIOACCHINO, M. MCKUBRE, F. TANZELLA and P. TRIPODI - Hydrogen isotopes interaction dynamics in palladium lattice.....	» 409
G. H. MILEY - On the reaction product and heat correlation for LENRs..	» 419
H. HORA, G. H. MILEY and J. C. KELLY - Low energy nuclear reactions of protons in host metals.....	» 425
J. DUFOUR, D. MURAT, X. DUFOUR and J. FOOS - The hydrex concept-effect on heavy nuclei.....	» 431
L. OLEARI - On the probability of collision of the nuclei in H ₂ and D ₂ molecules	» 437
F. FRISONE - Probability of deuteron-plasmon fusion at room temperature within microcracks of crystalline lattices with deuterium loading.....	» 443
H. KOZIMA - The cold fusion phenomenon and physics of neutrons in solids.....	» 449
H. KOZIMA, M. OHTA, K. ARAI, M. FUJII, H. KUBOH and K. YOSHIMOTO - Nuclear transmutation in solids explained by TNCF model.....	» 455
H. KOZIMA - TNCF model- A phenomenological approach	» 461
A. A. NASSIKAS - The cold fusion as a space-time energy pumping process	» 467
Author index.....	» 475