**SCIENCE ET TECHNIQUE DU FROID COMPTES RENDUS**

CZECH AND GERMAN NATIONAL COMMITTEE FOR COOPERATION

WITH THE INTERNATIONAL INSTITUTE OF REFRIGERATION (IIR)

**The 12th**

**CRYOGENICS 2012**

**IIR International Conference**



Dresden, Germany

September 11 – 14, 2012

**INSTITUT INTERNATIONAL DU FROID**

**INTERNATIONAL INSTITUTE OF REFRIGERATION**

Commissions A1, A2 and C1



**PROGRAMME**

**REFRIGERATION SCIENCE AND TECHNOLOGY**

Programme in Detail

monday, September 10, 2012

registration

16:00 – 19:00

Welcome Party

19:00 – 21:00

Tuesday, September 11, 2012

Opening ceremony

Chair: Chrz V., Herzog R., Scurlock R., Coulomb D., Lebrun P.

09:00 Opening Ceremony

I. Cryogenics in particle physics

Chair: Lebrun P., Herzog R.

09:20 001 Cryogenics for the Future Accelerator Complex NICA at JINR

Agapov N.

09:45 009 Development of a Two-Phase Thermosiphon for Extreme Cooling Requirements in the Tritium Source of KATRIN

Grohmann S.

10:10 010 Thermal Design of Cryogenic Permanent Magnet Undulator for SLS

Anghel A.

10:35 036 Analysis of the SIS100 Superconducting Magnet Cooling

Bleile A.

coffee break

11:00 – 11:25

II. Cryogenics in particle physics & fusion

Chair: Herzog R., Agapov N.

11:25 030 Design, Manufacturing and Assembly of the Cryogenic Transfer Line
for XFEL/AMTF

Chorowski M.

11:50 020 Design proposal for MITICA Cryogenic Plant

Valente M.

12:15 018 The MITICA Facility: A Possible Optimization of the Cryogenic Plant Cooling capacity

Fellin F.

12:40 095 Cryogenics for the European Spallation Source

Wang X.

lunch break

13:05 – 14:00

III. Superconductivity and its applications

Chair: Lebrun P., Kade A.

14:00 002 Experimental Study of Superconducting Magnets for the NICA Accelerator Complex

Khodzhibagiyan H.

14:25 037 Measurement of Dynamic Heat Losses in the Fast Ramped Superconducting Magnets for the SIS100 Synchrotron

Bleile A.

14:50 026 The cryogenic system of the 43 T Hybrid magnet of LNCMI Grenoble, France

Ronayette L.

15:15 054 Cooling Systems for Superconducting Power Applications – Experiences Gained in HTS Cable and Fault-Current Limiter Projects

Hobl A.

15:40 051 Components and Systems for HTS Applications

Kade A.

coffee break

16:05 – 16:30

IV. Superconductivity & Very Low Temperatures

Chair: Herzog R., Kralik T.

16:30 015 Superconducting Current Feeders System for SST-1

Gupta N.C.

16:55 042 Study of Refrigeration Characteristics of Slush Nitrogen in Flow System

Nakamura N.

17:20 079 Modern Ways of Reaching and Using Millikelvin Temperatures

Wernicke D.

17:45 053 Compact Dilution Refrigerator for Sensor Cooling

Schneider M.

18:10 073 The AEGIS´Low Temperature System

Eisel T.

WEdnesday, September 12, 2012

V. Cryocoolers, Liquid Helium

Chair: Thummes G., Kaiser G.

08:30 039 A 3-Dimensional Numerical Study a Co-Axial type Acoustic Stirling Cryocooler

Farouk B.

08:55 038 Effects of the Inertance Tube on Pulse Tube Refrigerator Performance

Farouk B.

09:20 052 3-Cycle Pulse Tube Cooler for Cryogenic High-Power Applications

Kuhn M.

09:45 008 Low Temperature Phase Equilibria of Refrigerant Mixtures

Winkelmann D.

10:10 088 Studies of Adsorption Characteristics of Activated Carbons down to 4.5K for Development of Cryosorption Pumps

Kasthurirengan S.

coffee break

10:35 – 11:00

Coffee Breaks on Wednesday are sponsored by

VI. Cryotherapy, Cryobiology

Chair: Mericka P., Schumacher H.M.

