

8th International Conference on Tritium Science and Technology

September 16 through 21, 2007

Hyatt Regency Rochester
Rochester, New York

PROGRAM

Updated 28 September 2007 to reflect actual meeting program

Sunday, September 16, 2007, 6:00 PM

REGISTRATION 6:00–8:00 PM (Outside Grand Ballroom)

Registration and Reception

We will have an open bar with hors d'oeuvres

Monday, September 17, 2007, 8:30 AM

7:30AM–8:30AM (Outside Grand Ballroom)

Continental Breakfast

PLENARY 8:30AM–12:00PM (Grand Ballroom)

M. Nishikawa and D. Green (Chairs)

- 8:30 Introduction and Welcome
R. McCrory, M. Nishikawa, and W. Shmayda
- 9:00 1 Recent Progress in ITER Tritium Plant Systems Design and Layout (*Invited*)
M. Glugla (Forschungszentrum Karlsruhe GmbH), S. Beloglazov, B. Carlson, S. Cho, I.-R. Cristescu, I. Cristescu, H. Chung, J.-P. Girard, D. Green, T. Hayashi, D. Murdoch, A. Perevezentsev, W. Shu, K.-M. Song, E. Tada, C. Taylor, S. Willms, T. Yamanishi
- 9:30 2 Tritium Activities in Canada (*Invited*)
J. Miller (AECL)
- 10:00 Coffee Break
- 10:30 3 Tritium Issues in PWR Reactors (*Invited*)
G. Jones (Constellation Energy)
- 11:00 4 (was 33) The Use of Tritium in Pharmaceutical Research and Development (*Invited*)
L. E. Weaner (Johnson & Johnson Pharmaceutical Research and Development LLC)
- 11:30 5 Tritium Researches Under Broader Approach Program in the ITER Project (*Invited*)
T. Yamanishi (Japan Atomic Energy Agency), T. Hayashi, W. Shu, Y. Kawamura, H. Nakamura, Y. Iwai, K Kobayashi, and K. Isobe
- 12:00 Lunch on own

ITER 1:15PM–3:15PM (Grand Ballroom)

M. Glugla and T. Yamanishi (Chairs)

- 1:15 6 Tritium in Fusion: R&D in the EU (*Invited*)
R. Lässer (EFDA Close Support Unit), A. Antipenkov, N. Bekris, L. Boccaccini, C. J. Caldwell-Nichols, P. Coad, I. Cristescu, M. Gasparotto, M. Glugla, G. Del-Orco, O. Gastaldi, Ch. Grisolia, S. Knipe, A. J. Magielsen, A. Möslang, D. Murdoch, R. Pearce, A. Perevezentsev, G. Piazza, Y. Poitevin, I. Ricapito, J.-F. Salavy, and M. Zmitko
- 1:45 7 ITER Design Review; Tritium Issues (*Invited*)
D. Murdoch (EFDA Close Support Unit), S. Beloglazov, P. Boucquey, H. Chung, M. Glugla, T. Hayashi, A. Perevesentsev, K. Sessions, and C. Taylor
- 2:15 8 Savannah River National Laboratory's Role in Supplying ITER with Tritium Processing Equipment
D. Green (Savannah River National Laboratory), S. Willms, and B. Rogers
- 2:35 9 Uncertainty Assessment and Analysis of ITER IN-VV Tritium Inventory Determination
Ioanna Cristescu (Forschungszentrum Karlsruhe GmbH), I. Cristescu, M. Glugla, D. Murdoch, and S. Ciattaglia
- 2:55 10 Tritium Transfers Evaluation on ITER HCLL TBM
O. Gastaldi (CEA Cadarache), P. Aizes, F. Gabriel, J. F. Salavy, and L. Giancarli
- 3:15 Break

ENVIRONMENT 3:45PM–5:35PM (Grand Ballroom)

P. Guetat and T. Uda (Chairs)

- 3:45 11 Tritium Radioecology and Dosimetry—Today and Tomorrow (*Invited*)
D. Galeriu (National Institute for Physics and Nuclear Engineering “Horia Hulubei”), P. Davis, W. Raskob, and A. Melintescu
- 4:15 12 Environmental and Radiological Impact of Accidental Tritium Release
L. Patryl (CEA) and P. Guetat
- 4:35 13 Determination of Non Exchangable-Organically Bound Tritium Fraction in Tree Leaf Samples Collected Around A Nuclear Research Center
N. Baglan (CEA), R. Le Meignen, G. Alanic, and F. Pointurier
- 4:55 14 Tritium in Municipal Solid Waste Leachate
R. Mutch, Jr. (HydroQual, Inc), J. Mahony, P. Paquin, and J. Cleary
- 5:15 15 Tritium Release Reduction and Radiolysis Gas Formation
C. Douche (CEA Valduc)

POSTER SESSION 1 5:40PM–7:40PM (Regency Ballroom) S. Konishi, A. Antoniazzi, and E. Magomedbekov (Chairs)

