



13-th International Conference on
Tritium Science and Technology

Tritium 2022

PROGRAMME

Bucharest, ROMANIA
16-21 October, 2022

Steering Committee of the International Conference on Tritium Science and Technology

Scott Willms (ITER/LANL, US)	Arkadiy Yukhimchuk (RFNC – VNIIEF, Russia)
James E. Klein (SRNL, US)	Shuming Peng (INPC, China)
Walter Shmayda (Rochester U, US)	Yuji Hatano (Toyama U, Japan)
Christian Grisolia (CEA, EU)	Toshihiko Yamanishi (QST, Japan)
Beate Bornschein (KIT, EU)	Seungyon Cho (NFRI, Korea)
Sam Suppiah (AECL, Canada)	

General Chair of the 13th International Conference on Tritium Science and Technology

Mihai Varlam – General Manager of National Research and Development Institute for Cryogenic and Isotopic Technologies – ICSI Rm. Valcea

Chair of Technical Organizing Committee of the 13th International Conference on Tritium Science and Technology

Liviu Ștefan - Director of Pilot Plant for Tritium and Deuterium Separation from National Research and Development Institute for Cryogenic and Isotopic Technologies – ICSI Rm. Valcea

Co-Chair of Technical Organizing Committee of the 13th International Conference on Tritium Science and Technology

Florin Buzatu - General Manager of Institute of Atomic Physics (IFA)

DAY 1 – October 17, 2022

08:00 am - 09:00 am **Conference registration**

Official photo of Tritium 2022 conference participants

09:00 am - 10:00 am **SESSION 1. OPENING CEREMONY (ATLAS 1+2)**

Chairmans: **Scott WILLMS**

President of the Steering Committee of International Conference on Tritium Science and Technology
Fuel Cycle Division Leader at ITER Organization

Dr. Mihai VARLAM

General Manager of National Research and Development Institute for Cryogenic and Isotopic Technologies – ICSI Rm. Valcea

Dr. Florin-Dorian BUZATU

General Manager of Institute of Atomic Physics

Guests of honor:

Dr. Sebastian-Ioan BURDUJA

Minister of Research, Innovation and Digitization

Acad. Nicolae-Victor ZAMFIR

Vice-President of Romanian Academy

Dr. Nicolae Marius MĂRGINEAN

General Manager of Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering

Dr. Cristian MIHAILESCU

General Manager of National Institute for Laser, Plasma & Radiation Physics

09:00 am - 09:40 am **Opening Speeches of Tritium 2022 conference**

09:40 am - 10:00 am **“CERNAVODA TRITIUM REMOVAL FACILITY PROJECT STATUS AND PLAN”**

Nicolae TRANTEA, Lead Expert - Cernavoda NPP

10:00 am - 12:00 am **SESSION 2. PLENARY LECTURES (ATLAS 1+2)**

Chairmans: **James E. KLEIN and Seungyon CHO**

10:00 am - 10:40 am **“Progress and Plans for Tritium Processing at ITER”**

Scott WILLMS, Fuel Cycle Division Leader at ITER Organization

10:40 am - 11:20 am **“Overview of Tritium Designs and Development for European DEMO”**

Christian DAY, Head of Department at Karlsruhe Institute of Technology

11:20 am - 12:00 pm **"Scope and Status of the European in-Kind Contribution for the ITER Tritium Processing and monitoring systems"**

Giovanni PIAZZA, Project Manager CP&FC Team/ ITER-D, F4E

12:00 am - 12:20 pm **Coffee break**

12:20 pm - 14:20 pm **SESSION 3. (ATLAS 1+2)**

Chairmans: **Yuji HATANO and Sam SUPPIAH**

12:20 pm - 13:00 pm **“Status and Future of Tritium Laboratory Karlsruhe (TLK)”**

Beate BORNSCHEIN

Head of the Karlsruhe Tritium Laboratory (TLK)

13:00 pm - 13:40 pm **"Progress and Plans for Tritium Research at UKAEA"**
Rachel LAWLESS, Tritium Programme Manager at UKAEA

13:40 pm - 14:20 pm **"SPARC Tokamak Tritium Processing Systems"**
Walter SHMAYDA, University of Rochester, Laboratory for Laser Energetics

14:20 pm - 15:20 pm **Lunch**

15:20 pm - 16:20 pm **SESSION 4. (ATLAS 1+2)**

Chairmans: Christian DAY and Paul CLOESSNER

15:20 pm - 15:40 pm
D1 - A - P1

"Results from the characterization of irradiated JET first wall carbon materials and the implications for tritium retention properties"

A. HOLLINGSWORTH¹, C. HUTSON², I. WILSON¹, S. REYNOLDS¹, A. COOPER¹, E. GARCADIAGO-ORTEGA¹, G. RELA¹, H. SMITH¹, R. BROWN¹, R. MACKENZIE², K. HALLAM², C. JONES², A. EL-TURKI², H. PARASKEVOULAKOS²

¹UKAEA, Culham Science Centre, Abingdon, Oxon, OX14 3DB, UK; ²University of Bristol, Interface Analysis Centre, School of Physics, Bristol, BS8 1QU, UK

15:40 pm - 16:00 pm
D1 - A - P2

"Tritium Opportunities and Technical Roadmap for Fusion Developments Worldwide – CNL and UKAEA view"

Ian CASTILLO¹, Sam SUPPIAH¹, Hugh BONIFACE¹, Stephen STRIKWERDA¹, Donald RYLAND¹, Todd WHITEHORNE¹, Steve WHEELER², Damian BRENNAN², Rachel LAWLESS²

¹Canadian Nuclear Laboratories, 286 Plant Road, Chalk River, Ontario, K0J 1J0, Canada; ²UK Atomic Energy Authority, Culham Science Centre, Abingdon, OX14 3DB, UK

16:00 pm - 16:20 pm
D1 - A - P3

"Application of Hydrogen Fuel Cell Technology to Hydrogen Isotope Separation Processes"

Sam SUPPIAH, Lee GARDNER, Stefan COTOSMAN, Hongqiang LI, Hugh BONIFACE
Canadian Nuclear Laboratories, 286 Plant Road, Chalk River, Ontario, K8A 3C7, Canada

16:20 pm - 16:40 pm **Coffee break**

16:40 pm - 18:00 pm **PARALELL SESSIONS - 5A, 5B, 5C, 5D, 5E.**

16:40 pm - 18:00 pm **SESSION 5A. (ATLAS 1+2)**

Chairmans: Anca MELINTESCU and Florian PRIESTER

16:40 pm - 17:00 pm
D1 - A - P4

"Engineering Design of the Tritium Advanced Technology Facility"

Graham TUCKER¹, Jon BLAKE¹

¹SNC Lavalin Atkins Ltd, The Hub, Aztec West, Bristol, UK

17:00 pm - 17:20 pm
D1 - A - P5

"Design considerations and latest architecture of the EU-DEMO fuel cycle inner loops"

Thomas GIEGERICH¹, Christian DAY¹, Alessia SANTUCCI², Jonas SCHWENZER¹;

¹Karlsruhe Institute of Technology (KIT), Hermann-von-Helmholtz-Platz 1, 76344 Eggenstein-Leopoldshafen, Germany; ²ENEA Frascati, Via E. Fermi 45, 00044 Frascati, Italy

17:20 pm - 17:40 pm
D1 - A - P6

"Hydrogen Ortho para separation by cryogenic distillation"

Robin GROESSLE, Daniel KURZ, Ion CRISTESCU, Stefan WELTE

Institute for Astroparticle Physics, Tritium Laboratory Karlsruhe (IAP-TLK), Karlsruhe Institute of Technology (KIT), Hermann-von-Helmholtz-Platz 1, 76344 Eggenstein-Leopoldshafen, Germany

17:40 pm - 18:00 pm

D1 - A - P7

"Process Modeling of Light and Heavy Water Detritiation Facilities"

David OUELLETTE, Steven YEUNG, Donald RYLAND, Stephen STRIKWERDA, Nirmal GNANAPRAGASAM, Amir Motamed DASHILBORUN, Hugh BONIFACE, Sam SUPPIAH, Ian CASTILLO
Canadian Nuclear Laboratories, 286 Plant Road, Chalk River, ON K0J 1J0, Canada

16:40 pm - 18:00 pm

SESSION 5B. (MEROPE 1+2)

Chairmans:

Mirjana DAMJANOVIC and Shiori HIRATA

16:40 pm - 17:00 pm

D1 - M - P8

"Four years of tritium operation of the KATRIN experiment at TLK"

