



Final Program

(As of April 09, 2019)

Sunday, April 21

Registration Opens

16:00-18:00

2F, Lobby

Welcome Reception

18:00-20:00

6F, The Terrace



Monday, April 22

Registration Open

08:00-
2F, Lobby

Opening Ceremony

08:30-09:00
Room A (2F, Grand Ballroom A)

Keynote Session

09:00-10:30
Room A (2F, Grand Ballroom A)

Coffee Break

10:30-11:00
2F, Lobby

Oral Session 01

[O1A]
11:00-12:50
Room A (2F, Grand Ballroom A)

[O1B]
11:00-12:40
Room B (2F, Grand Ballroom B)

Lunch Break

12:50-14:00

Oral Session 02

[O2A]
14:00-15:30
Room A (2F, Grand Ballroom A)

[O2B]
14:00-15:25
Room B (2F, Grand Ballroom B)

Coffee Break

15:30-15:50
2F, Lobby

Poster Session 01

15:50-18:00
Room C (2F, Grand Ballroom C)

Industrial Presentations

16:00-17:15
Room B (2F, Grand Ballroom B)

12th International Conference on Tritium Science & Technology



April 22–26, 2019, Haeundae Grand Hotel Busan, Korea

Keynote Session

Monday, April 22 / 09:00-10:30
Room A (2F, Grand Ballroom A)

Session Chair
Seungyon Cho (NFRI, Republic of Korea)

KN1 09:00-09:45

Technical Discussion on Tritiated Water Treatment for Fukushima Daiichi Nuclear Power Station

Toshihiko Yamanishi^{1*}, Hideki KAKIUCHI², Hiroshi Tauchi³, Tokuhiro Yamamoto⁴, Ichiro Yamamoto⁵

¹Japan Agency for Quantum and Radiological Science and Technology, Japan, ²Institute for Environmental Sciences, Japan, ³Ibaraki University, Japan, ⁴Japan Atomic Energy Agency, Japan, ⁵Nagoya University of Arts and Sciences, Japan

KN2 09:45-10:30

H3AT: A New Tritium Facility at UKAEA

Damian Brennan, Colin Walters, Mark Naden, Dave Coombs, Barry Butler, Alex Perevezentsev, Rachel Strickland

United Kingdom Atomic Energy Authority, UK



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Oral Session 01

[O1A]

Monday, April 22 / 11:00-12:50
Room A (2F, Grand Ballroom A)

Session Chair

Elodie Bernard (CEA, France)
Clark Snow (Sandia Nat'l Lab., USA)

O1A.1 11:00-11:25

The Development of Deuterium-Tritium Target for Inertial Confinement Fusion on Gekko XII-LFEX Facility

Yasunobu Arikawa^{1*}, Yuki Iwasa¹, Kohei Yamanoi¹, Keisuke Iwano¹, Shinsuke Fujioka¹, Akifumi Iwamoto², Mitsuo Nakai¹, Yuji Hatano³, Masanori Hara³, Satoshi Akamaru³, Takayoshi Norimatsu¹

¹Osaka University, Japan, ²National Institute of Fusion Science, Japan, ³University of Toyama, Japan

O1A.2 11:25-11:50

Tritium Permeation Behavior in Plasma-Facing Components and Structural Materials

Masashi Shimada*, Robert J. Pawelko

Idaho National Laboratory, USA

O1A.3 11:50-12:10

Observations of Tritium Inventory in JET-ILW Dust Particles and Applications to Metal Wall Fusion Devices

Naoko Ashikawa^{1*}, Teppei Otsuka², Yuji Torikai³, Nobuyuki Asakura⁴, Anna Widdowson⁵, Marek Rubel⁶, Hikaru Furuta³, Hironori Kurotaki⁴, Masami Ando⁴, Dai Hamaguchi⁴, Suguru Masuzaki¹, Yuji Hatano⁷, Hirofumi Hanamura⁴, Stefan Jachmich⁵, Takumi Hayashi⁴

¹National Institute of Fusion Science, Japan, ²KINDAI University, Japan, ³Ibaraki University, Japan, ⁴National Institutes for Quantum and Radiological Science and Technology, Japan, ⁵Culham Center of Fusion Energy, UK, ⁶KTH Royal Institute of Technology, ⁷University of Toyama, Japan

O1A.4 12:10-12:30

Assessment on Helium Embrittlement of Austenitic Steels Used in Tritium Storage and Delivery System

Sojeong Yang¹, Jae-Uk Lee², Hyun-Goo Kang², Min Ho Chang², Takuji Oda^{1*}

¹Seoul National University, Republic of Korea, ²National Fusion Research Institute, Republic of Korea

O1A.5 12:30-12:50

Influence of Thermal Aging on Deuterium Retention and Trapping in Reduced Activation Ferritic/Martensitic Steels

Siwei Zhang, Zongming Shao, Wei Wang*, Xiang Ji, Chunjing Li

Chinese Academy of Sciences, China



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Oral Session 01

[O1B]

Monday, April 22 / 11:00-12:40
Room B (2F, Grand Ballroom B)

Session Chair

Michael McDonald (Kinectrics, Canada)
Hongsuk Chung (KAERI, Republic of Korea)

O1B.1 11:00-11:20

Validation of Tritium Protection Factors in Respiratory Protective Equipment - Setup and Initial Tests

Michael McDonald*, Armando Antoniazzi
Kinectrics, Canada

O1B.2 11:20-11:40

Design of a Cryostat for Spectroscopic Investigation of All Hydrogen Isotopologues in the Liquid Phase

Bennet Krasch, Robin Groessle, Daniel Kuntz, Sebastian Mirz
Karlsruhe Institute of Technology, Germany

O1B.3 11:40-12:00

Current R&D Activities on Tritium Permeation Barrier for Tritium Plant of CFETR

Zhangguikai*, Yangfeilong, Xiangxin, Tangtao, Chenchangan, Wangxiaolin
China Academy of Engineering Physics, China

O1B.4 12:00-12:20

The 5th Organically Bound Tritium (OBT) Inter-Laboratory Exercise: Analysis of Fish Sample

Sang Bog Kim*
Canadian Nuclear Laboratories, Canada

O1B.5 12:20-12:40

Preliminary Design and Tritium Assessment of CFETR HCCB TBB

Xiaoyu WANG*, Xinghua WU, Long ZHANG, Qixiang CAO, Xingfu YE, Ruyan LI, Hongbin LIAO, Xueqin WANG, Jun WANG
Southwestern Institute of Physics, China



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Oral Session 02

[O2A]

Monday, April 22 / 14:00-15:30
Room A (2F, Grand Ballroom A)

Session Chair

Takumi Chikada (Shizuoka Univ., Japan)
Arikawa Yasunobu (Osaka Univ., Japan)

O2A.1 14:00-14:25

Kinetics of Tritium Absorption/Desorption of Massive and Dust Materials

Payet Mickael*, Garcia-Argote Sebastien, Feuillastre Sophie, Pieters Gregory, Bernard Elodie, Grisolia Christian

The French Alternative Energies and Atomic Energy Commission, France

O2A.2 14:25-14:50

Advanced Electron Microscopy of Helium Nanobubbles in a Palladium Alloy

David B. Robinson^{1*}, Noelle R. Catarineu¹, Norman C. Bartelt¹, Xiaowang Zhou¹, Suzy Vitale¹, Joshua D. Sugar¹, Warren L. York¹, Caitlin A. Taylor¹, E. Lynn Bouknight², Kirk L. Shanahan²

¹Sandia National Laboratories, USA, ²Savannah River National Laboratory, USA

O2A.3 14:50-15:10

Comparison of Hydrogen Isotope Retention in Divertor Tiles of JET with ITER-Like Wall Exposed during 2011-2012 and 2015-2016 Campaigns

Yasuhisa Oya^{1*}, Suguru Masuzaki², Masayuki Tokitani², Moeko Nakata¹, Fei Sun¹, Makoto Oyaidzu³, Kanetsuku Isobe³, Nobuyuki Asakura³, Teppei Otsuka⁴, Anna M. Widdowson⁵, Jari Likonen⁶, Marek Rubel⁷

¹Shizuoka University, Japan, ²National Institute of Fusion Science, Japan, ³National Institutes for Quantum and Radiological Science and Technology, Japan ⁴Kindai University, Japan, ⁵Culham Science Centre, UK, ⁶VTT Technical Research Centre of Finland, Finland, ⁷Royal Institute of Technology, Sweden

O2A.4 15:10-15:30

³He Release, Crystal Lattice Evolution and ³He Bubble Evolution in Titanium Tritides: A Survey of Experimental Results

X.S. Zhou*, G.J. Chen, H.F. Wang, W. Ding, W.D. Wang, S.M. Peng, X.G. Long

China Academy of Engineering Physics, China



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Oral Session 02

[O2B]

Monday, April 22 / 14:00-15:25

Room B (2F, Grand Ballroom B)

Session Chair

Kyu-Min Song (KHNP, Republic of Korea)

Shuming Peng (CAEP, China)

O2B.1 14:00-14:25

Design Status of the Torus Vacuum Pumping System for Tritium Processing in the EU-DEMO

Thomas Giegerich^{1*}, Christian Day¹, Curt Gliss², Stefan Hanke¹, Thomas Haertl², Yannick Hoerstensmeyer¹, Mihaela Ionescu-Bujor¹, Ralf Mueller¹, Benedikt Peters¹, Holger Strobel¹

¹Karlsruhe Institute of Technology, Germany, ²EUROfusion, Germany

O2B.2 14:25-14:45

Operation of a CECE Process with Very High Tritium

T. Whitehorne*, C. Muirhead, F. Mattie, H. Boniface, C. Chenard, S. Suppiah

Canadian Nuclear Laboratories, Canada

O2B.3 14:45-15:05

Tritium Supply and Processing for the First KATRIN Tritium Operation

S. Welte*, D. Hillesheimer, L. T. Le, S. Schaefer, F. Priester, E. Fanghaenel, M. Sturm

Karlsruhe Institute of Technology, Germany

O2B.4 15:05-15:25

Latest Design Developments for the Fuel Cycle and Tritium Plant for the European DEMO Fusion Reactor

Barry Butler^{1*}, Rachel Lawless¹, Tamsin Jackson¹, Robert George¹, Joao Lopes¹, Sophie Davies¹, Alessia Santucci², Christian Day³, Thomas Giegerich³, Bernhard Ploek⁴