- P1-1 Darlington Tritium Removal Facility and Station Upgrading Plant Dynamic Process Simulation
Presented by A. Busigin (NITEK USA, Inc.)
- P1-3 Tritium Processing Loop for KATRIN Experiment
Presented by O. Kazachenko (Forschungszentrum Karlsruhe GmbH)
- P1-4 Tritium Processing Tests for the Validation of Upgraded PERMCAT Mechanical Design
Presented by D. Demange (Forschungszentrum Karlsruhe GmbH)
- P1-5 STAR Facility Status and Future Plans
Presented by J. P. Sharpe (Idaho National Laboratory)
- P1-6 STAR Facility Tritium Accountancy
Presented by J. P. Sharpe (Idaho National Laboratory)
- P1-8 Recovery of Tritium Dissolved in Sodium at the Steam Generator of Fast Breeder Reactor
Presented by Y. Oya (Shizuoka University)
- P1-9 Research Program on Tritium Control Methods in the Super Critical CO₂ Gas Cooling Reactors
Presented by H. Nakamura (Japan Atomic Energy Agency)
- P1-10 Concerns on Tritium Confinement and Atmosphere Detritiation Systems in ITER Tritium Building
Presented by M. Porfiri (ENEA FPN-FUSTEC)

- P1-11 The Levels of Atmospheric Tritium Concentrations in Toki, Japan
Presented by T. Uda (National Institute for Fusion Science)
- P1-12 Tritium Level Along Romanian Black Sea Coast
Presented by C. Varlam (ICSI)
- P1-13 HTO and OBT Concentrations in a Wetland Ecosystem
Presented by S. B. Kim (AECL)
- P1-14 Darlington Tritium Removal Facility Environmental Tritium Emissions Reduction Using a Bubbler System
Presented by A. Leilabadi (OPGN)
- P1-15 Organically-Bound Tritium in the Environment: First Investigation of Environmental Survey in the Vicinity of a French Research Centre
Presented by L. Vichot (CEA)
- P1-16 Tritium in Precipitation in the Vicinity of Stacks at Canadian Nuclear Facilities
Presented by S. Mihok (Canadian Nuclear Safety Commission)
- P1-18 Tritium Transfer in Large Farm Animals—A Model Test
Presented by A. Melintescu (National Institute for Physics and Nuclear Engineering “Horia Hulubei”)
- P1-19 Experimental Investigation of Buried Tritium in Plant and Fish Tissues
Presented by S. B. Kim (AECL)
- P1-20 Tritium Concentration in the Air at Rokkasho, Aomori Before Full Operation of the Nuclear Fuel Reprocessing Plant
Presented by H. Kakiuchi (Institute for Environmental Sciences)
- P1-21 Tritium Safety Study Using Caisson Assembly (CATS) at TPL/JAEA
Presented by T. Hayashi (Japan Atomic Energy Agency)
- P1-22 Historical Doses to the Public from Routine and Accidental Releases of Tritium—Lawrence Livermore National Laboratory, 1953-2005
Presented by S. R. Peterson (Lawrence Livermore National Laboratory)
- P1-23 Background Tritium Concentrations of River and Lake Waters in Japan
Presented by N. Momoshima (Kyushu University)
- P1-24 Seasonal Variability of Tritium and Ion Concentrations in Rain at Kumamoto, Japan and Back-Trajectory Analysis of Air Mass
Presented by N. Momoshima (Kyushu University)
- P1-25 Validation of Environmental Transfer Model of Tritium Using Pine Tree Scenario
Presented by K. Miyamoto (National Institute of Radiological Sciences)
- P1-26 Development and Validation of a Model for Tritium Uptake by a Fresh-Water Bivalve Using the IAEA EMRAS Scenario
Presented by K. Miyamoto (National Institute of Radiological Sciences)

- P1-27 Tritium Behavior Intentionally Released in the Room
Presented by K. Kobayashi (Japan Atomic Energy Agency)
- P1-28 Evaluation of Different Chemical Form of Tritium in Normal Condition in an Internal Regenerator Cycle of the Demo Reactor of Fusion
Presented by M. Velarde (Universidad Politécnica Madrid)
- P1-29 Prediction of the Safety Level to an Installation of the Tritium Process Through Predictive Maintenance
Presented by V. Anghel (ICSI)
- P1-30 Tritium Confinement, Retention and Releases at the Tritium Laboratory Karlsruhe
Presented by U. Besserer (Forschungszentrum Karlsruhe GmbH)
- P1-31 Operation Results on Safety Systems of Tritium Processing Laboratory in Japan Atomic Energy Agency
Presented by T. Yamanishi (Japan Atomic Energy Agency)
- P1-32 Study on Correlation Between Tritium Release Behavior and Annihilation Behavior of Irradiation Defects in Neutron-Irradiated Li_4SiO_4
Presented by H. Ishikawa (Shizuoka University)
- P1-33 Solubility, Diffusivity and Isotopic Exchange Rate of Hydrogen Isotopes in Li-Pb
Presented by Y. Maeda (Kyushu University)
- P1-34 Experimental Study on Electrochemical Hydrogen Pump of SrZrO_3 -Base Oxides
Presented by M. Tanaka (National Institute for Fusion Science)
- P1-35 The Effect of Water on Tritium Release Behavior From Solid Breeder Candidates
Presented by K. Suematsu (Kyushu University)
- P1-36 Measurement and Quality Control for the Deuterium-Tritium Fuel Mix in NIF Ignition Targets
Presented by J. J. Sanchez (Lawrence Livermore National Laboratory)
- P1-37 Post Service Examination of a Tritium Permeator and a Turbomolecular Pump from the CAPER Facility at the Tritium Laboratory Karlsruhe
Presented by C. J. Caldwell-Nichols (Forschungszentrum Karlsruhe GmbH)
- P1-38 LLE High Pressure DT Fill Process Control System
Presented by T. Duffy (University of Rochester)
- P1-39 Deuterium-Tritium Exchange in the Ready Targets from Compounds of Light Element with Deuterium
Presented by Yu. A. Merkuliev (Lebedev Physical Institute)
- P1-40 Tritium Ageing Studies for <<LMJ Target>> Applications
Presented by F. Bachelet (CEA Valduc)