David HILLESHEIMER, Alexander MARSTELLER, Florian PRIESTER, Marco Röllig, Michael Sturm, Stefan Welte, Johanna Wydra, Lutz Bornschein, Tobias Falke, Tobias Weber, Nancy Tuchscherer, Than-Long Le
Tritium Laboratory Karlsruhe (TLK), Institute for Astroparticle Physics (IAP), Karlsruhe Institute of Technology (KIT), 76344 Eggenstein-Leopoldshafen, Germany

17:00 pm - 17:20 pm

D1 - M - P9

"Current and Future Lawrence Livermore Tritium Facility Capabilities"

Noelle R.CATARINEU, Brandon W. CHUNG, Neil J. ROBERTS, Devin C. BYRNE, Jorge J. SANCHEZ
Lawrence Livermore National Laboratory, 7000 East Avenue, Livermore, CA, 94550, USA

17:20 pm - 17:40 pm

D1 - M - P10

"Tritium Decontamination of Components and Materials at CNL and UKAEA"

Stephen REYNOLDS¹, Steve WHEELER¹, Damian BRENNAN¹, Rachel LAWLESS¹, Ian CASTILLO², Sam SUPPIAH², Todd WHITEHORNE², Don RYLAND², Hugh BONIFACE² and JET Contributors
¹UKAEA, H3AT Department, Culham Science Centre, Abingdon OX14 3DB, United Kingdom, ²Canadian Nuclear Laboratories, 286 Plant Road, Chalk River, Ontario, K0J 1J0, Canada

17:40 pm - 18:00 pm

D1 - M - P11

"Comparison of AWD to CECE For ITER Scale Water Detritiation"

Anthony BUSIGIN^{1/2}, Musharaf RABBANI¹, Haiqin MAO¹, Amy GOTTSCHLING¹, Huw DAVID¹
¹Kinectrics Inc., 800 Kipling Ave, Etobicoke, ON M8Z 5G5, ²NITEK USA Inc., 8439 Leeward Air Ranch CIR, Ocala, FL 34472, U.S.A.

18:20 pm - 18:40 pm

Coffee break

16:40 pm - 18:00 pm

SESSION 5C. (ELECTRA 1+2)

Chairmans:

Johanna WYDRA and Takuji ODA

16:40 pm - 17:00 pm

D1 - E - P12

"Synthesis of Erbium Deuteride and Erbium Tritide by Ion Beam Implantation"

Jon NORTHALL¹, Mark DARBY^{2,3}, Adam COOPER², Anthony HOLLINGSWORTH², Anke WOHLERS², Yevhen ZAYACHUK²
¹AWE, Aldermaston, Reading, RG7 4PR, United Kingdom, ²UKAEA, Culham Science Centre, Abingdon, OX14 3DB, United Kingdom

17:00 pm - 17:20 pm

D1 - E - P13

"Studies concerning Tritium retention in controlled/ uncontrolled W dust morphologies, and with/ without microwave (2.45 GHz) plasma treatments"

Valentina MARASCU¹, Mickael PAYET^{2,3}, Sophie FEUILLASTRE², Gregory PIETERS², Sebastien GARCIA-ARGOTE², Arnaud BULTEL⁴, Aurelien FAVRE⁴, Vincent MERTENS⁵, Frederique MISERQUE⁶, Etienne Augustin HODILLE³, Elodie BERNARD³, Christian GRISOLIA³
¹National Institute for Laser, Plasma and Radiation Physics, RO-077125 Magurele, Romania, ²Université Paris-Saclay, CEA, INRAE, DMTS, SCBM, F-91191 Gif-sur-Yvette, France, ³CEA, IRFM, F-13108 St Paul Lez Durance, France, ⁴CORIA, UMR 6614, Normandy

University, F-76801 Saint-Etienne du Rouvray, France, ⁵CEA Saclay, DRF, IRAMIS, NIMBE, LEDNA, F-91191 Gif-sur-Yvette, France, ⁶CEA Saclay, DES, ISAS, DPC, SCCME, LECA, F-91191 Gif-sur-Yvette, France

17:20 pm - 17:40 pm

D1 - E - P14

"Tritium permeation from/to high temperature, high pressure water through Inconel 600"

Azusa MATSUMOTO¹, Yuji HATANO²

¹Graduate School of Science and Engineering, University of Toyama, Toyama 930-8555, Japan, ²Hydrogen Isotope Research Center, University of Toyama, Toyama 930-8555, Japan

17:40 pm - 18:00 pm

D1 - E - P15

"Recent Progress Towards New Materials for Hydrogen Isotope Separation"

Rosemary BROWN¹, Teuntje TIJSEN¹, Matthew LANGLEY¹, Zoltan KOLLO^{1,2}, Richard WALKER¹, Alessia SANTUCCI³, Anthony HOLLINGSWORTH¹, Marco INCELLI^{3,4}, Xavier LEFEBVRE¹, Andrée DE BACKER¹, and JET Contributors⁵

¹CCFE, Culham Science Centre, Abingdon, Oxon OX14 3DB, UK, ²IST Austria, Am Campus 1, 3400 Klosterneuburg, Austria, ³ENEA FSN-FUSTEC-TEN, C.R. Frascati, via E. Fermi 45, 00044 Frascati (Roma), Italy, ⁴DEIM, University of Tuscia, Via del Paradiso 47, 01100 Viterbo, Italy, ⁵See the author list of X. Litaudon et al 2017 Nucl. Fusion 57 102001

18:20 pm - 18:40 pm

Coffee break

16:40 pm - 18:00 pm

SESSION 5D. (CALEANO 1+2)

Chairmans:

Heena K. MUTHA and Floriane MONTUPET-LEBLOND

16:40 pm - 17:00 pm

D1 - C - P16

"Detritiation and Recovery of Vacuum Pump Fluids for Commercial Fusion Power",

Tyler GUIN, Kori MCDONALD, Benjamin RUIZ-YI, Joseph MEANY, Mark ELVINGTON, Jay GAILLARD, George LARSEN

Savannah River National Laboratory, 301 Gateway Dr, SC, 29803, USA

17:00 pm - 17:20 pm

D1 - C - P17

"Speed of sound measurements for verification of reference gas samples containing tritiated molecules"

Simon NIEMES, James Robert BRAUN

Tritium Laboratory Karlsruhe (TLK), Institute for Astroparticle Physics (IAP), Karlsruhe Institute of Technology (KIT), Hermann-von-Helmholtz-Platz 1, 76021 Karlsruhe, Germany

17:20 pm - 17:40 pm

D1 - C - P18

"The Tritium Migration Analysis Program, Version 8 (TMAP8)"

Paul W. HUMRICKHOUSE¹, Alexander D. LINDSAY², Pierre-Clément A. SIMON²

¹Oak Ridge National Laboratory, 1 Bethel Valley Road, Oak Ridge, TN, 37830, USA,

²Idaho National Laboratory, PO Box 1625, Idaho Falls, ID, 83415, USA

17:40 pm - 18:00 pm

D1 - C - P19

"Can tritium monitoring and control requirements be met by existing technologies?"

Teuntje TIJSEN, Barry BUTLER

CCFE, Culham Science Centre, Abingdon, OX14 3DB, UK

18:20 pm - 18:40 pm

Coffee break

16:40 pm - 18:00 pm

SESSION 5E. (ALCYONE 1+2)

Chairmans:

Elodie BERNARD and Igor PEÑALVA

16:40 pm - 17:00 pm

D1 - AL - P20

"Tritium behavior in water and gas produced by a fully tritium compatible hydrogen generator system"

Carmen VARLAM, Irina VAGNER, Ionut FAURESCU, Anisia BORNEA

National Research and Development Institute for Cryogenics and Isotopic Technologies - ICSI Rm. Valcea, 4 Uzinei Street, PO Box 7 Raureni, Code 240050, Romania

17:00 pm - 17:20 pm

D1 - AL - P21

"Compacted mixed catalytic packing for water detritiation"

Gheorghe IONITA, Gheorghe TITESCU, Nicolae SOFILCA, Ciprian BUCUR
National Research and Development Institute for Cryogenics and Isotopic Technologies -
ICSI Rm. Valcea, 4 Uzinei Street, PO Box 7 Raureni, Code 240050, Romania

17:20 pm - 17:40 pm

D1 - AL - P22

"Measurement of Absorption and Desorption Isotherms of Palladium Hydride Using Various H₂/D₂ Mixtures Between 20°C and 120°C"

Matthew SHARPE*, Walter T. SHMAYDA
Laboratory for Laser Energetics, University of Rochester, 250 East River Road,
Rochester NY, 14623, USA

17:40 pm - 18:00 pm

D1 - AL - P23

"Ball milling – a low cost, high throughput analog for tritium-aging of hydrides?"