¹United Kingdom Atomic Energy Authority, UK, ²Energy and Sustainable Economic Development, Italy ³Karlsruhe Institute of Technology, Germany, ⁴Max-Planck-Institut für Plasmaphysik, Germany



Poster Session 1

Monday, April 22 / 15:50-18:00

Room C (2F, Grand Ballroom C)

P1_01

Preparation of Y₂O₃/Al₂O₃ Multilayer Coating as Tritium Permeation Barrier

Long Wang^{1*}, Yongjin Feng¹, Xiaoyu Wang¹, Ke Shi², Jijun Yang², Kaiming Feng¹, Ning Liu², Chuanhui Liang³, Wei Jin³, Aart Willem Kleijn³

¹Southwestern Institute of Physics, China, ²Schuan University, China, ³China Academic of Engineering Physics, China

P1_02

Tritium Transport and Distribution in a High Temperature Gas-Cooled Reactor

Sung Nam Lee, Nam-il Tak

Korea Atomic Energy Research Institute, Republic of Korea

P1_03

Development of 2/3D and Multi-Physics Tritium Transport Model for ITER TBM System

Ni Muiyi^{1*}, Nie Baojie¹, Zhao Xueli², Vander Laan Jaap³

¹Sun Yat-Sen University, China, ²Institute of Plasma Physics, China, ³International Thermonuclear Experimental Reactor, France

P1_04

Estimation on Protection Unit for Tritium

Sung Paal Yim^{1*}, Cheo Kyung Lee²

¹Korea Atomic Energy Research Institute, Republic of Korea, ²Handong Global University, Republic of Korea

P1_05

Conceptual Design of a Combined Tritium Extraction System with an Intermediate Heat Exchanger and Its Leakage to the Environment Analysis for Nuclear Fusion Reactors.

Marta Velarde¹, J. Fradera², J.M. Perlado²

¹Institute of Nuclear Fusion, Spain, ²IDOM, Spain



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P1_06

Seismic Testing of Glovebox Feedthrough Connectors and Vacuum Pumps

L. M. Angelette*, A. S. Poore, J. E. Klein, P. R. Beaumont, W. A. Stafford, J. J. Grinnell

Savannah River National Laboratory, USA

P1_07

An Experiment-Oriented Analysis of a Non-Steady-State Model for the Permeation of Multi-Component Hydrogen Isotopes through Metals

Nicolae Bidica^{1*}, Anisia Bornea¹, Ion Cristescu², Nicolae Sofilca¹, Ciprian Bucur¹, Marian Curuia¹

¹ICSI Rm. Valcea, Romania, ²Karlsruhe Institute of Technology, Germany

P1_08

The Tests of the Deuterium Permeation through the Rohacell 71HF - a Candidate Material for the SIC-2 Windows for the ITER HFS Reflectometry

Dmitrii Cherkez*, Alexander Spitsyn, Dmitrii Shelukhin, Vladimir Vershkov

¹National Research Center "Kurchatov Institute", Russian Federation

P1_09

New 3D Tritium Permeation Modelling Software Developed by the UKAEA

Alistair Joyce*, Anthony Hollingsworth

United Kingdom Atomic Energy Authority, UK

P1_10

The Study of Tritium Removal from Irradiated Nuclear Graphite Base on Hydrogen Isotope

Ke Deng¹, Xijun Wu², Mingjun Zhang¹, Qin Zhang¹, Guo Yang¹, Zhaowei Ma¹, Guanghua Wang¹, Wei Liu^{1*}

¹Chinese Academy of Science, China, ²University of South China, China

P1_11

A Summary of the Tritium Source Term Study in the 10 MW High Temperature Gas-Cooled Reactor

Mengqi Lou¹, Xuegang Liu¹, Liqiang Wei¹, Feng Xie^{1*}, Jiejuan Tong¹, Xianbao Duan², Bin Shan³, Guiqiu Zheng⁴

¹Tsinghua University, China, ²Wuhan Institute of Technology, China, ³Huazhong University of Science & Technology, China, ⁴Massachusetts Institute of Technology, USA

P1_12

Tritium Distributions in LILWs of Korean Candu Reactor

Young-Ku Choi¹, Min-Hoon Baik², Jae-Kwang Lee², Tae Hyung Kim², Hong Joo Ahn^{2*}, Jong Kwang Lee²

¹Sun Kwang T&S, Republic of Korea, ²Korea Atomic Energy Research Institute, Republic of Korea



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P1_13

Tritium Research and Development Status at KAERI

Hongsuk Chung^{1*}, Jisoo Kim¹, Kwangjin Jung¹, Samuel Park¹, Min Ho Chang², Heeseok Kang³

¹KAERI-UST, Republic of Korea, ²National Fusion Research Institute, Republic of Korea, ³Korea Atomic Energy Research Institute, Republic of Korea

P1_14

New Technologies for Conditioning Liquid Radioactive Wastes

Nikolay Kazakovsky, Vladimir Korolev*, Arkadiy Yukhimchuk

The Russian Federal Nuclear Center – All-Russian Scientific Research Institute of Experimental Physics, Russian Federation

P1_15

Detritiation of Tungsten After Tritium Gas Exposure

N. Bobyr^{1*}, A. Spitsyn¹, A. Anikin², B. Ivanov², A. Bukin², N. Zabirova², Y. Hatano³

¹National Research Center "Kurchatov Institute", Russian Federation, ²Joint Stock Company "A.A. Bochvar High-technology Research Institute of Inorganic Materials", Russian Federation, ³University of Toyama, Japan

P1_16

Radiological Characterisation of Solid Waste Resulting from the Refurbishing of Tritium Laboratory

Viorel Fugaru*, Cristian Postolache, George Bubueanu, Catalin Stelian Tuta, Mihail-Razvan Ioan

Horia Hulubei National Institute of Research & Development for Physics and Nuclear Engineering, Romania

P1_17

Tritium Emissions and Monitoring during KSTAR Device Operation

Hee-Soo Kim*, Sangtae Kim, Kaprai Park, Si-Woo Yoon

National Fusion Research Institute, Republic of Korea

P1_18

Synthesis and Characteristic of Biomimetic Graphene Oxide/Al₂O₃ Composite Tritium Permeation Barrier

Hao YANG, Wei WANG, Siwei ZHANG, Xiang JI*, Chunjing LI, FDS Team

Chinese Academy of Sciences, China



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P1_19

Effect of Electron-Ion Interactions and Electronic Stopping on Irradiation Damage in β -Li₂TiO₃

Woong-Kee Kim, Oda Takuji*

Seoul National University, Republic of Korea

P1_20

Quality Assurance and Industrial Standardization of Eutectic Alloy Pb-15.7(2)Li

Jose Luis Herranz, Luis A. Sedano

FUS-ALIANZ Science, Engineering & Consulting, Spain

P1_21

Tritium Effects on Aromatic Carbon Loaded Polymers

Brent Peters^{1*}, Tim Krentz¹, Jay Gaillard¹, Steve Serkiz¹, Mark Kranj¹, Dale Hitchcock¹, Josef Velten¹, Timothy DeVol²

¹Savannah River National Laboratory, USA, ²Clemson University, USA

P1_22

Small Angle Neutron Scattering to Characterize Decay Helium Bubbles in Tritium Precharged Stainless Steels

Dale A. Hitchcock*, Timothy M. Krentz, Michael J. Morgan

Savannah River National Laboratory, USA

P1_23

Damage Distribution Dependence on Hydrogen Isotope Retention Behavior in Neutron - Fe²⁺ Implanted W

Moeko Nakata^{1*}, Akihiro Togari¹, Zhao Mingzhong¹, Fei Sun¹, Yuji Hatano², Takeshi Toyama³, Naoaki Yoshida⁴, Hideo Watanabe⁴, Masashi Shimada⁵, Dean Buchenauer⁶, Yasuhisa Oya¹

¹Shizuoka University, Japan, ²University of Toyama, Japan, ³Tohoku University, Japan, ⁴Kyushu University, Japan, ⁵Idaho National Laboratory, USA, ⁶Sandia National Laboratories, USA

P1_24

Effects of Radiation Defects Induced by Ion Irradiation on Crystal Structure of Li₂TiO₃

Donggyu Lee, Woong-Kee Kim, Takuji Oda*

Seoul National University, Republic of Korea



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P1_25

The Deuterium Permeation Behavior in Fe Ions Damaged Tungsten Studied by Gas-Driven Permeation Method

Mingzhong Zhao^{1*}, Moeko Nakata¹, Fei Sun¹, Yuji Hatano², Yoji Someya³, Kenji Tobita³, Yasuhisa Oya¹

¹Shizuoka University, Japan, ²University of Toyama, Japan, ³National Institutes for Quantum and Radiological Science and Technology, Japan

P1_26

In-Situ Tritium Release Measurement from Lithium Aluminate Pellets during Irradiation

Walter Luscher^{1*}, David Senor¹, Matt MacDougall¹, Gary Hoggard²

¹Pacific Northwest National Laboratory, USA, ²Idaho National Laboratory, USA

P1_27

Deuterium Retention Behavior in Tungsten: Comparison of Deuterium Gas Charging W and Plasma Irradiating W

Xiaoqiu Ye*, Wei Wang, Changan Chen, Wenhua Luo, Deli Luo

China Academy of Engineering Physics, China

P1_28

Tritium Aging Effects on Fracture Toughness of Stainless Steel Weldments

Michael J. Morgan, Dale A. Hitchcock, Timothy M. Krentz, Scott L. West

Savannah River National Laboratory, USA

P1_29

A Kinetic Study on the Mechanism of Hydrogen Evolution From Er₂O₃ Tritium Permeation Barrier

Mingwang Ma*, Ruiyun Wan, Binghua Tang

China Academy of Engineering Physics, China

P1_30

Predicting Tritium Uptake in Nuclear Graphite from In-Core Fluoride Salt Irradiations

Kieran Dolan*, Guiqiu Zheng, David Carpenter, Lin-Wen Hu

Massachusetts Institute of Technology, USA

P1_31

Time Domain Thermoreflectance (TDTR) Signatures of He Bubbles in Metals

Eliel Villa-Aleman*

Savannah River National Laboratory, USA



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P1_32

H/He Co-Irradiation Induced Structural Change and the Evolution of Gas Bubbles in Li₄SiO₄