- P1-41 Laser Megajoule Safety Issues
Presented by S. Dubost (CEA CESTA)
- P1-42 Particle Detection Using Tritiated Amorphous Silicon
Presented by B. Liu (University of Pittsburgh)
- P1-43 Advancing Fueling System for Steady-State Operation of a Fusion Reactor
Presented by R. Raman (University of Washington)
- P1-44 Detritiation of JET Tiles by Laser Cleaning
Presented by A. Widdowson (EURATOM/UKAEA Fusion Association)

Tuesday, September 18, 2007, 8:25 AM

7:30AM–8:30AM (Outside Grand Ballroom)

Continental Breakfast

BLANKETS 8:25AM–11:50AM (Grand Ballroom)

K. Okuno and D. Murdoch (Chairs)

- 8:25 Announcements
W. Shmayda
- 8:30 16 A Review of Tritium Related Issues on Liquid Breeder and Power Reactor Blankets
(Invited)
S. Konishi (Kyoto University)
- 9:00 17 Tritium Extraction Systems for the European HCLL/HCPB TBMs
I. Ricapito (ENEA FPN-FISING), A. Ciampichetti, G. Benamati, and M. Zucchetti
- 9:20 20 Influence of Oxygen on Permeation of Hydrogen Isotopes Through Group 5 Metals
Y. Hatano (University of Toyama), A. Busnyuk, V. Alimov, A. Livshits, and M. Matsuyama
- 9:40 21 Experiment of Recovery of Tritium from Li by Y and Design of Tritium Trap
S. Fukada (Kyushu University), Y. Maeda, and Y. Edao
- 10:00 Coffee Break
- 10:30 22 Technique for Measurement of Tritium Production Rate in a Blanket with Li_2O Pebble Bed
Y. Verzilov (Kinectrics Inc.), S. Sato, K. Ochiai, and T. Nishitani
- 10:50 23 Characteristics of Tritium Release Behavior from Solid Breeder Materials
T. Kinjyo (Kyushu University), M. Nishikawa, N. Yamashita, T. Koyama, K. Suematsu, S. Fukada, and M. Enoeda
- 11:10 P3-41 Thermal Detritiation of Plutonium
J. R. Wermer (Los Alamos National Laboratory)
- 11:30 Lunch on own

ICF 1:15PM–4:55PM (Grand Ballroom)

S. Willms and B. Borschein (Chairs)

- 1:15 24 Overview of the National Ignition Facility (Invited)
E. I. Moses (Lawrence Livermore National Laboratory)
- 1:45 25 Tritium Facilities for the LMJ Cryogenic Target
E. Fleury (CEA Valduc), R. Collier, O. Legaie, G. Pascal, O. Vincent-Viry, J-L. Dupont, J-P. Perin, and F. Viargues
- 2:05 26 Developing the Science and technologies for Laser Fusion Energy (Invited)
J. Sethian (Naval Research Laboratory)
- 2:35 27 IFE Power Reactor Fuel Recovery System
C. A. Gentile (Princeton University), T. Kozub, S. W. Langish, L. P. Ciebiera, K. Sessions, and J. Wermer

- 2:55 28 Tritium Management on OMEGA at the Laboratory for Laser Energetics
W. T. Shmayda (University of Rochester), S. J. Loucks, R. T. Janezic, G. P. Wainwright,
and T. Duffy
- 3:15 29 Overview of Recent Tritium Target Filling, Layering, and Material Testing at Los Alamos
National Laboratory
P. S. Ebey (Los Alamos National Laboratory), J. M. Dole, D. A. Geller, J. K. Hoffer, J.
Morris, A. Nobile, J. R. Schoonover, D. Wilson, M. Bonino, D. Harding, C. Sangster,
W. Shmayda, A. Nikroo, J. D. Sheliak, J. Burmann, R. Cook, S. Letts, and J. Sanchez
- 3:35 Break
- CECE 4:05PM–5:05PM (Grand Ballroom) M. Rogers and J. Klein (Chairs)**
- 4:05 30 Experiments on Water Detritiation and Cryogenic Distillation at TLK; Impact on ITER Fuel
Cycle Subsystems Interfaces
I. Cristescu (Forschungszentrum Karlsruhe GmbH), Ioana R. Cristescu, L. Dörr, G.
Hellriegel, R. Michling, P. Schaefer, S. Welte, and W. Wurster
- 4:25 31 Operation of a 2 Mg/year Heavy Water Detritiation Plant
W. T. Shmayda (University of Rochester), C. R. Shmayda, and R. D. Gallagher
- 4:45 32 Method to Test Isotopic Separation Efficiency of Palladium Packed Columns
L. K. Heung (Savannah River National Laboratory), G. C. Staack, J. E. Klein, and W. D.
Jacobs