George LARSEN, Kirk SHANAHAN, Dustin OLSON, Dale HITCHCOCK, Binod RAI,
Catherine HOUSLEY
Savannah River National Laboratory, Aiken, SC USA

18:20 pm - 18:40 pm

Coffee break

18:40-19:40 pm

SESSION 6. (SEMINAR FOYER+ MAIA+TAYAGETE)

POSTER SESSION 1

D1 - FMT - P1

"Benchmarking Hydrogen Isotope Separation Efficiency of Pd/k Packed TCAP Columns"

Kori MCDONALD, Benjamin RUIZ-YI, Anthony THOMPSON, George LARSEN
Savannah River National Laboratory, 301 Gateway Dr, Aiken, SC, 29803, USA

D1 - FMT - P2

"Experimental investigation of distillation process with low tritiated/deuterated water on hydrophilic package"

Marius ZAMFIRACHE, Anisia Bornea, George Ana, Ciprian Bucur, Ionut Faurescu, Iulia Stefan, Irina Vagner, Carmen Varlam, Felicia Vasut
National Research and Development Institute for Cryogenics and Isotopic Technologies -
ICSI Rm. Valcea, 4 Uzinei Street, PO Box 7 Raureni, Code 240050, Romania

D1 - FMT - P3

"Proton exchange membranes containing monolayer 2D materials for water electrolysis and enhanced hydrogen isotope separation"

Chan Woo PARK^{1*}, Youngho SIHN¹, In-Ho YOON¹
¹Decommissioning Technology Research Division, Korea Atomic Energy Research Institute,
111 Daedeok-Daero 989 Beon-Gil, Yuseong-Gu, Daejeon, 34057, Republic of Korea

D1 - FMT - P4

"Exploiting the Specific Isotope-Selective Adsorption of Metal-Organic Framework for Hydrogen Isotope Separation"

Raees MUHAMMAD, Minji JUNG, Jaewoo PARK, Seulji LEE, Hyunchul OH
Department of Energy Engineering, Gyeongsang National University, Republic of Korea

D1 - FMT - P5

"Thermal Desorption of Hydrogen Isotopes from CHA-type Zeolite"

Akira TAGUCHI*, Takumi NAKAMORI, Yuki YONEYAMA
Hydrogen Isotope Research Center, Univ. Toyama, Gofuku 3190, Toyama 930-8555,
Japan

D1 - FMT - P6

"Extended hypothetical calculation of tritium calorimetry using multi-hydride component system"

S.-H. Yun¹, M. Chang¹, H.-G. Kang¹, D. Chung¹, J.W. Lee¹, P.K. Jung¹, K.J. Jung¹
¹KFE: 169-148 Gwahak-ro, Yuseong-gu, Daejeon, 34133, Korea

D1 - FMT - P7

"A novel approach for tritium process monitoring with hybrid model-based and data-driven approaches"

Eduardo IRAOLA^{1,2}, José M. NOUGUÉS¹, Luis SEDANO³, Lluís BATET²,
¹Inprocess Technology & Consulting Group. Carrer de Pedro i Pons 9, 08034 Barcelona, Spain, ²ETSEIB, Universitat Politècnica de Catalunya BarcelonaTech (UPC). Department of Physics. Diagonal 647, 08028. Barcelona, Spain, ³FUS_ALIANZ Science, Engineering & Consulting. C/ Nord 19, Àtic, 43700. El Vendrell, Tarragona, Spain

- D1 - FMT - P8** **"Detritiation of low-level tritiated water using hydrogen bonded polymer: An experimental and theoretical study"**
 Youngho SIHN¹, Hyungjun KIM², Chan Woo PARK¹, In-ho YOON¹, Hee-Man YANG¹, Ilgook KIM¹
¹Korea Atomic Energy Research Institute, ²Korea Advanced Institute of Science and Technology 111, Daedeok-daero 989 beon-gil, Yuseong-gu, Daejeon, 34057, Republic of Korea
- D1 - FMT - P9** **"Isotope enrichment effects of lithium between liquid metal and chloride molten salt"**
 Ryo ITO¹, Fu NOMOTO¹, Yasuyuki OGINO², Keisuke MUKAI², Juro YAGI²
¹Graduate School of Energy Science, Kyoto University, Uji, Kyoto, 611-0011, Japan, ²Institute of Advanced Energy, Kyoto University, Uji, Kyoto 611-0011, Japan
- D1 - FMT - P10** **"Development of the continuous cooling system for the cathode in the glow discharge-type fusion neutron source"**
 Toshiro SAKABE¹, Yasuyuki OGINO², Keisuke MUKAI², Juro YAGI², 1- Graduate School of Energy Science, Kyoto University, Uji, Kyoto, 611-0011, Japan, 2- Institute of Advanced Energy, Kyoto University, Uji, Kyoto 611-0011, Japan
- D1 - FMT - P11** **"Water Balance and Water Detritiation Requirements in the EU-DEMO Fuel Cycle"**
 Jonas Caspar SCHWENZER¹, Alessia Santucci², Thomas Giegerich¹, Christian Day¹
¹Karlsruhe Institute of Technology (KIT), Hermann-von-Helmholtz-Platz 1, 76344, Eggenstein Leopoldshafen, Germany, ²ENEA, Fusion and Technology for Nuclear Safety and Security Department, Via E. Fermi 45, 00044 Frascati (RM), Italy
- D1 - FMT - P12** **"Evaluation of tritium distribution in Be limiter tiles used in JET ITER-like wall campaigns"**
 S. E. LEE¹, Y. HATANO¹, S. MASUZAKI², Y. OYA³, M. TOKITANI², M. YAJIMA², T. OTSUKA⁴, N. ASHIKAWA², Y. TORIKAI⁵, N. ASAKURA⁶, H. NAKAMURA⁶, H. KUROTAKI⁶, T. HAYASHI⁶, T. NOZAWA⁶, J. LIKONEN⁷, A. WIDDOWSON⁸, M. RUBEL⁹, JET CONTRIBUTORS*
 EUROfusion Consortium, JET, Culham Science Centre, Abingdon, OX14 3DB, UK, ¹University of Toyama, Toyama 930-8555, Japan, ²National Institute for Fusion Science, Toki 509-5292, Japan, ³Shizuoka University, Shizuoka 422-8529, Japan, ⁴Kindai University, Higashiosaka 577-8502, Japan; ⁵Ibaraki University, Mito 310-8512, Japan, ⁶National Institutes for Quantum Science and Technology, Rokkasho 039-3212, Japan; ⁷VTT, Otakaari 3J, P.O. Box 1000, FIN-02044 VTT, Finland; ⁸Culham Centre for Fusion Energy, Culham Science Centre, Abingdon, OX14 3DB, UK, ⁹Royal Institute of Technology (KTH), 100 44 Stockholm, Sweden
- D1 - FMT - P13** **"Tritium Categorization Method of Components and Systems to Drive Requirements and Guidance for the Design and Operation of Tritium Wetted Systems"**
 Robert MICHLING, Ian BONNETT, David DEMANGE, Wataru SHU, Peter SPELLER, Scott WILLMS
 ITER Organization, Route de Vinon-sur-Verdon, CS 90 046, 13067 St Paul Lez Durance Cedex – France
- D1 - FMT - P14** **"Investigating the reaction of nitrogen with uranium deuteride using quadrupole mass spectrometry"**
 Jon NORTHALL¹, Edward NORRIS¹
¹AWE, Aldermaston, Reading, RG7, 4PR, United Kingdom
- D1 - FMT - P15** **"The Development of an Instrument Test Facility for the Evaluation of Gaseous Measurement Techniques for Continuous Tritium Accountancy"**
 Adam COOPER¹, Richard MATHER, Eduardo GARCIADIEGO-ORTEGA, Veronique KAYEM, Sean HAYES, Lyn MCWILLIAM
¹United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, OX14 3DB, United Kingdom
- D1 - FMT - P16** **"Simulations of tritium transport in a vacuum sieve tray and results for extraction efficiency at scales relevant for commercial fusion reactors"**
 Colin BAUS^{1,2}, Yoshifumi KUME², Satoshi KONISHI^{2,3}, Masato TABUCHI², Richard PEARSON²
¹Institute of Advanced Energy, Kyoto University, Uji, Japan, ²Kyoto Fusioneering, Tokyo, Japan, 3- Open Innovation Institute, Kyoto University, Kyoto, Japan

DAY 2 - October 18, 2022

09:00 am - 11:00 am **SESSION 7. PLENARY LECTURES (ATLAS 1+2)**

Chairmans: **Beate BORNSCHEIN and Walter SHMAYDA**

09:00 am - 09:40 am **"Tritium R&D Activities at the Savannah River National Laboratory"**
Paul CLOESSNER
Laboratory Fellow for U.S. Department of Energy's Savannah River National Laboratory (SRNL)

09:40 am - 10:20 am **"Overview of Tritium Activities in Canada"**
Ian CASTILLO, Head of the Hydrogen and Tritium Technologies Directorate for the Canadian Nuclear Laboratories (CNL).