Jingwen Ba, Rui Li, Quanwen Wu, Rongguang Zeng, Xiayan Yan, Tao Tang*

China Academy of Engineering Physics, China

P1_33

Results from Tritium Capable Experiments at the New H3AT Facility

Anthony Hollingsworth^{1*}, A. De Backer¹, M.Y.Lavrentiev¹, J.Hess¹, J. Likonen², K. Heinola³, I. Jecu⁴, M-F. Barthe^{5,6}, P. Desgardin^{5,6}, E. Meslin⁷

¹United Kingdom Atomic Energy Authority, UK, ²VTT Technical Research Centre of Finland, Finland, ³University of Helsinki, Finland, ⁴National Institute for Laser, Plasma and Radiation Physics, Romania, ⁵Conditions Extrêmes et Matériaux Haute Température et Irradiation, France, ⁶Centre National de la recherche scientifique, France, ⁷Service de Recherches de Métallurgie Physique, France

P1_34

Towards Accurate Molecular Dynamics Simulations of Helium Bubble Nucleation and Growth in Palladium Tritide

Xiaowang Zhou, Norman C. Bartelt*, Ryan B. Sills

Sandia National Laboratories, USA

P1_35

The Tritium Release Performance of Li₄SiO₄-Based Solid Solutions as Advanced Tritium Breeders

Linjie Zhao, Xiaojun Chen, Chengjiang Xiao, Heyi Wang, Xingui Long, Shuming Peng*

China Academy of Engineering Physics, China

P1_36

Research Activities on Tritium Handling Materials in Caep

Tao Tang*, Guikai Zhang, Huaqin Kou, Xin Xiang, Quanwen Wu, Jingwen Ba, Xiaojun Deng, Renjin Xiong, Feilong Yang, Li Hu

China Academy of Engineering Physics, China

P1_37

Hydrogen Isotope Retention and Release Properties of Beryllium Intermetallic Compounds as Advanced Neutron Multipliers for Fusion Applications

Jae-Hwan Kim^{1*}, Mitsutaka Miyamoto², Masaru Nakamichi¹

¹National Institutes for Quantum and Radiological Science and Technology, Japan, ²Shimane University, Japan



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P1_38

Deuterium Retention in Advanced Steels for Fusion Reactor Structural Application

Xunxiang Hu^{1*}, Lizhen Tan¹, Kun Wang¹, Caleb P. Massey², David T. Hoelzer¹, Yutai Katoh¹

¹Oak Ridge National Laboratory, USA, ²University of Tennessee, USA

P1_39

Electron Tomography and Energy Loss Spectroscopy of Helium Nanobubbles Formed in a Palladium Tritide

Noelle R. Catarineu*, David B. Robinson, Norman C. Bartelt, Joshua D. Sugar, Warren L. York, Suzanne Vitale

Sandia National Laboratories, USA

P1_40

Fabrication of Li₂TiO₃ Pebbles Using Nano-Powder for Tritium Breeding Material

Yi-Hyun Park*, Jongil Kim, Duck Young Ku, Mu-Young Ahn, Youngmin Lee, Seungyon Cho

National Fusion Research Institute, Republic of Korea

P1_41

Removing the Memory Effect of an Alumina-Based Catalyst

David W. James*, Gregory C. Staack, Kaitlin J. Lawrence

Savannah River National Laboratory, USA

P1_42

Tritium Retention in Beryllium and Titanium Beryllide after High-Dose Neutron Irradiation

Vladimir Chakin^{1*}, Rolf Rolli¹, Ramil Gaisin¹, Michail Klimenkov¹, Pavel Vladimirov¹, Masaru Nakamichi²

¹Karlsruhe Institute of Technology, Germany, ²National Institutes for Quantum and Radiological Science and Technology, Japan

P1_43

First-Principles Calculation of Stability and Mobility of Helium in Alpha-Uranium

Jae Hyuk Kim¹, Jae Uk Lee², Hyun Goo Gang², Min Ho Chang², Takuji Oda^{1*}

¹Seoul National University, Republic of Korea, ²National Fusion Research Institute, Republic of Korea

P1_44

In-Situ Determination of Parameters of Hydrogen Isotopes Interaction with Materials Using Dynamic Sorption/Desorption Method

Timur Kulsartov¹, Zhanna Zaurbekova^{1*}, Yuriy Ponkratov², Vyacheslav Gnyrya²

¹Kazakh-Britain Technical University, Kazakhstan, ²Institute of Atomic Energy, Kazakhstan



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P1_45

Analysis of the Reactor Experiments Results on Irradiation of Pb83Li17 Lead-Lithium Eutectic

Timur Kulsartov^{1*}, Zhanna Zaurbekova¹, Yergazy Kenzhin², and Aset Shaimerdenov²

¹Institute of Atomic Energy, Kazakhstan, ²Institute of Nuclear Physics, Kazakhstan

P1_46

Diffusion Characterization of Hydrogen Isotopes in Hastelloy Nalloy for the Application of Fluoride-Salt-Cooled High Temperature Reactors (FHRs)

Dongxun Zhang, Wei Liu, Wenguan Liu, Yuan Qian

Chinese Academy of Sciences, China

P1_47

Forging Process Effects on the Fracture Toughness Properties of Types 316L, 304L, and 21-6-9 Tritium-Precharged Stainless Steels

Michael Morgan*, Timothy Krentz

Savannah River National Laboratory, USA

P1_48

Isothermal Desorption Rate of Helium from Metal

Lei Wang*, Yuan Wang, Yongrong Xie

China Academy of Engineering Physics, China

P1_49

Effect of Ferrite Content on Fracture Toughness of Tritium-Precharged-and-Aged Stainless-Steel Weldments

Michael Morgan, Timothy Krentz, Scott West, Joy McNamara, Andrew Duncan*, Paul Korinko

Savannah River National Laboratory, USA

P1_50

Modelling the Processes of Hydrogen Isotopes Interaction with Solids Surface

Yevgen Chikhray^{1*}, Saulet Askerbekov¹, Yergazy Kenzhin², Yuriy Gordienko³, Etsuo Ishitsuka⁴

¹Institute of Experimental and Theoretical Physics, Kazakhstan, ²Institute of Nuclear Physics, Kazakhstan, ³National Nuclear Center of the Republic of Kazakhstan, Kazakhstan, ⁴Japan Atomic Energy Agency, Japan



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P1_51

Tritium Permeation through Ce-ODS Steel

Yudai Urabe¹, Kenichi Hashizume^{1*}, Teppei Otuka², Kan Sakamoto³

¹Kyushu University, Japan, ²Kindai University, Japan, ³Nippon Nuclear Fuel Development, Japan

P1_52

Tritium Dissolution Behavior in Rare-Earth Oxides

M. Khalid Hossain¹, Kenichi Hashizume^{1*}, Shinnosuke Jo¹, Kaname Kawaguchi¹, Yuji Hatano²

¹Kyushu University, Japan, ²University of Toyama, Japan

P1_53

Titanium Hydrides with Controlled H/T Ratio for AMS Facilities Calibration

Cristian Postolache*, Viorel Fugaru, Catalin Stelian Tuta, George Bubueanu, Andrei Antohe, Mihail-Razvan Ioan

Horia Hulubei National Institute of Physics and Nuclear Engineering, Romania

P1_54

Synthesis of Sodalite Membrane toward the Enrichment of Hydrogen Isotopes

Bangjun Ma*, Xiaofang Wang, Chang-An Chen

China Academy of Engineering Physics, China



Tuesday, April 23

Registration Open

08:00-
2F, Lobby

Plenary Session 01

08:30-10:30
Room A (2F, Grand Ballroom A)

Coffee Break

10:30-11:00
2F, Lobby

Oral Session 03

[O3A]
11:00-12:50
Room A (2F, Grand Ballroom A)
[O3B]
11:00-12:50
Room B (2F, Grand Ballroom B)

Lunch Break

12:50-14:00

Oral Session 04

[O4A]
14:00-15:25
Room A (2F, Grand Ballroom A)
[O4B]
14:00-15:30
Room B (2F, Grand Ballroom B)

Coffee Break

15:30-15:50
2F, Lobby

Poster Session 02

15:50-18:00
Room C (2F, Grand Ballroom C)



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Plenary Session 01

Tuesday, April 23 / 08:30-10:30
Room A (2F, Grand Ballroom A)

Session Chair

J. E. Klein (SRNL, USA)
Matthew Sharpe (LLE, USA)

PL1 08:30-09:10

The First Tritium Campaign of the Karlsruhe Tritium Neutrino Experiment (KATRIN)

Magnus Schloesser^{1*}, The KATRIN Collaboration²

¹Karlsruhe Institute of Technology, Germany, ²Karlsruhe Tritium Neutrino Experiment, Germany

PL2 09:10-09:50

Tritium Related Activities in KHNP

Kyu-Min Song

Korea Hydro & Nuclear Power Co., Republic of Korea

PL3 09:50-10:30

Tritium Activities at Chalk River, Canadian Nuclear Laboratories

S. Suppiah*, S.Thomson

Canadian Nuclear Laboratories Ltd., Canada



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Oral Session 03

[O3A]

Tuesday, April 23 / 11:00-12:50
Room A (2F, Grand Ballroom A)

Session Chair

Qiang Qi (CAS, China)
Taylor Glover (KAIST, Republic of Korea)

O3A.1 11:00-11:25

Measurements of the Effective Thermal Conductivity of a Solid Tritium Breeder Pebble Bed under Neutron Irradiation

Qin Zhan¹, Hongguang Yang^{1*}, Shanshan Liu¹, Zhibo Han¹, Beibei Luo¹, Yanyan Ge¹, Jiyin Zhu¹, Liling Yang¹, Yan Tang²

¹China Institute of Atomic Energy, China, ²University of Chong Qin, China

O3A.2 11:25-11:50

Development of WCCB Test Blanket

Yoshinori Kawamura^{1*}, Hyoseong Gwon¹, Wenhai Guan¹, Hisashi Tanigawa¹, Takanori Hirose¹, Atsushi Wakasa¹, Kentaro Hattori¹, Noriaki Chiba¹, Tamon Ouchi¹, Seiji Yoshino¹, Seiji Mori², Hiromasa Iida², Takumi Yamamoto², Hiroyasu Uto¹, Yoji Someya¹

¹National Institutes for Quantum and Radiological Science and Technology, Japan, ²Nippon Advanced Technology, Japan

O3A.3 11:50-12:10

The Isotopic Effect on Tritium Permeation in Breeding Blankets

Carlos Moreno*, Fernando R. Urgorri, David Rapisarda

Centre for Energy, Environment and Technology, Spain

O3A.4 12:10-12:30

Progress of HCCR TBM and Its Tritium Extraction System Development

Mu-Young Ahn^{1*}, Seungyon Cho¹, Youngmin Lee¹, Soon Chang Park¹, Seok-Kwon Son¹, Yi-Hyun Park¹, Duck Young Ku¹, Chang-Shuk Kim¹, Jongil Kim¹, Don Won Lee², Cheol Woo Lee², Seong Dae Park²

¹National Fusion Research Institute, Republic of Korea, ²Korea Atomic Energy Research Institute, Republic of Korea

O3A.5 12:30-12:50

Conceptual Design of the EU DEMO Tritium Extraction and Removal System Based on Permeation Against Vacuum Technology

Roberto Bonifetto^{1*}, Laura Savoldi¹, Marco Utili², Domenico Valerio¹

¹The Polytechnic University of Turin, Italy, ²Energy and Sustainable Economic Development, Italy



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Oral Session 03

[O3B]

Tuesday, April 23 / 11:00-12:50
Room B (2F, Grand Ballroom B)

Session Chair

Hyun-Goo Kang (NFRI, Republic of Korea)
Jacqueline Meeker (LLNL, USA)

O3B.1 11:00-11:25

A New Paradigm of Tritium Emission Control: Is Dose an Adequate Measure?