POSTER SESSION 2 5:00PM–7:00PM (Regency Ballroom) J. Chêne, P. Sharpe, and T. Tanabe (Chairs)

- P2-1 Application of Membrane Dehumidifier for Gaseous Tritium Recovery in LHD
Presented by Y. Asakura (National Institute for Fusion Science)
- P2-2 Catalyst Stripper Reactor Testing
Presented by W. D. Jacobs (Savannah River National Laboratory)
- P2-3 Accounting Strategy of Tritium Inventory in the Heavy Water Detritiation Pilot Plant from
ICIT Rm. Valcea
Presented by N. Bidica (ICSI)
- P2-4 Improvement of PNPI Experimental Industrial Plant Based on CECE Process for Heavy
Water Detritiation
Presented by S. D. Bondarenko (Petersburg Nuclear Physics Institute)
- P2-5 Water-Hydrogen Isotope Exchange Process Analysis
Presented by O. Fedorchenko (Petersburg Nuclear Physics Institute)
- P2-6 Dynamic Behavior of Chemical Exchange Column in a Water Detritiation System for a
Fusion Reactor
Presented by T. Yamanishi (Japan Atomic Energy Agency)
- P2-7 Solid-Polymer-Electrolyte Tritiated Water Electrolyzer for Water Detritiation System
Presented by Y. Iwai (Japan Atomic Energy Agency)
- P2-8 Effect of Cation on HTO/H₂O Separation and Dehydration Characteristics of Y-type
Zeolite Adsorbent
Presented by Y. Iwai (Japan Atomic Energy Agency)

- P2-9 Separation Setup for the Light Water Detritiation Process in the Water-Hydrogen System Based on the Membrane Contact Devices
Presented by I. L. Rastunova (Mendeleev University of Chemical Technology of Russia)
- P2-10 Johnson-Matthey Diffuser Characterization Testing
Presented by P. J. Foster (Savannah River National Laboratory)
- P2-11 Flow Analysis of Diffuser-Getter-Diffuser Systems
Presented by J. E. Klein (Savannah River National Laboratory)
- P2-12 Hydrogen Isotope Recovery Using Proton Exchange Membrane Electrolysis (PEME) of Water
Presented by E. B. Fox (Savannah River National Laboratory)
- P2-13 Recombination of Hydrogen and Oxygen in Fluidized Bed Reactor with Different Gas Distributors
Presented by S. Ge (China Academy of Engineering Physics)
- P2-14 Behavior of Solid Polymer Membrane Electrolyzers in Use with Highly Tritiated Water
Presented by R. Michling (Forschungszentrum Karlsruhe GmbH)
- P2-15 Generator of Tritiated Hydrogen
Presented by C. Postolache (National Institute for Physics and Nuclear Engineering “Horia Hulubei”)
- P2-16 High-Pressure and High-Temperature Tritium Apparatus for the Exposure of Semiconductor Wafers
Presented by A. B. Antoniazzi (Kinectrics Inc.)
- P2-17 Determination of Distribution of Tritium in Labeled Compounds by EPR Spectrometry
Presented by C. Postolache (National Institute for Physics and Nuclear Engineering “Horia Hulubei”)
- P2-18 Synthesis of Labeled Compounds Using Recovered Tritium by Expired Beta Light Sources
Presented by L. Matei (National Institute for Physics and Nuclear Engineering “Horia Hulubei”)
- P2-19 Screening Tests for Improved Methane Cracking Materials
Presented by J. E. Klein (Savannah River National Laboratory)
- P2-20 Extended Regeneration Testing of the TWTS Molecular Sieve Beds at the Weapons Engineering Tritium Facility
Presented by M. L. Bibeault (Los Alamos National Laboratory)
- P2-21 Certification Testing of Quality Secondary Storage Containers
Presented by M. L. Bibeault (Los Alamos National Laboratory)
- P2-22 Integrated Process Gas Modeling for Tritium Systems at the Savannah River Site
Presented by A. S. Poore (Savannah River National Laboratory)
- P2-23 Estimation of Tritium and Helium Inventory in the Tritium Handling System in Korea
Presented by D. Yook (KAIST)
- P2-24 Korea’s Activities for the Development of ITER Tritium Storage and Delivery Systems
Presented by H. Chung (Korea Atomic Energy Research Institute)
- P2-25 Interim Storage for Tritiated Wastes
Presented by C. Douche (CEA Valduc)