10:20 am - 11:00 am **"Progress and Opportunities for Improving Tritium Technology"**
Anthony BUSIGIN, President at NITEK USA

11:00 am - 11:20 am **Coffee break**

11:20 am - 13:20 pm **SESSION 8. PLENARY LECTURES (ATLAS 1+2)**

Chairmans: **Rachel LAWLESS and Anthony BUSIGIN**

11:20 am - 12:00 pm **"Overview of Tritium Activities in South Korea"**
Seungyon CHO, Director Korea Institute of Fusion Energy

12:00 pm - 12:40 pm **"Classical thermodynamic analysis of Deuterium-based fusion reactions"**
Silvano TOSTI, Head of the laboratory "Nuclear Technologies" - ENEA

12:40 pm - 13:20 pm **"Tritium in Molten Salts"**
Raluca SCARLAT, Assistant Professor, Nuclear Engineering, UC Berkeley

13:20 pm - 14:20 pm **Lunch**

14:20 pm - 16:20 pm **SESSION 9. (ATLAS 1+2)**

Chairmans: **Ian CASTILLO and Anthony HOLLINGSWORTH**

14:20 pm - 14:40 pm
D2 - A - P1 **"Tritium production and neutron activation of 2LiF-BeF₂ (FLiBe) in Fluoride Salt-Cooled High-Temperature Reactors and Fusion Reactor Blankets"**
Lorenzo VERGARI¹, Raluca SCARLAT¹, Massimiliano FRATONI¹
¹University of California Berkeley, Department of Nuclear Engineering, 2521 Hearst Avenue, Berkeley, 94709, USA

14:40 pm - 15:00 pm
D2 - A - P2 **"Impact of irradiation on fuel retention in fusion reactor materials",**
Yuji HATANO¹
¹Hydrogen Isotope Research Center, University of Toyama, Toyama 930-8555, Japan

15:00 pm - 15:20 pm
D2 - A - P3 **"Tritium trapping and release in W materials: impact of tungsten oxide"**
Elodie BERNARD^{1}, Mykola IALOVEGA¹, Russel DOERNER², Mickaël PAYET^{1,3}, Sebastien GARCIA-ARGOTE³, Sophie FEUILLASTRE³, Gregory PIETERS³, Ryuichi SAKAMOTO⁴, Arkadi KRETER⁵, Etienne HODILLE¹, Nathalie HERLIN-BOIME⁷, Marco MINISSALE⁸, Cedric PARDANAUD⁸, Celine MARTIN⁸, Regis BISSON⁸, , Thierry ANGOT⁸ and Christian GRISOLIA¹*
¹IRFM, CEA Cadarache, St Paul lez Durance, 13108 France; ²Center for Energy Research, UCSD, La Jolla, CA, United State; ³CEA, SCBM, Université Paris Saclay, F-91191, Gif-sur-Yvette, France; ⁴National Institute for Fusion Science, Toki, Japan; ⁵Forschungszentrum Jülich GmbH, Jülich, Germany, 7-CEA, IRAMIS UMR NIMBE, Université Paris Saclay, 91191 Gif-sur-Yvette, France, 8-CNRS, Aix-Marseille Univ., PIIM, 13397 Cedex 20 Marseille, France

15:20 pm - 15:40 pm

D2 - A - P4

"Tritium Transport in Materials for Tritium Production"

DJ SENOR, AM CASELLA

Pacific Northwest National Laboratory, 902 Battelle Blvd, Richland, WA, 99352, USA

15:40 pm - 16:00 pm

D2 - A - P5

"Overview of SPARC Tritium Handling and Emissions Management for DT Fusion"

Heena K. Mutha^{1*}, Walter T. Shmayda², Kyle Ryan¹, Adam Kuang³, Christopher Chrobak¹, Matthew Fillion¹, Corinne Mitchell¹

¹Commonwealth Fusion Systems, Cambridge, MA, 02139, USA; ²University of Rochester Lab for Laser Energetics, Rochester, NY, 14623, USA; ³Massachusetts Institute of Technology, Cambridge, MA 02139

16:00 pm - 16:20 pm

Coffee break

16:20 pm - 17:20 pm

PARALELL SESSIONS - 10A, 10B, 10C, 10D, 10E.

16:20 pm - 17:20 pm

SESSION 10 A. (ATLAS 1+2)

Chairmans:

Rosemary BROWN and Max AKER

16:20 pm - 16:40 pm

D2 - A - P6

"Experimental investigation of CECE process to recover tritium and deuterium from low tritiated/deuterated liquid waste"

Anisia BORNEA, George ANA, Ovidiu Balteanu, Diana Bogdan, George Bulubasa, Ciprian Bucur, Ionut Faurescu, Denisa Faurescu, Alina Niculescu, Iulia Stefan, Irina Vagner, Elvis Udrea, Carmen Varlam, Felicia Vasut, Mihai Vijulie, Marius Zamfirache

National R&D Institute for Cryogenics and Isotopic Technologies, Rm.Valcea, Uzinei 4, Romania

16:40 pm - 17:00 pm

D2 - A - P7

"Detritiation of JET Beryllium and Tungsten"

Thomas STOKES¹, Mirjana DAMJANOVIC¹, Joe BERRIMAN¹, Stephen REYNOLDS¹

¹UKAEA, Culham Science Centre, Abingdon, OX14 3DB, United Kingdom

17:00 pm - 17:20 pm

D2 - A - P8

"Oxygen Stream Management in a CECE Process"

Musharaf RABBANI¹, Anthony BUSIGIN^{1/2}, Haiqin MAO¹, Amy GOTTSCHLING¹, Huw DAVID¹,

¹Kinectrics Inc., 800 Kipling Ave, Etobicoke, ON M8Z 5G5; ²NITEK USA Inc., 8439 Leeward Air Ranch CIR, Ocala, FL 34472, U.S.A.

17:20 pm - 17:40 pm

Coffee break

16:20 pm - 17:20 pm

SESSION 10B. (MEROPE 1+2)

Chairmans:

Noelle R.CATARINEU and Jon NORTHALL

16:20 pm - 16:40 pm

D2 - M - P9

"A new lumped-parameter model for the simulation of the mock-up of a PAV Tritium Extraction Unit for the European DEMO reactor"

Aldo COLLAKU¹, Luigi CANDIDO¹, Francesca PAPA², Laura SAVOLDI¹ and Marco UTILI³,

¹Dipartimento Energia "Galileo Ferraris", Politecnico di Torino, Corso Duca degli Abruzzi 24, 10129, Italy, ²DIAEE Department, Sapienza University of Rome, 00186, Rome, Italy, ³ENEA, C.R. Brasimone, 40032 Camugnano (Bo), Italy

16:40 pm - 17:00 pm

D2 - M - P10

"Evaluation of hydrogen isotope retention behavior and impurities deposition for plasma exposed tungsten samples in QUEST"

Shiori Hirata¹, Kyousuke Ashizawa¹, Naoki Yoshida², Kazuaki Hanada², Yasuhisa Oya³

¹Graduate school of Science and Technology, Shizuoka University, Shizuoka 422-8529, Japan, ²Research Institute for Applied Mechanics, Kyushu University, Kasuga, 816-8580, Japan, ³Faculty of Science, Shizuoka University, Shizuoka, 422-8529, Japan

17:00 pm - 17:20 pm

D1 - M - P11

"Refractive Index Measurements of Solid Hydrogen Isotopes"

Jiaqi Zhang¹, Akifumi Iwamoto², Keisuke Shigemori¹, Masanori Hara³, Kohei Yamanoi¹,
¹Institute of Laser Engineering, Osaka university, 2-6 Yamadaoka, Suita, Osaka 565-0871, Japan, ²National Institute for Fusion Science, 322-6 Oroshi, Toki, Gifu 509-5292, Japan, ³Faculty of Science, Academic Assembly, University of Toyama, 3190 Gofuku, Toyama, 930-8555, Japan