Satoshi Konishi*

Kyoto University, Japan

O3B.2 11:25-11:50

Current Status of Process Design for ITER Storage and Delivery System

Min Ho Chang^{1*}, Jea-Uk Lee¹, Dong-You Chung¹, Hyun-Goo Kang¹, Sei-Hun Yun¹, Hongsuk Chung², Kyu-Min Song³

¹National Fusion Research Institute, Republic of Korea, ²Korea Atomic Energy Research Institute, Republic of Korea,

³Korea Hydro & Nuclear Power Co., Republic of Korea

O3B.3 11:50-12:10

Performance Restoration of a Tritium-Aged LaNi_{4.25}Al_{0.75} Sample

Gregory C. Staack*, David W. James

Savannah River National Laboratory, USA

O3B.4 12:10-12:30

Tritium Self-Sufficiency Performance Analysis for CFETR

XIA Xiulong*

China Academy of Engineering Physics, China

O3B.5 12:30-12:50

Synthesis, Characterization and Hydrogen Isotopes Storage Properties of Zr_{1-x}Ti_xCo and Zr_{1-x}Hf_xCo Alloys (x = 0.1, 0.2)

Bogdan Florian Monea¹, Ionete Eusebiu Ilarian^{1*}, Catalin Ducu², Stefan Ionut Spiridon¹, Sorin Moga², Xingbo Han³, Wei Liu³

¹The National Research and Development Institute for Cryogenic and Isotopic Technologies - ICSI Rm. Valcea, Romania,

²University of Pitesti, Romania, ³Chinese Academy of Sciences, China



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Oral Session 04

[O4A]

Tuesday, April 23 / 14:00-15:25
Room A (2F, Grand Ballroom A)

Session Chair

Yasuhisa Oya (Shizuoka Univ., Japan)
Alexey Golubev (Rosatom, Russian Federation)

O4A.1 14:00-14:25

Differential DNA Damage Response of Embryonic Neural Stem Cells and Fibroblasts after Tritiated Thymidine Contamination

Sofiane Mokrani, Christine Granotier-Beckers*, Olivier Etienne, Christian Grisolia, François Boussin

The French Alternative Energies and Atomic Energy Commission, France

O4A.2 14:25-14:45

The Impact Assessment of Tritium Emissions in Agricultural Plants Using CROPTRIT Model

Anca Melintescu*

Horia Hulubei National Institute for Physics and Nuclear Engineering, Romania

O4A.3 14:45-15:05

Tritium Releases to the Environment from the ESS Facility: Assessment of the Impact and Monitoring Strategy

Ene Daniela^{1*}, Rodolfo Avila², Sigrid Kozielski¹

¹*The European Social Survey, Sweden*, ²*2AF Energy (Nuclear), Sweden*

O4A.4 15:05-15:25

Measurement of Tritium Trapped in Natural Soil by Microwave Assisted Acid Dissolution Method

Kazunari Katayama*, Daiki Ishii, Toshiharu Takeishi, Satoshi Fukada

Kyushu University, Japan



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Oral Session 04

[O4B]

Tuesday, April 23 / 14:00-15:30

Room B (2F, Grand Ballroom B)

Session Chair

Satoshi Konishi (Kyoto Univ., Japan)

Min Ho Chang (NFRI, Republic of Korea)

O4B.1 14:00-14:25

Status of Design and Performance Validation of Metal Hydride Bed for Fusion Fuel Cycle

Hyun-Goo Kang*, Dong-You Chung, Jae-Uk Lee, Min Ho Chang

National Fusion Research Institute, Republic of Korea

O4B.2 14:25-14:50

Tritium Support for the National Ignition Facility

Jacqueline Meeker, Jorge Sanchez

Lawrence Livermore National Laboratory, USA

O4B.3 14:50-15:10

R&D Activities on ZrCo Tritium Storage Alloy in CAEP

Huaqin KOU*, Wenhua LUO, Tao TANG, Zhiyong HUANG, Ge SANG, Guanghui ZHANG, Changan CHEN

China Academy of Engineering Physics, China

O4B.4 15:10-15:30

All-Metal Scroll Vacuum Pumps for Tritium Processing Systems

Nathan Nicholas, Bryce Shaffer

Air Squared, USA



Poster Session 2

Tuesday, April 23 / 15:50-18:00

Room C (2F, Grand Ballroom C)

P2_01

Rigorous Tritium Wet Scrubber Column Modeling and Design

Anthony Busigin

NITEK USA, Inc., USA

P2_02

Zr₂Fe Modification for Tritium Absorption

Yong Yang

China Academy of Engineering Physics, China

P2_03

Preparation and Characterization of Super-Hydrophobic Pt-Based Catalysts for H/D Isotope Separation between Hydrogen and Water

Jiamao Li*, Chao Chen, Xiulong Xia, Yu Gong, Heyi Wang, Shuming Peng

China Academy of Engineering Physics, China

P2_04

Mass Transfer Performance Test of Structured Packings for Tritiated Water Distillation Detritiation

Chao Chen*, Jingwei Hou, Heyi Wang, Team of DT Fuel Cycle

China Academy of Engineering Physics, China

P2_05

Effect of Ultraviolet Light on Hydrogen Exchange Reaction between Hydrogen Gas and Tritiated Water

JiEun Yang, TaeJun Kim, Minsik Kim, Jei-Won Yeon

Korea Atomic Energy Research Institute, Republic of Korea

P2_06

Experimental Results and Experience with LPCE Process

O.A. Fedorchenko*, I.A. Alekseev, S.D. Bondarenko, T.V. Vasyanina

National Research Center "Kurchatov Institute", Russian Federation



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P2_07

Development of Technology for the Liquid Radioactive Waste Detritiation by Two-Temperature Catalytic Isotope Exchange Method in a Water-Hydrogen System

Pak Yu.S., Bukin A.N.*, Moseeva V.S., Marunich S.A., Rosenkevich M.B.

Dmitry Mendeleev University of Chemical Technology of Russia, Russian Federation

P2_08

Hydrogen Isotope Abstraction by Protionic Metal Oxides with Various Crystal Structures

Chan Woo Park*, Kune-Woo Lee, In-Ho Yoon, Hee-Man Yang, Ilgook Kim

Korea Atomic Energy Research Institute, Republic of Korea

P2_09

Rigorous Dynamic Simulation of Cryogenic Distillation of Hydrogen Isotopologues in the Fuel Cycle of a Thermonuclear Reactor Based on UV-Flash

Andrey Ovcharov^{1*}, Richard Szczepanski², Jacek Kosek¹, Nuno Pedrosa², Xiaofei Lu³, Lorenzo Basili⁴, Rosa Lo Frano⁴, Donato Aquaro⁴

¹International Thermonuclear Experimental Reactor, France, ²KBC Advanced Technologies Ltd, UK, ³Institute of Plasma Physics, China, ⁴University of Pisa, Italy

P2_10

Commissioning of the LPCE and Purification Systems as Front-End of the Experimental Pilot Plant for D-T Separation

Gheorghe Popescu, George Ana, Anisia Bornea, Ciprian Bucur, Ovidiu Balteanu, Iulia Stefan, Marius Zamfirache

National Institute of Research and Development for Cryogenic and Isotopic Technologies, Romania

P2_11

Hydrogen Generator Modification in View of Tritium Compatibility

George Ana*, Anisia Bornea, Marius Zamfirache, Alina Niculescu, Mihai Vijulie, Ciprian Bucur

National Institute of Research and Development for Cryogenic and Isotopic Technologies, Romania

P2_12

Pd Dense Membrane with Microchannel Structure for Hydrogen Isotope Purification under Different Pressures

Lei Yue*, Yu Gong, Jingwei Hou, Jiamao Li, Chao Chen, Chengjian Xiao, Heyi Wang

Institute of Nuclear Physics and Chemistry, China



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P2_13

Study on Preparation of Palladium Film on Porous Stainless Steel Substrate

Yaqi Song¹, Feilong Yang¹, Guikai Zhang¹, Guanghui Zhang¹, Renjin Xiong¹, Zhanlei Wang², Changan Chen^{1*}

¹China Academy of Engineering Physics, China, ²Science and Technology on Surface Physics and Chemistry Laboratory, China

P2_14

TCAP Parameter Optimization Using Fractional Factorial Experimental Design

Xin Xiao*, Henry T. Sessions

Savannah River National Laboratory, USA

P2_15

Thermodynamics, Kinetics and Selectivity of H₂ and D₂ on Zeolite under Low Temperature

Renjin Xiong^{1*}, Michael Hirscher²

¹China Academy of Engineering Physics, China, ²Max Planck Institute for Intelligent Systems, Germany

P2_16

Oxygen Regeneration of Palladium Silver Alloy Tubed Hydrogen Purifier

Melissa Golyski

Savannah River Nuclear Solution, USA

P2_17

Trace Tritium Recovery within the European DEMO Fuel Cycle

Tamsin Jackson^{1*}, Joao Lopes¹, Nadeera Jayasekera², Barry Butler¹

¹Culham Centre for Fusion Energy, UK, ²Loughborough University, UK

P2_18

Catalytic Separation of Hydrogen Isotopes Using Nickel Modified Alumina PLOT Capillary Column