- P2-26 A Micro-Gas Phase Chromatography with Recompression System Used to Measure Impurities in Low Pressure Tritiated Gases
Presented by A. Godot (CEA Valduc)
- P2-27 Decontamination of Tritiated Stainless Steel via Thermal Desorption
Presented by M. Quinlan (University of Rochester)
- P2-28 Behavior of Nafion Perfluorosulfonate Ionomer Membranes in Presence of Tritiated Water
Presented by L. Matei (National Institute for Physics and Nuclear Engineering “Horia Hulubei”)
- P2-31 Study of the Phenomenon of Hydrogen Isotope Superpermeation Through a Vanadium Membrane at “Prometheus” Setup
Presented by R. K. Musyaev (RFNC-VNIIEF)
- P2-32 Tritium Release from Ferritic and Austenitic Stainless Steels
Presented by T. Otsuka (Kyushu University)
- P2-33 Influence of Hydrogen Distribution on Mechanical Properties of Vanadium Alloy
Presented by H. Homma (University of Toyama)
- P2-34 Hydrogen Permeation Through Steel Coated with Silicon Carbide
Presented by Z. Yao (University of Tokyo)
- P2-35 Hydrogen Incorporation into Re-Deposition Layers Formed from Type 316 Stainless Steel
Presented by Y. Uchida (Kyushu University)
- P2-36 Experimental Stand for Studies of Hydrogen Isotopes Permeation
Presented by S. Brad (ICSI)
- P2-37 Observation of Tritium Distribution in Iron Oxide with Tritium Micro Autoradiography
Presented by K. Isobe (Japan Atomic Energy Agency)
- P2-38 Monte Carlo Simulation on Tritium Permeation Through Steels
Presented by T. Oda (University of Tokyo)
- P2-39 Observation of Tritium Distribution on/Beneath Mechanically-Treated Surfaces of Vanadium by Imaging Plate
Presented by K. Shimada (University of Toyama)
- P2-40 Research of the Tritium Saturation, Isotope Diffusion and Decontamination of Stainless Steel Using Magnetic Microscopy
Presented by A. I. Markin (State Research Center of the Russian Federation Troitsk Institute for Innovation and Fusion Research)
- P2-41 Transport of Tritium Across the Surface of SS316 at Ambient Temperatures
Presented by Y. Torikai (University of Toyama)
- P2-42 Interaction of Tritium with Oils and Tritiated Waste Oil Decontamination
Presented by A. B. Sazonov (University of Chemical Technology of Russia)

- P2-43 Fabrication and Properties of Erbium Coatings as a Tritium Permeation Barrier
Presented by A. Suzuki (University of Tokyo)
- P2-44 Tritium Diffusion in V-4Cr-4Ti Alloy
Presented by K. Hashizume (Kyushu University)

MUSICAL OUTING 7:30PM-9:30PM (Memorial Art Gallery)
Bus departs Hyatt Regency Rochester at 7:00 PM
This event is sponsored by OPG (Ontario Power Generation)
and AECL (Atomic Energy of Canada Ltd.)

Wednesday, September 19, 2007, 8:25 AM

7:30AM–8:30AM (Outside Grand Ballroom)

Continental Breakfast

WASTE 8:25AM–10:00AM (Grand Ballroom)

O. Gastaldi and M. Mintz (Chairs)

- 8:25 Announcements
W. Shmayda
- 8:30 ^{33 (was P1-7)} Interim Storage Requirements at Department of Energy Facilities
W. Weaver (U.S. Department of Energy))
- 9:00 ³⁴ Tritium Removal and Separation Technology Developments
I. Bonnett (General Electric), A. Busigin, and A. Shapiro
- 9:20 ³⁵ Removing Tritium and Other Impurities During Industrial Recycling of Beryllium from a Fusion Reactor
K. Dylst (SCK•CEN), F. Druyts, and J. Braet
- 9:40 ³⁶ Disposal Pathway for Tritiated Hydride Materials and Waste Tritium
A. B. Antoniazzi (Kinectrics Inc.)
- 10:00 Coffee Break

HYDRIDES 10:30AM–11:50AM (Grand Ballroom)

A. Livshits and L. Rodrigo (Chairs)

- 10:30 ³⁷ Helium Effects on Tritium Storage Materials
I. Moysan (CEA Valduc), S. Contreras, and J. Demoment
- 10:50 ³⁸ Examination of 80°C Desorption Isotherms of Tritium Aged Pd/k and LANA.75
G. C. Staack (Savannah River National Laboratory), K. L. Shanahan, R. T. Walters, and R. D. Pilgrim
- 11:10 ³⁹ Investigation of Isotope Exchange for Fabricating High-Density Lithium Deuteride-Tritide Components
J. R. Wermer (Los Alamos National Laboratory), S. N. Paglieri, and B. P. Nolen
- 11:30 ⁴⁰ SAES ST 909 Pilot Scale Methane Cracking Tests
J. E. Klein (Savannah River National Laboratory) and H. T. Sessions
- 11:50 Lunch on own

FACILITIES 1:15PM–3:35PM (Grand Ballroom)