11:00 006 Cryotherapy State-of-art and Challenges in Poland

Piotrowska A.

11:25 077 Study of Contact Methods to Cool Biological Tissue in Local Cryosurgery

Butorina A.

11:50 004 Application of the Very Low Temperatures for the Preservation ofRare Plants’ Seeds of Ukraine

Arapetyan E.

12:15 094 A Preliminary Method for Ultra-Rapid Freezing of the Nicotiana Tabacum BY-2 Cell Line by Encapsulation/Vitrification

Schumacher H.M.

12:40 074 Standardization of the Cryopreservation Process for Parathyroid Glands

Von Walcke-Wulffen

lunch break

13:05 – 14:00

VII. Air separation and product storage, CO2 sequestration

Chair: Chrz V., Kalbassi M.

14:00 058 Air Separation Unit Installation and Qualification at the French Guyana Space Centre

Burdaszewski P.

14:25 032 Advanced Cryogenic Process for Low Purity Oxygen Production

Kirchner L.

14:50 085 Oxygen Supply for CO2 Capture by Oxyfuel Coal Combustion

Kalbassi M.

15:15 007 Thermodynamic Analysis of Liquid Oxygen Production System Based on Coupling Joule-Thomson Cooler with PSA

Piotrowska A.

15:40 078 Feasibility Study of “CO2 Free Hydrogen Chain” Utilizing Australian Brown Coal Linked with CCS

Inoue K.

coffee break

16:05 – 16:30

Coffee Breaks on Wednesday are sponsored by

VIII. Miscellaneous

Chair: Klier J., Vins M.

16:30 076 Thermosiphon Tanks for Reliable Pump Operation

Hnizdil T.

16:55 045 Numerical Simulation of Mixed Convection Heat Transfer to Forced Flow Supercritical Helium

Ghosh P.

17:20 055 Presentation of the German DIN Working Group – Safety Devices for Helium Cryostats

Süsser M.

poster session - introduction

17:45 – 17:55

poster session

17:55 – 19:00

Superconductive materials and magnets

A1 013 Design of a superconducting inductor for axial concentration flux motor

Ailam E.H.

A1 016 Stability of YBCO coated conductor according to Cu stabilizer thickness for cryogenic applications

Bae J.H.

A1 033 Properties of impregnated superconducting coils made from YBCO coated conductor using different technology of impregnation

Frolek L.

A1 049 Study of Heat Electrodynamic Processes in High Temperature Superconductors (HTSC) Taking into Account Defects of Their Internal Structure

Dontsova E.

A1 086 Critical Current Degradation Analysis in Irradiated Superconducting Materials

Sosnowski J.

A1 093 Opportunities for Improving the Electrochemical Characteristics
of Ni-Zn Batteries Using High Temperature Superconducting Ceramic

Dimitrov D.

A1 056 Superconducting Unclosed Shields for Improving Homogeneity of the Magnetic Field in Magnetic Systems

Kulikov E.

Cryocoolers and cooling of superconductive systems

A1 019 Cool-down processes of NICA accelerator complex

Mitrofanova Y.A.

A1 021 Liquid cryogen targets for experiments in nuclear relativistic
and particle physics

Konstantinov A.V.

A1 062 Studies of Performance Characteristics of Twin Thermoacoustic Prime Mover with Gas Mixtures as Working Fluids

Behera U.

A1 068 High-Power Stirling-Type Pulse Tube Cryocooler for Operation
near 80 K

Thummes G.

A1 065 Cryogenic System of Superconducting Separator for Kaon Channel
of IHEP Accelerator

Kozub S.

A1 090 Status of the Cryogenic System for the Ariel E-Linac at Triumf

Sitnikov A.

Heat transfer

A1 017 The cryogenic insulation characteristics of GFRP in Liquid Nitrogen

Kim H.J.

A1 071 Cryogenic He experiment on natural turbulent convection

Kralik T.

A1 072 Radiative heat transfer at low temperatures over microscopic distances in vacuo

Kralik T.

A2 027 Design of a cryogenic helium plate-fin heat exchanger

Hu Z.J.