Weiwei Wang*, Xingbi Ren, Lidong Xia, Hairong Li, Weiguang Zhang, Xiaosong Zhou, Xinggui Long, Shuming Peng

China Academy of Engineering Physics, China

P2_19

Hydrogen Adsorption and Desorption Experiments for Cryogenic Molecular Sieve Bed

Yi-Hyun Park, Seungyon Cho, Mu-Young Ahn, Seok Kwon Son, Soon Chang Park*, Youngmin Lee

National Fusion Research Institute, Republic of Korea



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P2_20

Design and Manufacturing Issues Related to a High Efficiency Microreactor in View of Tritiated Streams Conversion to Water

Mirela Draghia*, Gheorghe Pasca, Alin Fuciu

IS TECH SRL, Romania

P2_21

A Study on Trace Amount of Q2 and CQ4 Treatment Process

Woo Chan Jung^{1*}, Pil Kap Jung¹, Young Min Kim¹, Hung Man Moon¹, Min Ho Chang², Hyeon Gon Lee²

¹Daesung Industrial Gases, Republic of Korea, ²National Fusion Research Institute, Republic of Korea

P2_22

A Mathematical Design and Synthesis of Complex Column Model for Tritium Separation

Seon-Byeong Kim

Korea Atomic Energy Research Institute, Republic of Korea

P2_23

The Study of a CECE Process for Low Tritiated Liquid Waste prior to Experimental Phase

Anisia Mihaela Bornea*, Marius Valentin Zamfirache, George Romulus Ana, Ovidiu Ioan Balteanu, Liviu Ovidiu Stefan

National Institute of Research and Development for Cryogenic and Isotopic Technologies, Romania

P2_24

Study of Preparation and Hydrogen Isotope (H₂ and D₂) Sorption of CHA-Type Zeolite

Akira Taguchi^{1*}, Takumi Nakamori¹, Yuki Yoneyama¹, Takahiko Sugiyama², Masahiro Tanaka³, Kenji Kotoh⁴, Yu Tachibana⁵, Tatsuya Suzuki⁵

¹University Toyama, Japan, ²Nagoya University, Japan, ³National Institute for Fusion Science, Japan, ⁴Kyushu University, Japan, ⁵Nagaoka University Technology, Japan

P2_25

A Theoretical Study On Tritium Calorimetry In Hydride Bed

S.-H. Yun*, M. Chang, H.-G. Kang, D. Chung, J.W. Lee, K.J. Jung

National Fusion Research Institute, Republic of Korea

P2_26

The Diffusion Permeation Behavior of Deuterium through the Niobium and its Composite Membrane with Different Grain Sizes

Guo Yakun, Zhou Xin, Ma Bangjun, Ye Xiaoqiu, Chen Changan*

Science and Technology on Surface Physics and Chemistry Laboratory, China



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P2_27

Experimental Results of a Medium-Scale Pd-Ag Permeator for the Tritium Extraction and Removal System of DEMO-HCPB Blanket

Marco Incelli*, Alessia Santucci, Silvano Tosti

European Nuclear Energy Agency, Italy

P2_28

Permeator Simulations for the Exhaust Processing System of the EU-DEMO Fuel Cycle

Yannick Hoerstensmeyer^{1*}, Silvano Tosti², Alessia Santucci², Giacomo Bruni²

¹Karlsruhe Institute of Technology, Germany, ²European Nuclear Energy Agency, Italy

P2_29

Technology Development for Isotope Rebalancing and Protium Removal in the EU-DEMO Fuel Cycle

Cyra Neugebauer*, Yannick Hoerstensmeyer, Christian Day

Karlsruhe Institute of Technology, Germany

P2_30

Use of SAES Getter ST 909 for the Complete Cracking of Methane Contained in Small-Volume Tritiated Dihydrogen Batches with High Concentrations of Impurities

Haudebourg*, Gauvin, Milleton, Macaud

The French Alternative Energies and Atomic Energy Commission, France

P2_31

Non-Evaporable Getters for Tritium Recovery in the Helium Coolant Purification System of DEMO

Alessia Santucci*, Antonio Frattolillo, Marco Incelli, Silvano Tosti

European Nuclear Energy Agency, Italy

P2_32

Evaluating All-Metal Diaphragm Valves for Use in a Tritium Environment

Paul R. Beaumont, Levi R. Houk, Lucas M. Angelette, Andrew N. Payton, James E. Klein, Anita S. Poore

Savannah River National Laboratory, USA

P2_33

Tritium Transport Characteristics Analysis of TMSR-SF under Accident Conditions

Hao Qin, Chenglong Wang*, Wenxi Tian, Suizheng Qiu, G.H. Su

Xi'an Jiaotong University, China



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P2_34

The Coolant Purification System of China HCCB TBM: Preliminary Design and Testing of Principle Prototype System

Huang Zhiyong*, Song Jiangfeng, Yao Yong, Chen Changan

China Academy Of Engineering Physics, China

P2_35

Wolsong TRF Operation Status, Operation Experience

Woo Jin Jeon, Dong Min Lee, Hyun Je Park, Hye Jin Kwon

Korea Hydro & Nuclear Power Co., Republic of Korea

P2_36

The Current Status of the Heavy Water Detritiation Facility at PNPI

Alekseev I.A., Bondarenko S.D.*, Vasyanina T.V., Fedorchenko O.A.

National Research Center "Kurchatov Institute", Russian Federation

P2_37

Simulation of Gas Flows in DT-Fueling Systems of DEMO-FNS Hybrid Facility Accounting for Integrated Modeling of Core and Divertor Plasmas

Sergey Ananyev*, Andrei Kukushkin, Alexei Dnestrovskij, Alexander Spitsyn, Boris Kuteev

National Research Center "Kurchatov Institute", Russian Federation

P2_38

Research Facilities of IAE NNC RK (Kurchatov, Kazakhstan) for Investigations of Tritium Interaction with Structural Materials of Fusion Reactors

Yuriy Gordienko^{1*}, Yuriy Ponkratov¹, Timur Kulsartov¹, Zhanna Zaurbekova¹, Yerbolat Koyanbayev¹, Yevgen Chikhray²

¹Institute of Atomic Energy, Kurchatov, Kazakhstan, ²Al-Farabi Kazakh National University, Kazakhstan

P2_39

Monitoring and Recovery of Tritium in Fusion Test Facility

M. Tanaka^{1,2*}, N. Suzuki¹, H. Kato¹, C. Iwata¹, N. Akata¹, H. Hayashi¹, H. Miyake¹

¹National Institute for Fusion Science, Japan ²The Graduate University for Advanced Studies, Japan

P2_40

Analysis of the Transient Regimes of a Detritiation Facility Operation

Marius Valentin Zamfirache*, Anisia Mihaela Bornea, Liviu Ovidiu Stefan, Ovidiu Ioan Balteanu, George Ana

National R&D Institute for Cryogenics and Isotopic Technologies, Romania



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P2_41

Concept Design of the Tritium Plant on the TRINITI Site for Ignitor Project Tasks

Alexander Gostev¹, Mikhail Subbotin^{2*}, Vladimir Kochin², Vladimir Khripunov², Mikhail Rozenkevich³, Alexander Perevezentsev³, Galina Shrova³, Yury Pak³, Alexey Bukin³, Sergey Marunich³

¹ISC, Russian Federation, ²NRC, Russian Federation, ³D. Mendeleev University of Chemical Technology of Russia, Russian Federation

P2_42

Simulation of He-3 Collection Procedure in Tritium Storage System of Fusion Fuel Cycle

Jae-Uk Lee^{1*}, Min Ho Chang¹, Hyun-Goo Kang¹, Dong-You Chung¹, In-Beum Lee²

¹National Fusion Research Institute, Republic of Korea, ²Pohang University of Science and Technology, Republic of Korea

P2_43

Romania' Contribution to Manufacture and Use of Heavy Water

Ionita Gheorghe*, Marius Peculea, Ioan Stefanescu

The National Research and Development Institute for Cryogenic and Isotopic Technologies - ICSI Rm. Valcea, Romania

P2_44

Challenges of Fueling Fusion Plasmas with Deuterium-Tritium Pellets

Larry Baylor*, Steve Meitner, Robert Duckworth, Trey Gebhart

Oak Ridge National Laboratory, USA

P2_45

HYSYS/ASPEN+ Advanced Tritium Transfer Modelling Tools for ITER/DEMO Plant Systems

Jose M. Nougues¹, Josep A. Feliu¹, Oriol Millan¹, Luis A. Sedano^{2,3*}

¹Inprocess Technology And Consulting Group, Spain ²FUS_ALIANZ Science, Engineering & Consulting, Spain, ³E&C energy consulting, Spain

P2_46

Optimization of the Manufacturing of Beta Radiation Sources Based on Tritium for Betavoltaic Power Sources

A.S. Anikin*, M.I. Belyakov, A.N. Bukin, N.E. Zabirowa, N.P. Bobyr, I.G. Lesina, A.A. Semenov, A.V. Lizunov, A.V. Demin

A.A. Bochvar High-technology Research Institute of Inorganic Materials, Russian Federation

P2_47

A Bibliometrics Analysis on Tritium Technology in the Field of Fusion Energy

Hansoo Chang^{1*}, Jung-Suk Hong²

¹National Fusion Research Institute, Republic of Korea, ²Korea Institute of S&T Evaluation and Planning, Republic of Korea



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P2_48

Quenching Correction with Two-Dimensional Scintillation Spectrum in Tritium Measurement

Masanori Hara^{1*}, Miki Shoji¹, Tsukasa Aso², Takayoshi Furusawa³, Yuka Kato³, Takuro Masuda³

¹University of Toyama, Japan, ²National Institute of Technology, Toyama College, Japan, ³Hitachi, Ltd., Japan

P2_49

A Study on the Risk Management of Fusion Exhaust Gas Recovery Process

Woo-Chan Jung^{1*}, Pil-Kap Jung¹, Young-Min Kim¹, Hung-Man Moon¹, Min-Ho Chang², Hyeon-Gon Lee ²

¹Daesung Industrial Gases, Republic of Korea, ²National Fusion Research Institute, Republic of Korea