J. Braet and R. Rabun (Chairs)

- 1:15 ⁴¹ Determination of Neutrino Mass from Tritium Beta Decay (*Invited*)
B. Bornschein (Forschungszentrum Karlsruhe GmbH)
- 1:45 ⁴² A Decade of Tritium Technology Development and Operation at the Tritium Laboratory Karlsruhe (*Invited*)
L. Dörr (Forschungszentrum Karlsruhe GmbH), U. Besserer, N. Bekris, B. Bornschein, C. Caldwell-Nichols, D. Demange, I. Cristescu, I. R. Cristescu, M. Glugla, G. Hellriegel, P. Schäfer, S. Welte, and J. Wendel
- 2:15 ⁴³ Tritium Laboratory with Multiple Purposes at NIPNE Magurele Romania
L. Matei (National Institute for Physics and Nuclear Engineering “Horia Hulubei”), C. Postolache, and V. Fugaru

- 2:35 44 The SRNL Tritium Process Project
 P. F. Cloessner (Savannah River National Laboratory), L. K. Heung, W. D. Jacobs, J. E. Klein, A. S. Poore, H. T. Sessions, K. L. Shanahan, G. C. Staack, C. S. McWhorter, W. A. Spencer, L. L. Tovo, and T. Hang
- 2:55 45 Tritium Removal and Applications for Wolsong Heavy Water Reactors
 SH Son (Korea Electric Power Research Institute), KM Song, and YG Chung
- 3:15 46 Operational Experience of Tritium Handling During LLE's Cryogenic Target Filling Operation
 R. T. Janezic, G. P. Wainwright, W. T. Shmayda, and S. J. Loucks (University of Rochester)

LLE TOUR AND 4:00PM-7:00PM (Laboratory for Laser Energetics)
PICNIC Busses depart Hyatt Regency Rochester at 4:00 PM

Thursday, September 20, 2007, 8:25 AM

7:30AM–8:30AM (Outside Grand Ballroom)

Continental Breakfast

ISS 8:25AM–10:10AM (Grand Ballroom)

I. Cristescu and K. Sessions (Chairs)

- 8:25 Announcements
W. Shmayda
- 8:30 47 HDT Mixtures Treatment Strategies by Gas Chromatography
C. Laquerbe (CEA Valduc), S. Contreras, and J. Demoment
- 8:50 48 An Overview of Recent Hydrogen Separating Membrane Research at Los Alamos National Laboratory
S. N. Paglieri (Los Alamos National Laboratory), R. E. Buxbaum, M. V. Ciocco, B. H. Howard, I. E. Anderson, and R. L. Terpstra
- 9:10 49 Next-Generation TCAP Hydrogen Isotope Separation Process
L. K. Heung (Savannah River National Laboratory), A. S. Poore, W. D. Jacobs, H. T. Sessions, and C. S. Williams
- 9:30 50 Modelling Aging Effects on a TCAP Column
C. Laquerbe (CEA Valduc), S. Contreras, O. Baudouin, and J. Demoment
- 9:50 51 Design and Synthesis of Thin Palladium Membranes for Hydrogen Separation
Z. Shi, J. A. Szpunar (McGill University), and S. Wu
- 10:10 Coffee Break

DECOMMISSIONING 10:40AM–12:10PM (Grand Ballroom)

C. Gentile and Y. Sun (Chairs)

- 10:40 52 Refurbishment of the Tritium Laboratories at SCK•CEN
J. Braet (SCK•CEN), K. Dylst, and S. Vanderbiesen
- 11:00 53 Tritium Recycle from Gaseous Illumination Devices
R. Vellinger and J. M. Mintz (Lawrence Livermore National Laboratory)
- 11:20 54 Concentration Profile of Tritium Penetrated in Concrete
H. Takata (Kyushu University), K. Furuichi, M. Nishikawa, S. Fukada, K. Katayama, T. Takeishi, K. Kobayashi, T. Hayashi, and H. Namba
- 11:40 55 Tritium and Tritiated Water Transport in Ducts
G. R. Longhurst (Idaho National Laboratory)
- 12:10 Lunch on own

MEASUREMENTS 1:15PM–2:55PM (Grand Ballroom)

L. Dörr and M. Matsuyama (Chairs)

- 1:15 56 Continuous Real Time Water Monitoring for Tritium and Other Radionuclides
R. Goldstein (Technical Associates) and D. Dotson
- 1:35 57 Analytical Method for Measuring Total Protium and Total Deuterium in a Gas Mixture Containing H₂, D₂, and HD Via Gas Chromatography
H. T. Sessions (Savannah River National Laboratory)
- 1:55 58 Remote Analysis of High-Tritium-Content Water
R. A. Sigg (Savannah River National Laboratory) and D. P. DiPrete

- 2:15 59 Visual Imaging of Tritiated Surfaces
C. A. Gentile (Princeton University), S. W. Langish, C. H. Skinner, and L. P. Ciebiera
- 2:35 60 Measurement of the Helium-3 Permeation Rate in GDP Glass ICF Targets
J. Wermer (Los Alamos National Laboratory)
- 2:55 Break

DEVELOPMENT 3:30PM-4:50PM (Grand Ballroom)