17:20 pm - 17:40 pm

Coffee break

16:20 pm - 17:20 pm

SESSION 10C. (ELECTRA 1+2)

Chairmans:

Thomas GIEGERICH and Matthew SHARPE

16:20 pm - 16:40 pm

D2 - E - P12

"High-resolution spectroscopy on tritiated molecular hydrogen"

Valentin HERMANN¹, Magnus SCHLÖSSER¹, Simon NIEMES¹, Benedict ROTHMUND¹, Kin. F. LAI², Meissa L. DIOUF², Frank M. J. COZIEN², Edcel J. SALUMBIDES², Wim UBACHS²
¹Tritium Laboratory Karlsruhe (TLK), Institute for Astroparticle Physics (IAP), Karlsruhe Institute of Technology (KIT), 76344 Eggenstein-Leopoldshafen, Germany; ²Department of Physics and Astronomy, LaserLab, Vrije Universiteit Amsterdam (VU), Netherlands

16:40 pm - 17:00 pm

D2 - E - P13

" μ RA - A new compact easy-to-use Raman system for all hydrogen isotopologues"

Florian PRIESTER, Alexander MARSTELLER
Institute for Astroparticle Physics, Tritium Laboratory Karlsruhe (IAP-TLK), Karlsruhe Institute of Technology (KIT), Hermann-von-Helmholtz-Platz 1, 76344 Eggenstein-Leopoldshafen, Germany

17:00 pm - 17:20 pm

D2 - E - P14

"Characterization of tritiated heavy water using magnetic resonance spectroscopy"

Andi Sebastian CUCOANES, Cristian POSTOLACHE, Daniel NEGUT, Catalin Stelian TUTA
"Horia Hulubei" National Institute for R&D in Physics and Nuclear Engineering (IFIN-HH), 30 Reactorului Street, Magurele, 077125, Romania

17:20 pm - 17:40 pm

Coffee break

16:20 pm - 17:20 pm

SESSION 10D. (CALEANO 1+2)

Chairmans:

George LARSEN and Graham TUCKER

16:20 pm - 16:40 pm

D2 - C - P15

"The effect of co-and counter-permeation on tritium transport in HCPB and WCLL breeding blanket environments"

S.J. HENDRICKS, E. CARELLA, C. MORENO, F.R. URGORRI, J. MOLLA
Ciemat, Av. Complutense 40, 28040, Madrid, Spain

16:40 pm - 17:00 pm

D2 - C - P16

"LIBRA (Liquid Immersion Blanket Rapid Assessment) Experiment"

Sara FERRY¹, Kevin WOLLER¹, Ethan PETERSON¹, Caroline SORENSEN¹, Dennis WHYTE¹
¹Massachusetts Institute of Technology, Plasma Science and Fusion Center (MIT PSFC) 167 Albany St, Cambridge, Massachusetts, USA

17:00 pm - 17:20 pm

D2 - C - P17

"Modeling the PbLi flow including tritium transport and permeation with GETTHEM"

Roberto BONIFETTO¹, Antonio FROIO¹, Fabrizio LISANTI¹, Marco UTILI²
¹NEMO Group, Dipartimento Energia, Politecnico di Torino, c.so Duca degli Abruzzi 24, 10129 Torino, Italy; ²ENEA - Brasimone, Department of Fusion and Nuclear Safety Technology, 40032, Camugnano (BO) - Italy

17:20 pm - 17:40 pm

Coffee break

16:20 pm - 17:20 pm

SESSION 10E. (ALCYONE 1+2)

Chairmans:

Greg STAACK and Paul W. HUMRICKHOUSE

16:20 pm - 16:40 pm

D2 - AL - P18

"APRIL: a new facility for the characterization of anti-permeation coatings for fission and fusion applications"

Francesca PAPA¹, Alessandro VENTURINI², Marco UTILI², Gianfranco CARUSO¹, Mariano TARANTINO²

¹DIAEE Department, Sapienza University of Rome, 00186, Rome, Italy, ²ENEA, Department of Fusion and Nuclear Safety Technology, 40032, Camugnano (BO), Italy

16:40 pm - 17:00 pm

D2 - AL - P19

"The radiological impact assessment of acute tritium releases in environment"

Anca MELINTESCU

"Horia Hulubei" National Institute for Physics and Nuclear Engineering, Department of Environmental Physics and Life, 30 Reactorului St., POB MG-6, Bucharest-Magurele, RO-077125, Romania

17:00 pm - 17:20 pm

D2 - AL - P20

"Process for the determination of EU-DEMO hazardous inventory needed for safety purposes"

Pierre CORTES¹, Joelle ELBEZ-UZAN¹,

¹EUROfusion/DCT, Boltzmannstraße 2, 85748, Garching bei München, Germany

17:20 pm - 17:40 pm

Coffee break

17:40 pm - 18:40 pm

SESSION 11. (SEMINAR FOYER+ MAIA+TAYAGETE)

POSTER SESSION 2

D2 - FMT - P1

"Assessment of He-3 Release from Depleted Uranium Tritide Bed Considering Cyclic Operation Using Empirical Models"

Jae-Uk LEE, Min Ho CHANG, Pil Gap JUNG, Hyun-goo KANG, Dong-you CHUNG, Sei-Hun YUN

Korea Institute of Fusion Energy, Yuseong-gu, Daejeon, 34133, South Korea

D2 - FMT - P2

"Planned operations of the SPARC's Tokamak Exhaust Purification System"

Eric K. DOMBROWSKI¹, Heena K. MUTHA¹, Walter T. SHMAYDA²

¹Commonwealth Fusion Systems, Cambridge, MA, 02139, USA; ²University of Rochester Lab for Laser Energetics, Rochester, NY, 14623, USA

D2 - FMT - P3

"Containment and Detritiation in Balance of Plant Systems"

Owen FRANKLIN¹

¹UKAEA, Culham Science Centre, Abingdon, OX14 3DB, United Kingdom

D2 - FMT - P4

"Organically bound tritium level in plants during growing season and environmental factors influence"

Irina VAGNER, Carmen VARLAM, Ionut FAURESCU

National Institute R&D for Cryogenics and Isotopic Technologies-ICSI, Uzinei Street, no.4, Rm-Valcea, 240050, Romania

D2 - FMT - P5

"Accumulation of organically bound tritium in Komatsuna cultivated in soil containing tritiated water"

Michael PORTUPHY¹, Kazunari KATAYAMA¹, Takahiro MATANO¹, Yutaro WADA¹, Makoto OYA¹

¹Kyushu University, Kasuga, Fukuoka, 816-8580, Japan

D2 - FMT - P6

"Possibilities of reprocessing solid waste with tritium from fusion using high-temperature heating"

Jaroslav STOKLASA¹, Jan HRBEK¹, Lucie ARÁSKOVÁNENADÁLOVÁ¹, Bence MÉSZÁROS¹, Mykhaylo PAUKOV¹

¹Nuclear Fuel Cycle dept., Research Centre Řež, Hlavní 130, Řež, 250 68 Husinec, Czech Republic

D2 - FMT - P7

"Detritiation of the organic material in the MSO process"

Vojtěch GALEK¹, Anna ČERNÁ¹, Petr PRAŽÁK¹, Lucie KARÁSKOVÁ-NENADÁLOVÁ¹
¹Research Centre Řež, Hlavní 130, Husinec - Řež, CZ 250 68, Czech Republic

D2 - FMT - P8

"Tritium extraction from lithium-lead eutectic alloy: experimental results of a Permeator Against Vacuum mock-up at 450°C"

Alessandro VENTURINI, Francesca PAPA, Daniele MARTELLIA, Marco UTILIA
¹ENEA, Fusion and Technology for Nuclear Safety and Security Department, Brasimone Research Centre, 40032 Camugnano, Bologna, Italy, ²DIAEE Department, Sapienza University of Rome, 00186, Rome, Italy

D2 - FMT - P9

"Overview of the current status in tritium battery development, manufacturing and applications"

Ovidiu BALTEANU, Alexandru BADITA, George ANA
National Institute for Research and Development for Cryogenic and Isotopic Technologies ICSI Rm.Valcea

D2 - FMT - P10

"Process Monitor Evaluation Facility"

Sophie DAVIES¹, James O'CALLAGHAN², Walter SHMAYDA³
¹UKAEA, Culham Science Centre, Abingdon, OX14 3DB, United Kingdom, ²UKAEA, Culham Science Centre, Abingdon, OX14 3DB, United Kingdom, ³University of Rochester, Laboratory for Laser Energetics, Rochester, NY, 14623-1299, United States