P2_50

Applicability of a 100 ml Polyethylene Vial for Low Level Tritium Measurement by a Low Background Liquid Scintillation Counter

Yoshinari Oshimi¹, Mayu Ohki¹, Misato Nagano¹, Takuyo Yasumatsu^{1*}, Masanori Hara², Satoshi Akamaru², Masato Nakayama², Miki Shoji²

¹Tokyo Power Technology Ltd., Japan ²University of Toyama, Japan



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Wednesday, April 24

Registration Open

08:00-
2F, Lobby

Plenary Session 02

08:30-10:30
Room A (2F, Grand Ballroom A)

Coffee Break

10:30-11:00
2F, Lobby

Oral Session 05

[O5A]
11:00-12:30
Room A (2F, Grand Ballroom A)

[O5B]
11:00-12:25
Room B (2F, Grand Ballroom B)

Lunch Break

12:30-14:00

Excursion

14:00-18:00

*Course T1, C3 will be departure at 13:00



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Plenary Session 02

Wednesday, April 24 / 08:30-10:30
Room A (2F, Grand Ballroom A)

Session Chair

Damian Brennan (UKAEA, UK)
Magnus Schloesser (KIT, Germany)

PL4 08:30-09:10

Progress of Tritium Science and Technology for Fusion Energy in China

Shuming Peng*

China Academy of Engineering Physics, China

PL5 09:10-09:50

Tritium Activities at the University of Rochester's Laboratory for Laser Energetics

W. T. Shmayda*, M. Sharpe, C. Fagan, M. D. Wittman, R. F. Earley

Laboratory for Laser Energetics, USA

PL6 09:50-10:30

Tritium-Related Activities in the RF

Arkadiy Yukhimchuk*

*The Russian Federal Nuclear Center – All-Russian Scientific Research Institute of Experimental Physics,
Russian Federation*



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Oral Session 05

[O5A]

Wednesday, April 24 / 11:00-12:30
Room A (2F, Grand Ballroom A)

Session Chair

Anthony Busign (NITEK USA, Inc., USA)
Paul Cloessner (SRNL, USA)

O5A.1 11:00-11:25

Qualification Tests for Detritiation to Validate Scrubber Column Technology for Use at ITER DS with a Pilot-Scale Scrubber Column

Yuki Edao^{1*}, Rie Kurata¹, Yasunori Iwai¹, Kanetsugu Isobe¹, Toshihiko Yamanishi¹, Takumi Hayashi¹, Scott Willms²

¹National Institutes for Quantum and Radiological Science and Technology, Japan, ²International Thermonuclear Experimental Reactor, France

O5A.2 11:25-11:50

Physico-Chemical Methods of Handling Tritiated Water and Gas Streams

Mikhail B. Rozenkevich*, Alexey N. Bukin, Sergey A. Marunich, Eldar P. Magomedbekov, Yury S. Pak, Irina L. Rastunova, Igor L. Selivanenko

D. Mendeleev University of Chemical Technology of Russia, Russian Federation

O5A.3 11:50-12:10

Hydrogen Isotope Separation Using Graphene Electrochemical Membrane

L. M. Anglette¹, C. South¹, L. Roy¹, S. Creager², X. Xiao^{1*}

¹Savannah River National Laboratory, USA, ²Clemson University, USA

O5A.4 12:10-12:30

Development and Operation of a Water Detritiation Facility Based on CECE Technology

Hou Jingwei, Chen Chao, Xiao Chengjian, Wang Heyi, Fu Xiaolong, Xia Xiulong, Gong Yu, Peng Shuming*

China Academy of Engineering Physics, China



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Oral Session 05

[O5B]

Wednesday, April 24 / 11:00-12:25

Room B (2F, Grand Ballroom B)

Session Chair

Phillips Steve (Premium Analyse, France)

Aleksey Vasilyev (IIE, Russian Federation)

O5B.1 11:00-11:25

Organically Bound Tritium (OBT) - New Challenges

BAGLAN Nicolas¹, Peron², Baglan¹

¹The French Alternative Energies and Atomic Energy Commission, France, ²Subatech, France

O5B.2 11:25-11:45

Characterisation and Treatment Methods Used for JET Tritiated Waste

Robert Vale*, Damian Brennan, James Bromley, Dave Coombs, Xavier Lefebvre, Steve Reynolds, Tomas Rey

United Kingdom Atomic Energy Authority, UK

O5B.3 11:45-12:05

Development of Fast Response Detector for Tritium Measurements in Dynamic Mode in Fusion Reactor

Chen Zhilin*, Peng Shuming, Chen Ping, Wu Guanyin, Yang Yang

China Academy of Engineering Physics, China

O5B.4 12:05-12:25

High Purity HD for Cross Calibration of Hydrogen Isotopologue Analytics

Robin Groessle^{1*}, Tim Brunst², Bennet Krasch¹, Sebastian Mirz¹

¹Karlsruhe Institute of Technology, Germany, ²Max Planck Institute for Physics, Germany



Thursday, April 25

Registration Open

08:00-
2F, Lobby

Plenary Session 03

08:30-10:30
Room A (2F, Grand Ballroom A)

Coffee Break

10:30-11:00
2F, Lobby

Oral Session 06

[O6A]
11:00-12:50
Room A (2F, Grand Ballroom A)
[O6B]
11:00-12:50
Room B (2F, Grand Ballroom B)

Lunch Break

12:30-14:00

Oral Session 07

[O7A]
14:00-15:30
Room A (2F, Grand Ballroom A)
[O7B]
14:00-15:30
Room B (2F, Grand Ballroom B)

Coffee Break

15:30-15:50
2F, Lobby

Poster Session 03

15:50-18:00
Room C (2F, Grand Ballroom C)

Banquet

19:00-22:00
22F, SKY hall



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Plenary Session 03

Thursday, April 25 / 08:30-10:30
Room A (2F, Grand Ballroom A)

Session Chair

Toshihiko YAMANISHI (QST, Japan)
Ion Cristescu (KIT, Germany)

PL7 08:30-09:10

Progress in Developing the Tritium Handbook for ITER

Ian Bonnett*, Robert Michling, Wataru Shu, David Demange, Scott Willms

International Thermonuclear Experimental Reactor, France

PL8 09:10-09:50

Tritium Trapping in Tungsten for Nuclear-Fusion Devices: Impact of Pre-Existing Defects, Material Morphology and Helium Irradiation

Bernard^{1*}, Sakamoto², Kreter³, Grisolia¹, Payet¹, Garcia-Argote¹, Corr⁴, Doerner⁵, Schwarz-Selinger⁶, Bisson⁷, Pardanaud⁷, Markelj⁸, Martin⁷, Barthe⁹, Thompson⁴

¹The French Alternative Energies and Atomic Energy Commission, France, ²National Institute for Fusion Science, Japan, ³Forschungszentrum Jülich, Germany, ⁴Australian National University, Australia, ⁵University of California San Diego, USA, ⁶Max-Planck-Institut für Plasmaphysik, Germany, ⁷Aix Marseille University, France, ⁸Jožef Stefan Institute, Slovenia, ⁹French National Centre for Scientific Research, France

PL9 09:50-10:30

Progress of Tritium Related Activities in QST

Takumi Hayashi^{1*}, Rie Kurata¹, Yuki Edao¹, Yasunori Iwai¹, Kanetsugu Isobe¹, Nobuyuki Asakura¹, Suguru Masuzaki², Makoto Oyaizu¹, Masaru Nakamichi¹, Toshihiko Yamanishi¹, Hisashi Tanigawa¹, Yasunori Kawamura¹, Takumi Suzuki³, Masayuki Yamada³

¹National Institutes for Quantum and Radiological Science and Technology, Japan, ²National Institute for Fusion Science, Japan, ³Japan Atomic Energy Agency, Japan



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Oral Session 06

[O6A]

Thursday, April 25 / 11:00-12:50

Room A (2F, Grand Ballroom A)

Session Chair

Masashi SHIMADA (INL, USA)

Takuji Oda (Seoul Nat'l Univ., Republic of Korea)

O6A.1 11:00-11:25

Retention and Transport of Tritium and Hydrogen Isotopes in Fusion Reactor Materials

Yuji Hatano*

University of Toyama, Japan

O6A.2 11:25-11:50

Review of Tritium and Helium-3 in Metal Tritides

Clark S. Snow*, Caitlin A. Taylor, Brittany R. Muntifering

Sandia National Laboratories, USA

O6A.3 11:50-12:10

Characterization of Tritium Transport in Molten 2LiF-BeF₂ Salt and Graphite by Electrochemistry Techniques.

Francesco Carotti*, Huali Wu, Raluca Scarlat

University of Wisconsin, USA

O6A.4 12:10-12:30

The Cryosorbent and Regeneration Properties of Activated Charcoal for Tokamak Exhaust

Yu Gong*, Lei Yue, Xiaolong Fu, Heyi Wang

China Academy of Engineering Physics, China

O6A.5 12:30-12:50

Microstructural Evolution During Neutron Irradiation of Lithium Aluminate for Tritium Production

DJ Senor*, DE Burkes

Pacific Northwest National Laboratory, USA



Oral Session 06

[O6B]

Thursday, April 25 / 11:00-12:50
Room B (2F, Grand Ballroom B)

Session Chair

Takumi HAYASHI (QST, Japan)
Ian Bonnett (ITER Organization, France)

O6B.1 11:00-11:25

Tritium R&D Activities at the Savannah River National Laboratory

Paul Cloessner*

Savannah River National Laboratory, USA

O6B.2 11:25-11:50

R&D Progresses of D-T Fuel Cycling for CFETR

Heyi Wang*, Shuming Peng, Xiaolin Wang

China Academy of Engineering Physics, China

O6B.3 11:50-12:10

Tritium Processing Systems and First Tritium Operation of the KATRIN Experiment

Florian Priester*, David Hillesheimer, Alexander Marsteller, Marco Roellig, Michael Sturm

Karlsruhe Institute of Technology, Germany

O6B.4 12:10-12:30

Activities and Capabilities at LANL's Weapons Engineering Tritium Facility (WETF)

Chandra Savage Marsden*, Brad Meyer

Los Alamos National Laboratory, USA

O6B.5 12:30-12:50

The WWR-K Reactor Experimental Base for Studies of the Tritium Release out of Materials under Irradiation

Shaimerdenov Asset*, Gizatulin Shamil, Dyussambayev Daulet, Askerbekov Saulet, Kenzhina Inesh