A. Nobile and H. Chung (Chairs)

- 3:30 61 A Tritium Adsorption Pump with Pre-condensed Ar at Extremely Low Tritium Pressure
F. Eichelhardt (Universitaet Karlsruhe), B. Bornschein, L. Bornschein, O. Kazachenko, N. Kernert, and M. Sturm
- 3:50 62 Characterization and Optimization of a Getter-Based Atmosphere Purification and Waste Treatment System for a Hydrogen-Helium Glovebox
S. N. Paglieri (Los Alamos National Laboratory), M. L. Bibeault, D. G. Tuggle, and J. R. Wermer
- 4:10 63 Effects of Tritium Gas Exposure on the Dynamic Mechanical Properties of Several EPDM Elastomers
E. A. Clark (Savannah River National Laboratory) and G. C. Staack
- 4:30 64 Tritiation of Semiconductor Materials for Micropower Applications
B. Liu (University of Pittsburgh), N. P. Kherani, S. Zukotynski, and K. P. Chen

POSTER SESSION 3 5:00PM-6:45PM (Regency Ballroom)

K. Rule, S. Contreras, and A. Everatt (Chairs)

- P3-2 Diffuser/Permeator Modeling
Presented by W. D. Jacobs (Savannah River National Laboratory)
- P3-3 Experimental Results of Hydrogen Distillation at the Low Power Cryogenic Column for the Production of Deuterium Depleted Hydrogen
Presented by I. Alekseev (Petersburg Nuclear Physics Institute)
- P3-4 Experimental Verification of Hydrogen Isotope Separation by Pressure Swing Adsorption
Presented by K. Kotoh (Kyushu University)
- P3-5 Breakthrough Curve Analysis on Pressure Swing Adsorption for Hydrogen Isotope Separation
Presented by K. Kotoch (Kyushu University)
- P3-6 Hydrogen Isotope Separation Using Molecular Sieve of Synthetic Zeolite 3A
Presented by K. Kotoch (Kyushu University)
- P3-7 The Setup of an Extraction System Coupled to a Hydrogen Isotopes Distillation Column
Presented by M. Zamfirache (National R&D Institute for Cryogenics and Isotopic Technologies)
- P3-8 Investigation Related to Hydrogen Isotopes Separation by Cryogenic Distillation
Presented by A. Bornea (National R&D Institute for Cryogenics and Isotopic Technologies)

- P3-9 Improvement of Pt/C/PTFE Catalyst Type Used for Hydrogen Isotopes Separation
Presented by A. Bornea (National R&D Institute for Cryogenics and Isotopic Technologies)
- P3-10 Separation of Hydrogen Isotopes by Palladium Alloy Membranes Separator
Presented by S. Jiangfeng (China Academy of Engineering Physics)
- P3-11 Techniques for Tritium Recovery from Carbon Flakes and Dust at the JET Active Gas Handling System
Presented by S. Grünhagen (Forschungszentrum Karlsruhe GmbH)
- P3-12 A Novel Approach to Fabrication and Assembly of Tritium Glove Box Gas Sampling System
Presented by J. Banar (Los Alamos National Laboratory)
- P3-13 Development of a Field Portable Tritium Instrument
Presented by R. Marsh (University of Southampton)
- P3-14 D/T Ratio in a Two-Phase DT Liquid Using Dielectric Constant and Electrical Conductivity Measurements
Presented by M. Iliescu (National R&D Institute for Cryogenics and Isotopic Technologies)
- P3-15 Tritium Test of a Ferrofluidic Rotary Seal
Presented by A. Antipenkov (Forschungszentrum Karlsruhe GmbH)
- P3-17 Development of a Low-Level Tritium Monitor
Presented by Y. Sakuma (National Institute for Fusion Science)
- P3-18 Industrial Universal Electrometer
Presented by J. Cordaro (Savannah River National Laboratory)
- P3-19 Operational Experience and Validation of the Triathler Model 425-034 Single Vial LSC Counter for Meeting DOE Release Criteria
Presented by R. W. Kanady (Batelle Energy Alliance, LLC)
- P3-20 Evaluation of a New Tritium Calorimeter at Los Alamos National Laboratory
Presented by D. West (Los Alamos National Laboratory)
- P3-21 A Method to Quantify Tritium Inside Waste Drums: He-3 Ingrowth Method
Presented by A. Godot (CEA Valduc)
- P3-22 Large Volume Calorimetry: A Technique to Quantify Tritium
Presented by J-C. Hubinois (CEA Valduc)
- P3-23 An Improved Electrolyser to Enrich Tritium Concentrations in Environmental Water Samples
Presented by T. Muranaka (Hachinobe Institute of Technology)
- P3-24 Standardization of Tritium Measuring Devices Based on a High Sensitivity Calorimeter
Presented by M. Matsuyama (University of Toyama)
- P3-25 Performance Evaluation of a High Sensitivity Tritium Gas Monitor Using a Pulse-Shaping Analyzer
Presented by T. Uda (National Institute for Fusion Science)
- P3-26 Tritium Measurement in Tritium Storage Bed with Gas Flowing Calorimetry
Presented by X-J. Luo (China Academy of Engineering Physics)