D2 - FMT - P11

"Activation of Group III and IV Metals for Tritium Absorption"

Clark SNOW¹, Michael BRUMBACH¹, Ryan SCHALIP¹, and Evan OTTESEN¹, 1- Sandia National Labs, Albuquerque, NM 87111, USA

D2 - FMT - P12

"Study on Tritium Permeation from Primary Water Coolant into Secondary Water Coolant for JA-DEMO"

Akito IPPONSUGI¹, Kazunari KATAYAMA¹, Taku MATSUMOTO¹, Shogo IWATA¹, Makoto Oya¹
¹Kyushu University, Kasuga, Fukuoka, 816-8580, Japan

D2 - FMT - P13

"Study on Methods for Suppressing Migration of Tritiated Water in Soil"

Toshiharu TAKEISHI¹, Kazunari KATAYAMA², Michael PORTUPHY²
¹Faculty of Engineering, Kyushu University, 744 Motoooka Nishi-ku, Fukuoka 819-0395, Japan, ²Kyushu University, Kasuga, Fukuoka, 816-8580, Japan

D2 - FMT - P14

"Development of Hybrid Process for Removal of Tritium in Contaminated Water"

Jiyang SO, Doocheol KIM, Seonggeon KIM, Sangwook LEE, Seongjoo KANG, Minho KWAK, Seunqil KIM*
Elim-Global Inc., Bundang Suji U-Tower, 767 Sinsu-ro, Suji-gu, Yongin-si, Gyeonggi-do, 16827, Korea

D2 - FMT - P15

"Analysis of production of fuel tritium for nuclear fusion using HTGR"

Hiroki ISOGAWA¹, Kazunari KATAYAMA², Hideaki MATSUURA³
¹Kyushu University, 6-1 Kasuga Park, Kasuga City, Fukuoka Prefecture, Zip Code: 8168580, Japan; ²Kyushu University, 744 Motoooka, Nishi-ku, Fukuoka City, Fukuoka Prefecture, Zip Code: 8190395, Japan

18:40-20:40 pm International Steering Committee Meeting (Sterope)

DAY 3 – October 19, 2022

08:00 am - 09:00 am SESSION 12 (ATLAS 1+2)

D3 - EA - EP Exhibitors presentation

TECHNICAL VISITS

09:00 am – 13:00 pm Extreme Light Infrastructure - Nuclear Physics (ELI-NP)

**09:00 am – 17:00 pm National Research and Development Institute for Cryogenic and
Isotopic Technologies – ICSI Rm. Valcea**

17:30 pm – 18:00 pm ROMANIAN EVENING REGISTRATION

18:00 pm – 22:00 pm ROMANIAN EVENING - RADISSON BLU BUCHAREST HOTEL

DAY 4 - October 20, 2022

09:00 am – 10:00 am **SESSION 13. PLENARY AND INVITE LECTURES (ATLAS 1+2)**

Chairmans: Raluca SCARLAT and Giovanni PIAZZA

09:00 am - 09:40 am **"TRANSAT and Tritium Technology"**
Christian GRISOLIA

09:40 am - 10:20 am **"R&D activities on tritium technology for ITER and JA DEMO at the Tritium Process Laboratory"**
Yuki EDAO

10:20 am - 11:00 am **"Estimation of tritium behavior in water cooled solid breeder blanket for DEMO"**
Kazunari KATAYAMA

11:00 am - 11:20 pm **Coffee break**

11:20 am - 13:00 pm **SESSION 14. (ATLAS 1+2)**

Chairmans: Christian GRISOLIA and Satoshi KONISHI

11:20 am - 11:40 pm

D4 - A - P1

"Tritium release behaviors in Li₂TiO₃ pebbles with different grain sizes and deuterium permeation in corrosive RAFM steels" - remotely

Qiang Qi^{1}, Chi Wang¹, Yingchun Zhang², Yasuhisa Oya³, Tiecheng Lu⁴, Haishan Zhou¹, Songlin Liu¹, Guang-Nan Luo¹*

¹*Institute of Plasma Physics, HFIPS, Chinese Academy of Sciences, Hefei, 230031, China,*

²*University of Science and Technology Beijing, Beijing 100083, PR China, ³Shizuoka University, 836, Ohya, Suruga-ku, Shizuoka 422-8529, Japan, ⁴College of Physical Science and Technology, Sichuan University, Chengdu, 610064, China*

11:40 pm - 12:00 pm

D4 - A - P2

"Theoretical Investigation of Tritium Distribution in Irradiated Graphite Spheres of High Temperature Gas-Cooled Reactors"

Ziling ZHOU¹, Liuqing CHEN², Yu WANG¹, Jingni GUO¹, Yanwei WEN³, Bin SHAN³, Feng XIE^{1}*

¹*Institute of Nuclear and New Energy Technology, Collaborative Innovation Center of Advanced Nuclear Energy Technology, Key Laboratory of Advanced Reactor Engineering and Safety of Ministry of Education, Tsinghua University, Beijing 100084, China; ²School of Materials Science and Engineering, Wuhan Institute of Technology, Wuhan 430074, Hubei, China; ³State Key Laboratory of Materials Processing and Die and Mould Technology and School of Materials Science and Engineering, Huazhong University of Science and Technology, Wuhan 430074, Hubei, China*

12:00 pm - 12:20 pm

D4 - A - P3

"High-energy tritium ions and α -particles release from the near-surface layer of lithium during neutron irradiation in the nuclear reactor core"

Kuanysh SAMARKHANOV¹, Erlan BATYRBEKOV², Mendykhan KHASENOV^{1,3}, Yuriy GORDIENKO¹, Yuriy PONKRATOV, Yevgeniy TULUBAYEV¹, Vadim BOCHKOV¹

¹*Institute of Atomic Energy Branch of the National Nuclear Center of the Republic of Kazakhstan, 10 Beybit Atom st., 071100, Kazakhstan; ²National Nuclear Center of the Republic of Kazakhstan, 2 Beybit Atom st., 071100, Kazakhstan; ³School of Sciences and Humanities, Nazarbayev University, 53 Kabanbay Batyr Ave., 010000, Kazakhstan*

12:20 pm - 12:40 pm

D4 - A - P4

"Development of Ti-3H target for radioactive isotope physics experiments"

Kenjiro Miki¹, Yuji Hatano², Yuta Utsuki¹, Masanori Hara², Koki Kameya², Nobuaki Imai³, Tomohiro Uesaka⁴, and the RIBF-SHARAQ11 Collaboration

¹*Graduate School of Science, Tohoku University, 6-3, Aramaki, Aza-Aoba, Aoba, Sendai, 980-8578, Japan, ²Hydrogen Isotope Research Center (HRC), University of Toyama, Gofuku 3190, Toyama, 930-8555, Toyama, ³Center for Nuclear Study,*

University of Tokyo, Hirosawa 2-1, Wako, Saitama, 351-0198, Japan; ⁴RIKEN Nishina Center, Hirosawa 2-1, Wako, Saitama, 351-0198, Japan

12:40 pm - 13:00 pm
D4 - A - P5

"Issues on dust particles containing tritium in ITER and DEMO"

Naoko ASHIKAWA^{1,2}

¹National Institute for Fusion Science, Gifu, JAPAN; ²The Graduate University for Advanced Studies, SOKENDAI, Gifu, Japan

13:00 pm - 13:20 pm
D4 - A - P6

"Environmental Behavior of Tritium and Its Impact on the Fusion Demo and Near Term Power Plants"

Satoshi KONISHI¹

¹Kyoto Fusioneering Ltd, 611-0011, Japan, 5-24 Gokasho-hirano, Uji, Kyoto, Japan

13:20 pm - 14:20 pm

Lunch

14:20 pm - 15:40 pm

PARALELL SESSIONS - 15A, 15B, 15C, 15D, 15E.