Institute of Nuclear Physics, Kazakhstan



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Oral Session 07

[07A]

Thursday, April 25 / 14:00-15:30
Room A (2F, Grand Ballroom A)

Session Chair

Mu-Young Ahn (NFRI, Republic of Korea)
Dave Robinson (SNL, Mexico)

O7A.1 14:00-14:25

Simultaneous Measurement of Deuterium Permeation and Lithium-Lead Corrosion for Tritium Permeation Barrier Coatings

Takumi Chikada^{1*}, Moeki Matsunaga¹, Kazuki Saito², Kazuki Nakamura¹, Keisuke Kimura¹, Hikari Fujita³, Yoshimitsu Hishinuma⁴, Teruya Tanaka⁴

¹Shizuoka University, Japan, ²SOKENDAI, Japan, ³The University of Tokyo, Japan, ⁴National Institute for Fusion Science, Japan

O7A.2 14:25-14:50

Molecular Dynamics Simulation for Behaviors of Helium in Uranium and Uranium Tritide

Takuji Oda^{1*}, Jae-Uk Lee², Hyun-Goo Kang², Min Ho Chang²

¹Seoul National University, Republic of Korea, ²National Fusion Research Institute, Republic of Korea

O7A.3 14:50-15:10

Study of Electrolyser Materials at High Tritium Concentrations

H. Boniface*, T. Whitehorne, C. Muirhead, H. Li, R. Carson, S. Suppiah

Canadian Nuclear Laboratories, Canada

O7A.4 15:10-15:30

Thin-Alumina Films as a Tritium Adsorption Inhibitor for Stainless-Steel 316

Cody Fagan*, Daniel Bassler, Matthew Sharpe, W.T. Shmayda, W.U. Schroeder

University of Rochester, USA



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Oral Session 07

[O7B]

Thursday, April 25 / 14:00-15:30
Room B (2F, Grand Ballroom B)

Session Chair

Sam Suppiah (CNL, Canada)
Heyi Wang (CAEP, China)

O7B.1 14:00-14:25

Preparations at JET for DT Operations

S Knipe*, T Jones, R Warren, R Lobel, R King, A Whitehead, B Wakeling, R Marshall, S Forbes, K-D Zastrow, A Manning, G Jones, S Emery

United Kingdom Atomic Energy Authority, UK

O7B.2 14:25-14:50

Design and R&D on Tritium Plant Systems for China Fusion Engineering Test Reactor

Changan CHEN*, Jinguang CAI, Guangming RAN, Heyi WANG, Wenhua LUO, Shuming PENG, Xiaolin WANG

China Academy of Engineering Physics, China

O7B.3 14:50-15:10

Preparation of the JET Fuel Cycle for Deuterium-Tritium Operations

B.R. Wakeling*, A. Cobalt, A. Davies, R. George, T. Huddleston, T. Jackson, M. Knight, X. Lefebvre, S. Medley, R. Olney, G. Papadopoulos, S. Romanelli, P. Staniec, A. Withycombe, R.J. Walker

United Kingdom Atomic Energy Authority, UK

O7B.4 15:10-15:30

The RMC Method to Handle Tritium Efficiently and Safely.

Sandro M.O.L. Schneider*, Patrick Burkhalter

smolsys ltd., Switzerland



Poster Session 3

Thursday, April 25 / 15:50-18:00

Room C (2F, Grand Ballroom C)

P3_01

Modeling the Formation of Organically Bound Tritium and Deuterium in Plants

Lars Brinkmann*, David Rowan, Volodymyr Korolevych

Canadian Nuclear Laboratories, Canada

P3_02

Comparative Study of DNA Double-Strand Break Induction in Human Mesenchymal Stem Cells Exposed to Tritiated Water, Organically Bound Tritium and X-Rays

Andreyan N. Osipov*, Oleg Kochetkov, Natalia Vorobyeva, Margarita Pustovalova, Anna Grekhova, Andrey Osipov, Dmitry Kabanov, Valeriy Barchukov

Burnasyan Federal Medical Biophysical Center of Federal Medical Biological A, Russian Federation

P3_03

Quickly Analytical Determination of Tritium in Urine by a New Resin Column

Yun Xie*, Zhilin Chen, Zhongtang Wang

China Academy of Engineering Physics, China

P3_04

Environmental Impact Analysis of Tritium around Nuclear Power Plants

Juyoul Kim*

KEPCO International Nuclear Graduate School, Republic of Korea

P3_05

Evaluation of Tritium Transport in a Forest Environment

Brian Viner*, Wendy Kuhne, Martine Duff, Ashley Swindle

Savannah River National Laboratory, USA

P3_06

Environmental Impact Considerations of Tritium Released from Fusion Reactor

Baojie Nie*, Mui Ni, Fengchen Li

Sun Yat-Sen University, China



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P3_07

Kinetics of Double Strand Breaks of Genome-Seized DNA in Low Concentration Tritiated Water Evaluated Using Single Molecule Observation Method

H. Shimoyachi^{1*}, Y. Hatano², T. Kenmotsu³, Y. Oya⁴, H. Nakamura⁵

¹University of Toyama, Japan, ²Doshisha University, Japan, ³Shizuoka University, Japan, ⁴National Institute for Fusion Science, Japan

P3_08

Measurement of Tritium Distribution in Graphite by Tritium Imaging Plate Technique

Huali Wu^{1*}, Guiqiu Zheng², David M Carpenter², Raluca O Scarlat¹

¹University of Wisconsin-Madison, USA, ²Massachusetts Institute of Technology, USA

P3_09

High-Level Tritium Determination in Organics by Combustion

T. Whitehorne*, C. Muirhead¹, M. Byers, S. Suppiah

Canadian Nuclear Laboratories, Canada

P3_10

A Generic CODAC Prototyping for Real-Time Dynamic Tritium Mass-Balance Monitoring Demonstration

Daniel Marchante^{1*}, Pau Pais¹, Lluís Batet², E. MAs De Les Valls², L. Sedano³

¹PROCONSYSTEMS, Spain ²Polytechnic University of Catalonia, Spain ³FUS_ALIANZ Science, Engineering & Consulting, Spain

P3_11

Calorimetry and He3 Ingrowth : 2 NDA Methods for Tritium Measurement and Accountancy

Vigineix*, Andre, Mathonat

KEP Technologies, France

P3_12

Development of Fast-Response Solved-Tritium Concentration Diagnostics

Luis Sedano

FUS_ALIANZ Science, Engineering & Consulting, Spain

P3_13

Real-Time Analysis of Hydrogen Isotope Gases in Second-Scale Reactions

Yan Xiayan, Lv Junbo, Qin Cheng, Guo Shulan, Wu Quanwen, Xiong Renjin*

China Academy of Engineering Physics, China



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P3_14

Non-Exchangeable Organically Bound Tritium Concentration in Tree Rings around a Chinese Nuclear Power Plant

Yuhua Ma ¹, Ming He², Youshi Zeng¹, Qingzhang Zhao², Yijun Pang², Wei Liu^{1*}, Yan Li¹

¹Chinese Academy of Sciences, China ²China Institute of Atomic Energy, China

P3_15

Preliminary Evaluation of Antech Model CD285-1540 Calorimeter

Brian Price*, Chandra Marsden

Los Alamos National Laboratory, USA

P3_16

Advances in Tritium Measurement and Detection

Phillips Steve*, Werth Vincent

Premium Analyse, France

P3_17

Development of a Monitoring Technique of Permeation Behaviors of Tritium in Metals to Pure Water

Teppei Otsuka^{1*}, Takuma Shimada¹, Kenichi Hashizume², Toshiaki Hiyama²

¹Kindai University, Japan, ²Kyushu University, Japan

P3_18

Material Studies to Reduce the Tritium Memory Effect in BIXS Analytic Systems

Max Aker*, Marco Roellig

Karlsruhe Institute of Technology, Germany

P3_19

Optimisations Made in Tritium Analysis and Inventory Measurement

Antonio Provenzano*, Gemma Allen, Christopher Knott, Damaris Roffey, Rachel Wilson, Dario Castiglione

Atomic Weapons Establishment, UK

P3_20

Experimental Measurement of Tritium from Molten FLiBe Salt under Neutron Irradiation

Guiqiu Zheng*, David Carpenter, Kieran Dolan

Massachusetts Institute of Technology, USA



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P3_21

Assessment of Tritium Exposure in the Atmosphere from the Spray Ponds Balakovo NPP

Vasilyev Aleksey^{1*}, Ekidin Aleksey¹, Vasyanovich Maxim¹, Antushevskiy Alexander², Semenov Maxim², Murashova Ekaterina²

¹Institute of Industrial Ecology, Russian Federation, ²Federal State Unitary Enterprise "Mayak Production Association", Russian Federation

P3_22

The Substitutability of Liquid Scintillation Cocktail in the Measurement of Low-Level Tritiated Water for CaF₂(Eu) Powders

Jing Wu, Heyi Wang*, Zhilin Chen

China Academy of Engineering Physics, China

P3_23

Tritium Permeation Characterization of Al₂O₃/FeAl Coating as Tritium Permeation Barrier on Type 321 Stainless Steel Container

Yangfeilong*, Zhangguikai, Xiangxin, Tangtao, Chenchangan, Wangxiaolin

China Academy of Engineering Physics, China

P3_24

Application of High Energy Tritium Ions and Particles Formed in ⁶Li(n, α)³H Nuclear Reaction to Excite the Luminescence of Inert Gas Mixtures

Yuriy Ponkratov^{1,3*}, Erlan Batyrbekov², Timur Kulsartov³, Mendykhan Khasenov³, Kuanysh Samarkhanov³, Zhanna Zaurbekova³, Yevgen Chikhray⁴

¹Tomsk Polytechnic University, Russian Federation, ²National Nuclear Center, Kazakhstan ³Institute of Atomic Energy, Kazakhstan, ⁴Institute of Experimental and Theoretical Physics, Kazakhstan

P3_25

Fast Quantitative Determination of He and Ar in Fuel Cycle Based on LIBS

Tao Xu¹, Chuan Ke², Ying Li², Yongliang Chen², Hong Zhang², Yong Zhao^{2*}

¹Fujian Normal University, China, ²Southwest Jiaotong University, China

P3_26

In-Situ Decontamination of Ion Chambers Using LEDs

George Larsen*, Simona E. Hunyadi Murph, Khai Nguyen, Kaitlin Lawrence

Savannah River National Laboratory, USA



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P3_27

Influence of Internal Structure of Semiconductor Detector on β -ray Induced X-Ray Spectrum