- P3-27 Design of Inlet Systems for Tritium Mass Spectrometers: A Historical Perspective Stressing Safety and Sampling Efficiency
Presented by W. S. Chamberlin (Los Alamos National Laboratory)
- P3-28 Development of Rapid Sampling System for Tritium in Atmospheric Water Vapor
Presented by H. Kakiuchi (Institute for Environmental Sciences)
- P3-29 A Prototype Wearable Tritium Monitor
Presented by R. A. Surette (AECL)
- P3-30 Inexpensive, Off-the-Shelf Hybrid Microwave System
Presented by R. T. Walters (Savannah River National Laboratory)
- P3-31 Design of Tritium Retention Systems with Specified Input and Output Target Concentrations
Presented by T. Bultmann (MBraun, Inc.)
- P3-32 Study of Helium Thermodesorption from Titanium Tritide Films
Presented by S-M. Peng (China Academy of Engineering Physics)
- P3-34 Design, Fabrication, and Testing of a Getter-Based Atmosphere Purification and Waste Treatment System for a Hydrogen-Helium Glovebox
Presented by S. N. Paglieri (Los Alamos National Laboratory)
- P3-35 Tritium Capture with Getter-Bed Technology at the Laboratory for Laser Energetics
Presented by G. P. Wainwright (University of Rochester)
- P3-36 Performance of a 1:1 ITER Metal Hydride Storage Bed in Comparison with Requirements
Presented by S. Beloglazov (Forschungszentrum Karlsruhe GmbH)
- P3-37 Absorbing and Desorbing Behaviors of Tritium by $\text{LaNi}_{4.25}\text{Al}_{0.75}$
Presented by X-G. Long (China Academy of Engineering Physics)
- P3-38 Design of a Radioactive Shipping Package for Transporting Bulk Tritium Contents
Presented by K. R. Eberl (Savannah River National Laboratory)
- P3-39 Aging Effects in $\text{Zr}(\text{Fe}_{0.5}\text{V}_{0.5})_2$ Tritides
Presented by F. Ghezzi (Associazione Euratom-ENEA-CNR)
- P3-40 Experimental Study on the Delivery Rate and Recovery Rate of ZrCo Hydride for an ITER Application
Presented by H. Chung (Korea Atomic Energy Research Institute)
- P3-41 Thermal Detritiation of Plutonium
Presented by H. Bach (Los Alamos National Laboratory)
- P3-42 Kinetics of Hydration and Dehydration Between ZrCo and Hydrogen Isotopes Using Numerical Simulations
Presented by M. H. Chang (National Fusion Research Center)
- P3-43 Air Passivation of Metal Hydride Beds for Waste Disposal
Presented by J. E. Klein (Savannah River National Laboratory)

BANQUET 7:00PM–10:00PM (Oak Hill Country Club)
Busses depart Hyatt Regency Rochester at 7:00 PM

Friday, September 21, 2007, 8:25 AM

7:30AM–8:30AM (Outside Grand Ballroom)

Continental Breakfast

MATERIALS 8:25AM–11:50AM (Grand Ballroom)

L. Sedano and E. Clark (Chairs)

- 8:25 Announcements
W. Shmayda
- 8:30 65 Selective Pumping of D/T in Fusion Device Exhausts by Superpermeable Membranes
(Invited)
A. I. Livshits (Bonch-Bruyevich University), A. A. Yuchimchuk, A. A. Samartsev, A. O. Busnyuk, M. E. Notkin, R. K. Musyaev, and V. N. Alimov
- 9:00 66 Effect of Radiogenic Helium on Stainless Steel 12Cr18Ni10Ti Structural Changes and Hydrogen Sorption
E. Denisov, R. Causey, e. Denisov, S. Grischechkin, M. Glugla, A. Hassanein, S. Kanashenko, *T. Kompaniets* (St. Petersburg State University), A. Kurdyumov, I. Malkov, and A. Yukhimchuk
- 9:20 67 Effect of Radiogenic Helium on Stainless Steel 12Cr18Ni10Ti Mechanical Properties and Hydrogen Permeability
I. Boitsov, R. Causey, M. Glugla, S. Grischechkin, A. Hassanein, B. Lebedev, S. Kanashenko, *T. Kompaniets* (St. Petersburg State University), A. Kurdyumov, I. Malkov, A. Stengach, and A. Yukhimchuk
- 9:40 68 Tritium and Decay Helium Effects on the Fracture Toughness Properties of Stainless Steel Weldments
M. J. Morgan (Savannah River National Laboratory), M. H. Tosten, and S. L. West
- 10:00 Coffee Break
- 10:30 69 Tritium-Deformation Interactions in fcc Austenitic Steels and Nickel Base Alloys
J. Chêne (CNRS/CEA)
- 10:50 70 Tritium Release and Trapping in Austenitic Stainless Steels: Role of Microstructure and Desorption Anneal
J. Chêne (CNRS/CEA), P. Trabuc, and O. Gastaldi
- 11:10 71 Deuterium and Helium Release and Microstructure of Tungsten Deposition Layers Formed by RF Plasma Sputtering
K. Katayama (Kyushu University), M. Tokitani, K. Imaoka, M. Nishikawa, S. Fukada, and N. Yoshida
- 11:30 72 Surface Enhanced Isotope Exchange Reactions Between Hydrogen Isotopes and Water Isotopomers
J. Borysow (Michigan Technical University) and M. Fink
- 11:50 Conference ends