Liquid hydrogen

A1/2 025 Cryogenic hydrogen storage in highly porous materials - A modelling approach

Schlemminger Ch.

A1/2 069 The development of methods and means of gasification of liquid hydrogen under supercritical parameters

Cheremnykh O. Ya.

A1/2 082 The development of methods and means of evacuation of hydrogen from tanks of a space flying apparatus under supercritical parameters

Cheremnykh O. Ya.

LNG

A2 091 Computer program for simulating the rollover phenomenon during the storage of the stratified layers of liquefied natural gas

Belgacem A.

Air separation

A2 023 Mixtures on basis of rare gases. Application and methods of production

Bondarenko V.L.

A2 028 Development of an Equation of State for the Representation
of Solid-Liquid, Solid-Vapour, and Liquid-Vapour Equilibria of Substances of Interest for the Air Distillation Process

Campestrini M.

A2 029 Study Concerning the Possibility for Increasing Argon Recovery from a Cryogenic Air Separation Process

Popa V.

A2 034 Test procedures for cryogenic components and considerations for leakage measurement

Boersch M.

A2 083 Study on the Miniature Turbo-Expander of Reverse Brayton Cryocooler at 100 K

Hou Y.

A2 084 Experimental investigation on the thermodynamic performance of turbo-expander in two phases

Hou Y.

Cryosurgery

C1 048 Dreams and Reality of Superhigh Frequency Cryogenic Technology in Surgery

Butorina A.

thursday, September 13, 2012

IX. Liquefied natural gas (LNG)

Chair: Scurlock R., Schustr P.

08:30 031 Conceptual Design of an Efficient Small LNG Production Facility

Quack H.

08:55 041 A multiobjective optimization for micro-scale liquefaction plants

Arteconi A.

09:20 040 LNG as vehicle fuel in Italy

Arteconi A.

09:45 047 Exergy Analysis to Determine Appropriate Design and Operating Parameters for Collins Refrigerator-Liquefier under Mixed Mode Operation

Chowdhury K.

coffee break

10:10 – 10:35

X. Cryobiology and -technology

Chair: Todorovich M., Spörl G.

10:35 046 Analysis on protein stability in Tris buffered purified bulk solutions during the freezing process

Heidingsfelder J.

11:00 003 Coupled Transport of Water and Cryoprotectant across Cell Membranes and Applications to Cryopreservation

Weng L.

11:25 064 Biological and technological challenges establishing a future-proof cryogenic biomaterialbank

Ciba P.

11:50 087 Cryopreservation of mesenchymal stromal cells by vitrification in multicomponent solutions

Petrenko A.

12:15 070 Safety and Quality Assurance in Donation, Harvest and Preservation of Cells and Tissues of Human Origin – A Review of Own Experience

Mericka P.

lunch break

12:40 – 14:00

Lunch & Meeting of Commissions of the IIR

XI. Liquid hydrogen

Chair: Haberstroh C., Bondarenko A.

14:00 067 Thermophysical Properties of Hydrogen and Deuterium at
all Ortho-Para Compositions

Leachman J.

14:25 080 Principles for the liquefaction of hydrogen with emphasis
on pre-cooling processes

Walnum H.T.

14:50 081 Search for the Best Processes to Liquefy Hydrogen in Very Large Plants

Quack H.

15:15 061 The development of methods and means for long-term storage of liquid hydrogen of high purity

Cheremnykh O.

15:40 050 A new cryogenic high-pressure H2 test area: First results

Klier J.

coffee break

16:05 – 16:30

XII. Rare Gases

Chair: Arkharov A., Lansky M.

16:30 059 Assessment of the Storage of Crude Helium in Reserves in Europe and elsewhere

Clarke R.H.

16:55 024 Cascade units for neon isotope production by rectification method

Bondarenko A.

17:20 022 Enrichment of rare gases concentrates with application of diaphragm technologies

Bondarenko A.

17:45 060 The Future of Helium? A Global Agency to Oversee Production, Storage, Supply and Use of Helium Gas and Liquid

Scurlock R.

closing ceremony

Chair: Chrz V., Herzog R., Scurlock R., Coulomb D., Lebrun P.

18:10 – 18:30

conference dinner

19:30 – 23:30

The conference dinner is sponsored by

      