S. E. Lee*, Y. Hatano, M. Hara, M. Matsuyama

University of Toyama, Japan

P3_28

The Area Measurements in the Tritium Laboratory (Tritulab), IFIN-HH, Romania

Ioan Mihail-Razvan*, Postolache Cristian, Fugaru Viorel, Bubueanu George, Tuta Catalin Stelian

Horia Hulubei National Institute of Research & Development for Physics and Nuclear Engineering, Romania

P3_29

Design Proposal of a PEM-MEA Cell System for Tritium Enrichment of Environmental Water Samples

Carmen Varlam, Stefan Ionut Spiridon*, Ionut Faurescu, Dorin Schitea, Alin Chitu, Laurentiu Patularu, Irina Vagner, Catalin Jianu

The National Research and Development Institute for Cryogenic and isotopic Technologies - ICSI Rm. Valcea, Romania

P3_30

Design & Operation of a Monitoring System which Separates & Measures High & Low Concentration Tritium in Air

Dell Williamson*, Robert Goldstein

US Nuclear Corp, USA

P3_31

Numerical Simulation Study of the Adsorption of Water and Water Radiolysis Products in NaA Zeolite

J. Randrianandraina¹, M. Grivet^{1*}, J. E. Groetz¹, C. Ramseyer¹, B. Cardey¹, F. Torrealba Anzola¹, D. Ducret², C. Chambelland²

¹University of Burgundy Franche-County, France, ²The French Alternative Energies and Atomic Energy Commission, France

P3_32

Development of a Cost-Effective Type B Tritium Shipping Package

Paul S. Blanton, Josh P. Flach, Christopher P. Cable

Savannah River National Laboratory, USA

P3_33

Scale-Up Study for Depleted Uranium (DU) Beds via Numerical Simulation of Hydrogen Absorption Process

Masoomah Ghasemi, Jaeyoo Choi, Muhammad Faizan Chinnanai, Hyunchul Ju*

Inha University, Republic of Korea



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P3_34

Analyzing Hydriding Performance in Real-Scale Depleted Uranium (DU) Beds

Seongjin Yun, Geonhui Gawk, Masoomah Ghasemi, Chinnanai Muhammad Faizan, Hyunchul Ju*

Inha University, Republic of Korea

P3_35

Measurement of Palladium Hydride and Palladium Deuteride Isotherms between 77 and 393 K

M. Sharpe^{1*}, K. Glance², W. T. Shmayda¹

¹Laboratory for Laser Energetics, USA, ²Pittsford Sutherland High School, USA

P3_36

Alloying Effects on Hydrogen Isotope Storage and Disproportionation of ZrCo Alloys - Experimental and Theoretical Investigation

Guanghai Zhang*, Ge Sang, Huaqin Kou

China Academy of Engineering Physics, China

P3_37

Development of 3He Bubble Microstructure in TiT₂ Films During Aging

Haifeng Wang*, Shuming Peng

China Academy of Engineering Physics, China

P3_38

3D Tritium Transport Analysis for WCCB Blanket Based on COMSOL

Xueli Zhao¹, Muyi Ni², Baojie Nie², Bing Zhang¹, Lei Chen¹, Kai Huang¹, Songlin Liu^{1*}

¹Chinese Academy of Sciences, China, ²Sun Yat-Sen University, China

P3_39

Effects of Sintered Metal Filters on Hydrogen Isotope Delivery Characteristics in a Metal Hydride Bed

Jisoo Kim¹, Samuel Park¹, Kwangjin Jung¹, Min Ho Chang², Heeseok Kang³, Hongsuk Chung^{1*}

¹University of Science and Technology, Republic of Korea, ²National Fusion Research Institute, Republic of Korea, ³Korea Atomic Energy Research Institute, Republic of Korea

P3_40

Preliminary Experimental Study on Application of Cu Foam as Internal Component of Metal Hydride Bed

Dong-You Chung*, Hyun-Goo Kang, Min Ho Chang, Jae-Uk Lee, Sei-Hun Yun

National Fusion Research Institute, Republic of Korea



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P3_41

Hypothetical Operation Plan to Minimize Tritium Inventory of Fusion Fuel Cycle

Suh-Young Lee¹, Min Ho Chang², Jae-Uk Lee², Jin-Kuk Ha³, Sei-Hun Yun², In-Beum Lee¹, Euy Soo Lee^{3*}

¹Pohang University of Science and Technology, Republic of Korea, ²National Fusion Research Institute, Republic of Korea,

³Dongguk University, Republic of Korea

P3_42

Hydride Bed Isotopic Exchange

P. J. Foster^{1*}, Z. J. Trotter¹, S. A. Schaufler¹, J. L. Clark¹, J. E. Klein²

¹Savannah River Nuclear Solutions, USA, ²Savannah River National Laboratory, USA

P3_43

Hydride Bed He-3 Recovery & Partial Regeneration

Paul Foster^{1*}, Zechariah Trotter¹, Summer Schaufler¹, Jared Clark¹, Greg Staack²

¹Savannah River Nuclear Solutions, USA, ³Savannah River National Laboratory, USA

P3_44

Engineering Analysis of HCCB-TBS Tritium Extraction System

Lei Yang*, Yong Yao, Ming Wen, Yongtao An, Kanghao He, Jinguang Chen, Linzi Liu

China Academy of Engineering Physics, China

P3_45

Tritium Breeding Capabilities in Magnetized Target Fusion Reactors

Taylor Glover, Haseeb Ur Rehman, Yonghee Kim

Korea Advanced Institute of Science and Technology, Republic of Korea

P3_46

Study on the Trace Hydrogen Capture from Helium by Pd/Al₂O₃

Yong Yao*, Deli Luo, Lei Yang, Jiangfeng Song

China Academy of Engineering Physics, China

P3_47

Design, Synthesis, Calculation and Characterization of the Tritium Breeder: Li₄TiO₄ Ceramics

Juemin Yan^{1*}, Tao Gao¹, Xiaojun Chen², Chengjian Xiao²

¹Sichuan University, China, ²China Academy of Engineering Physics, China



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P3_48

Effect of MHD Velocity Profiles on Tritium Permeation in PbLi Channels

Fernando Roca Urgorri*, Carlos Moreno, Ivan Fernandez-Berceruelo, Elisabetta Carella, David Rapisarda, Angel Ibarra

Centre for Energy, Environment and Technology, Spain

P3_49

Tritium Release Behavior in Tritium Breeding Materials

Qiang Qi^{1*}, Guang-Nan Luo¹, Jing Wang¹, Qilai Zhou², Mingzhong Zhao², Maoqiao Xiang³, Moeko Nakata², Haishan Zhou¹, Yingchun Zhang³, Yasuhisa Oya²

¹Chinese Academy of Sciences, China, ²Shizuoka University, Japan, ³University of Science and Technology, China

P3_50

Sensitivity Analysis and Dimensioning of Reactor-Scale Pd/Ag Permeators for the Tritium Extraction and Removal System of the EU-HCPB Blanket

Rodrigo Antunes^{1,2*}, Laetitia Frances^{1,2}, Marco Incelli³, Alessia Santucci³

Karlsruhe Institute of Technology, Germany, ²Tritium Laboratory Karlsruhe, Germany, ³Energy and Sustainable Economic Development, Italy

P3_51

Fundamental Analysis for Electrochemical Extraction and Monitoring of Impurities from Lead Lithium with Chloride Molten Salt

Hiroyuki Miyagaki, Tomohiro Okada*, Juro Yagi, Keisuke Mukai, Satoshi Konishi

Kyoto University, Japan

P3_52

Electrochemical Extraction and Monitoring of Light Element Impurities in Liquid Lithium with Chloride Molten Salt

Juro Yagi*, Tomohiro Okada, Keisuke Mukai, Satoshi Konishi

Kyoto University, Japan

P3_53

Effects of Temperature and Pressure on Purge Gas Chemical Compositions in Tritium Breeding Blanket

Michiko Ahn Furudate^{1*}, Seungyon Cho²

¹Chungnam National University, Republic of Korea, ²National Fusion Research Institute, Republic of Korea

P3_54

On the Optimum Tritium Breeding Blanket Configuration of a Tokamak Reactor

Bong Guen Hong*

Chonbuk National University, Republic of Korea



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P3_55

Numerical Investigation of Purge Gas Flow through Pebble Beds Using Discrete Element Method and Computational Fluid Dynamics

Youngmin Lee^{1*}, Dongwoo Sohn², Mu-Young Ahn¹, Yi-Hyun Park¹, Seungyon Cho¹

¹National Fusion Research Institute, Republic of Korea, ²Korea Maritime and Ocean University, Republic of Korea

P3_56

Numerical Study of Hydrogen Reformer to Increase Methane Conversion Rate

Dohwan Kim, Kyeongmin Oh, Jaeseung Lee, Hyunchul Ju*

Inha University, Republic of Korea



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Friday, April 26

Registration Open

08:00-
2F, Lobby

Panel Discussion

08:30-09:30
Room A (2F, Grand Ballroom A)

Coffee Break

09:30-09:50
2F, Lobby

Plenary Session 04

09:50-11:50
Room A (2F, Grand Ballroom A)

Closing Ceremony

11:50-12:30
Room A (2F, Grand Ballroom A)



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Plenary Session 04

Friday, April 26 / 09:50-11:50
Room A (2F, Grand Ballroom A)

Session Chair
Scott Willms (ITER Organization, France)
Yuji Hatano (Univ. of Toyama, Japan)

PL10 09:50-10:30

Overview of Tritium Technologies for the EU DEMO Breeding Blanket

Ion Cristescu^{1*}, David Rapisarda², Alessia Santuci³, Marco Utili³

¹Karlsruhe Institute of Technology, Germany, ²Centre for Energy, Environment and Technology, Spain,

³Italian National Agency for New Technologies, Energy and Sustainable Economic Development, Italy

PL11 10:30-11:10

Expected Environmental Effects at Long-Term Tritium Supply-Lessons Learned

Alexey Golubev, Valentina Golubeva*

Rosatom, Russian Federation

PL12 11:10-11:50

Tritium in the Environment

Hideki Kakiuchi*

Institute for Environmental Sciences, Japan