14:20 pm - 15:40 pm

SESSION 15B. (MEROPE 1+2)

Chairmans:

Musharaf RABBANI and Lorenzo VERGARI

14:20 pm - 14:40 pm
D4 - M - P7

"Development of a theoretical model for the determination of the transport parameters of hydrogen isotopes in eutectic PbLi"

Igor PEÑALVA¹, Gustavo ESTEBAN¹, Natalia ALEGRÍA¹, Jon AZKURRETA¹, María URRESTIZALA¹, Marta MALO², Belit GARCINUÑO², David RAPISARDA²

¹University of the Basque Country (UPV/EHU), Energy Engineering Department, Faculty of Engineering, Plaza Ingeniero Torres Quevedo 1, 48013, Bilbao, Spain; ²CIEMAT, Avda. Complutense 40, 28040, Madrid, Spain

14:40 pm - 15:00 pm
D4 - M - P8

"Characteristics of uranium hydride bed for fusion fuel cycle: Absorption / desorption performance and practical operation test"

Hyun-goo KANG, Dong-you CHUNG, Sei-hun YUN, Pil-Kap JUNG, Jae-UK LEE, Min Ho Chang, Kijung JUNG

Korea Institute of Fusion Energy(KFE), Gwahak-ro, Yuseong-gu, Daejeon, Korea

15:00 pm - 15:20 pm
D4 - M - P9

"Calculation of Solid Hydrogen Properties by Atomistic Simulations"

Takuji Oda¹, Jae-Uk Lee², Min Ho Chang³

¹Seoul National University, 1 Gwanak-ro, Gwanak-gu, Seoul 08826, Republic of Korea, ²Korea Institute of Fusion Energy, Daejeon 34133, Republic of Korea, ³Korea Institute of Fusion Energy, Daejeon 34133, Republic of Korea

15:20 am - 15:40 pm
D4 - M - P10

"Deuterium Stream Management Leaving the LPCE Column in a CECE Process for Heavy Water Detritiation"

Musharaf Rabbani¹, Anthony Busigin^{1/2}, Haiqin Mao¹, Amy Gottschling¹, Huw David¹,

¹Kinectrics Inc., 800 Kipling Ave, Etobicoke, ON M8Z 5G5, ²NITEK USA Inc., 8439 Leeward Air Ranch CIR, Ocala, FL 34472, U.S.A.

15:40 am - 16:00 pm

Coffee break

14:20 pm - 15:40 pm

SESSION 15C. (ELECTRA 1+2)

Chairmans:

Robin GROESSLE and Azusa MATSUMOTO

14:20 pm - 14:40 pm
D4 - E - P11

"Proficiency tests as a tool for laboratory improvement – a view from the other side"

Jasmina KOŽAR LOGAR¹, Paul DOHERTY², AbdulGhani SHAKHASHIRO²

¹Jožef Stefan Institute, Jamova cesta 39, SI-1000 Ljubljana, Slovenia; ²IARMA Limited

14:40 pm - 15:00 pm

D4 - E - P12

"Tritium permeation and inventory in DEMO Eurofer 97 exposed to water"

F. Montupet-Leblond¹, E. Bernard¹, M. Payet¹, S. Vartanian¹, R. Delaporte-Mathurin^{1,2}, J. Mougenot², Y. Charles², E. Hodille¹, C. Grisolia¹

¹CEA, IRFM (DRF), F-13108 Saint-Paul-lez-Durance, France; ²Université Sorbonne Paris Nord, LSPM, CNRS, UPR 3047, F-93430 Villetaneuse, France

15:00 pm - 15:20 pm

D4 - E - P13

"Construction of a test facility and the test of an active tritium permeation barrier"

*Joshua KOHPEIß, Stefan WELTE, Ion CRISTESCU, Nancy TUCHSCHERER
Karlsruhe Institute of Technology (KIT), Institute for Astroparticle Physics, Tritium Laboratory Karlsruhe, Hermann-von-Helmholtz-Platz 1, 76344 Eggenstein-Leopoldshafen, Germany*

15:20 pm - 15:40 pm

D4 - E - P14

"Tritium Aging of Regenerated LANA.75"

Greg STAACK¹, Steve REYNOLDS²

¹Savannah River National Laboratory, Aiken, SC 29808, USA; ²Merrick & Company, Aiken, SC 29803, USA

15:40 am - 16:00 pm

Coffee break

14:20 pm - 15:40 pm

SESSION 15D. (CALEANO 1+2)

Chairmans:

Alexander MARSTELLER and David SENOR

14:20 pm - 14:40 pm

D4 - C - P15

"A Passive System Technical Specification for CANDU 6 Generation II Reactor"

Iulian NITA^{1,2}, Rodica PANCEF^{1,2}

¹RATEN CITON, Atomistilor 409, Magurele, 077215, Ilfov Romania; ²RATEN ICN, Campului 1, POB 78, 115400, Mioveni, Arges, Romania

14:40 pm - 15:00 pm

D4 - C - P16

"ViMA – the spinning rotor gauge to measure the viscosity of tritium between 77 and 300 K"

Johanna WYDRA, Alexander MARSTELLER, Robin GRÖSSLE, Florian PRIESTER, Michael STURM

Institute for Astroparticle Physics, Tritium Laboratory Karlsruhe (IAP-TLK), Karlsruhe Institute of Technology (KIT), Hermann-von-Helmholtz-Platz 1, 76344 Eggenstein-Leopoldshafen, Germany

15:00 pm - 15:20 pm

D4 - C - P17

"Study of hydrogen trapping in bearing steel by Tritium tracer technique"

Mizuki NISHIMURA¹, Sun Eui LEE¹, Yuji HATANO², Kenji MATSUMOTO³

¹Graduate School of Science and Engineering, University of Toyama, Toyama 930-8555, Japan; ²Hydrogen Isotope Research Center, University of Toyama, Toyama 930-8555, Japan; ³Honda R&D, Co. Ltd.

15:20 pm - 15:40 pm

D4 - C - P18

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

Dale HITCHCOCK¹, Timothy KRENTZ¹

¹Savannah River National Laboratory, 301 Gateway Drive South Carolina, USA

15:40 am - 16:00 pm

Coffee break

14:20 pm - 15:40 pm **SESSION 15E. (ALCYONE 1+2)**

Chairmans: Shiori HIRATA and Jiaqi ZHANG

14:20 pm - 14:40 pm
D4 - AL - P19

“Recent Developments of Hydrogen Isotope Separation and Enrichment by the Thermal Cycling Absorption Process at CNL”

Victor PUPKEVICH, David OUELLETTE, David CHERNIAK, Michelle THOMAS, Hugh BONIFACE, Adrian VEGA

Canadian Nuclear Laboratories, 286 Plant Rd., Chalk River, ON, K0J 1J0, Canada

14:40 pm - 15:00 pm
D4 - AL - P20

“The Tritium Window: An Opportunity for Accelerated Fusion Development”

Richard PEARSON^{1,2}, Max KAROUS¹, Colin BAUS^{2,3}, Andrew WILSON¹, Andrea D’ANGIO¹, Satoshi KONISHI^{3,4}, Shutaro TAKEDA^{3,5}

¹Kyoto Fusioneering UK Ltd, 200 Brook Drive, Reading, RG2 6UB, United Kingdom;

²Institute of Advanced Energy, Kyoto University, Uji, Japan; ³Kyoto Fusioneering Ltd, Otemachi Bldg 6th Floor, Chiyoda City, Tokyo, 100-0004, Japan; ⁴Open Innovation Institute, Kyoto University, Kyoto, Japan; ⁵Urban Institute, Kyushu University, Fukuoka, Japan

15:00 pm - 15:20 pm
D4 - AL - P21

“In-situ tritium decontamination of the KATRIN rear wall using a UV/ozone treatment”

Max AKER¹, Michael STURM¹, Florian PRIESTER¹, Simon TIROLF¹, Robin GRÖßLE¹, Alexander MARSTELLER¹, Marco RÖLLIG¹, Magnus SCHLÖSSER¹

¹Institute for Astroparticle Physics, Tritium Laboratory Karlsruhe (IAP-TLK), Karlsruhe Institute of Technology (KIT), Hermann-von-Helmholtz-Platz 1, 76344 Eggenstein-Leopoldshafen, Germany

15:20 pm - 16:00 pm

Coffee break

16:00 pm - 17:00 pm

SESSION 16. (SEMINAR FOYER+ MAIA+TAYAGETE)

POSTER SESSION 3

D4 - FMT - P1

“Investigations of a membrane-coupled temperature swing absorption process for Hydrogen Isotope Separation in the EU-DEMO Fuel Cycle”

A. UIHLEIN, T. GIEGERICH, C. DAY

Karlsruhe Institute of Technology (KIT), Hermann-von-Helmholtz-Platz 1, 76344 Eggenstein-Leopoldshafen, Germany

D4 - FMT - P2

“Estimation of the effective pumping speed for deuterium and tritium of the Linear Diffusion Pumps in the EU-DEMO torus exhaust vacuum pumping system”

Tim TEICHMANN, Xueli LUO, Thomas GIEGERICH, Christian DAY

Institute for Technical Physics, Karlsruhe Institute of Technology, Hermann-von-Helmholtz-Platz 1, 76344 Eggenstein-Leopoldshafen, Germany

D4 - FMT - P3

“Investigations on He-3 – Hydrogen Isotopes Separation Employing Pd/Ag Membranes”

Gheorghe BULUBASA, Alina NICULESCU, George ANA, Iuliana STEFAN, Ciprian BUCUR

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

D4 - FMT - P4

“Integration of a micro-channel reactor in a CECE process for H₂ removal from the O₂ stream produced by the H₂ generator”

Alina NICULESCU, Gheorghe BULUBASA, George ANA, Anisia BORNEA

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

D4 - FMT – P5	<p>“Tritium compatible hydrogen generator construction” George ANA, Ovidiu BALTEANU, Ciprian BUCUR, Iuliana STEFAN, Alina NICULESCU, George BULUBASA National Research and Development Institute for Cryogenics and Isotopic Technologies – ICSI Rm. Valcea, Uzinei Street No. 4, Rm. Valcea, 240050, Romania</p>
D4 - FMT – P6	<p>“Enhancement of thermal conduction for the welded condenser of a cryogenic distillation column for hydrogen isotopes separation” Catalin BRILL, Sebastian BRAD, Claudia BOGDAN, Alin LAZAR, Mihai VIJULIE, Oleksandr SIROSH National Research and Development Institute for Cryogenics and Isotopic Technologies – ICSI Rm. Valcea, Uzinei Street No. 4, Rm. Valcea, 240050, Romania</p>
D4 - FMT – P7	<p>“Experimental study on vapor adsorption and desorption using ambient molecular sieve” Seok-Kwon Son¹, Chang Wook Shin², Soon Chang Park¹, Youngmin Lee¹, Mu-Young Ahn^{1*}, Seungyon Cho¹ ¹Korea Institute of Fusion Energy, Daejeon, KS015, Republic of Korea, ²Korea Atomic Energy Research Institute, Daejeon, KS015, Republic of Korea</p>
D4 - FMT – P8	<p>“Instrumentation & control for tritium compatible hydrogen generator” Ovidiu BALTEANU, Iuliana STEFAN, Ciprian BUCUR, George ANA National Research and Development Institute for Cryogenics and Isotopic Technologies – ICSI Rm. Valcea, Uzinei Street No. 4, Rm. Valcea, 240050, Romania</p>
D4 - FMT – P9	<p>“Experimental tests on the permeation of deuterium through nickel membrane” Nicolae BIDICA, Narcisa GHIMIS, Bogdan MONEA National Research and Development Institute for Cryogenics and Isotopic Technologies – ICSI Rm. Valcea, Uzinei Street No. 4, Rm. Valcea, 240050, Romania</p>
D4 - FMT – P10	<p>“Hydride bed performance: Juxtaposition of LANA85 and LANA75 hydride bed absorption rates, capacity, and operational capabilities” R.A. MacDonald¹, P. J. Foster¹, Z. J. Trotter¹, J. E. Klein², G. C. Staack² ¹Savannah River Nuclear Solutions, Aiken, SC, U.S.A.; ²Savannah River National Laboratory, SC, U.S.A.</p>
D4 - FMT - P11	<p>“Plasma-Driven Permeation with Noble Gas Admixtures” Yannick KATHAGE¹, Alejandro VAZQUEZ-CORTES¹, Stefan HANKE¹, Christian DAY¹, Thomas GIEGERICH¹ ¹Karlsruhe Institute of Technology, ITEP, Hermann-von-Helmholtz-Platz 1, Eggenstein-Leopoldshafen, 76344, Germany</p>
D4 - FMT - P12	<p>“Tritium Ingress Depth Study in Fusion Relevant Materials” James O’CALLAGHAN¹, Walter SHMAYDA², Anthony HOLLINGSWORTH³, Matthew SHARPE⁴, Ali MANSOURIAN⁵ ¹UKAEA, Culham Science Centre, Abingdon, OX14 3DB, United Kingdom; ²University of Rochester, Laboratory for Laser Energetics, Rochester, NY, 14623-1299, United States; ³UKAEA, Culham Science Centre, Abingdon, OX14 3DB, United Kingdom; ⁴University of Rochester, Laboratory for Laser Energetics, Rochester, NY, 14623-1299, United States; ⁵UKAEA, Culham Science Centre, Abingdon, OX14 3DB, United Kingdom</p>
D4 - FMT - P13	<p>“The generation and analysis of tritium-substituted methane” Deseada DÍAZ BARRERO^{1,*}, Thanh-Long LE², Simon NIEMES², Stefan WELTE², Magnus SCHLÖSSER^{2,*}, Beate BORNSCHEIN², Helmut H. TELLE¹ ¹Departamento de Química Física Aplicada, Universidad Autónoma de Madrid, 28049 Madrid, Spain; ²Tritium Laboratory Karlsruhe (TLK), Institute for Astroparticle Physics (IAP), Karlsruhe Institute for Technology (KIT), 76021 Karlsruhe, Germany</p>
17:30 pm - 18:00 pm	FESTIVE DINNER REGISTRATION (ATLAS FOYER)
18:00 pm - 23:00 pm	CONFERENCE FESTIVE DINNER (ATLAS 1+2)

DAY 5 - 21 October 2022

09:40 am - 11:00 am **SESSION 17. (ATLAS 1+2)**

Chairmans: Jasmina KOŽAR LOGAR and Max AKER

09:40 am - 10:00 am **Tritium 2025**

10:00 am - 10:20 am
D5 - A - P1

"Evaluation of Environmental Tritium Levels Around Cernavoda Nuclear Power Plant After 25 Years of Operation"

Simona ZAHAROV¹, Alexandru Emilian NEDELICU¹, Liliana Aurelia SAMSON¹
¹SNN-Cernavoda NPP, Medgidiei Street no. 2, Cernavoda, 905200, Romania

10:20 am - 10:40 am
D5 - A - P2

"Hydrogen isotope effect on plasma driven permeation for neutron damaged W"

Yasuhisa Oya¹, Kyosuke Ashizawa¹, Shiori Hirata¹, Fei Sun², Naoko Ashikawa³, Masashi Shimada⁴, Chase N. Taylor⁴, Robert Kolasinski⁵, Lauren Garrison⁶, Yuji Hatano⁷, Yoji Someya⁸

¹Shizuoka University, 836 Ohya, Suruga-ku, Shizuoka 422-8529 Japan; ²Hefei University of Technology, Hefei, Anhui, China; ³National Institute for Fusion Science, Gifu, Japan; ⁴Idaho National Laboratory, Idaho Falls, ID, USA; ⁵Sandia National Laboratories, Livermore, CA, USA; ⁶Oak Ridge National Laboratory, Oak Ridge, TN, USA; ⁷University Toyama, Toyama, JAPAN; ⁸National Institutes for Quantum Science and Technology, Aomori, Japan

10:40 am - 11:00 am
D5 - A - P3

"The measurement of hydrogen fluxes while forming tungsten deposition layer and the observation of microstructure"

Kentaro MASUTA¹, Yuki HARA¹, Makoto OYA¹, Naoaki YOSHIDA¹, Kazunari KATAYAMA¹

¹Kyushu University, Kasuga, Fukuoka, 816-8580, Japan

11:00 am - 11:20 am
D5 - A - P4

"Design, Fabrication and Test of a Prototype of Matrix Heat Exchanger for Cryogenic Distillation of Hydrogen Isotopes"

Claudia BOGDAN¹, Sebastian BRAD¹, Horia NECULA², Mihai VIJULIE¹, Alin LAZAR¹, Oleksandr SIROSH¹, Catalin BRILL¹

¹National Research and Development Institute for Cryogenics and Isotopic Technologies – ICSI Rm. Valcea, 4 Uzinei Street, P.O. Box Raureni 7, 240050, Rm. Valcea, Romania; ²Faculty of Power Engineering, University Politehnica of Bucharest, 313 Splaiul Independentei, 060042, Bucharest, Romania

11:20 am - 11:40 am
D5 - A - P5

"New achievements of H₂-HD-D₂ isotopic separation with the cryogenic distillation experimental stand from ICSI Cryogenic Laboratory"

Sebastian BRAD, Mihai VIJULIE, Alin LAZAR, Claudia BOGDAN, Oleksandr SIROSH, Catalin BRILL

National Research and Development Institute for Cryogenics and Isotopic Technologies – ICSI Rm. Valcea, 4 Uzinei Street, P.O. Box Raureni 7, 240050, Rm. Valcea, Romania

11:40 pm – 12:00 pm **Coffee break**

12:00 pm – 13:00 pm **Closing Ceremony**