Fusion Science and Technology

VOLUME 71 · NUMBER 4 · MAY 2017

Selected papers from the Eleventh International Conference on Tritium Science and Technology—Part 2
April 17–22, 2016, Charleston, South Carolina

Contents

v Preface
Robert P. Addis, James E. Klein

TECHNICAL PAPERS

457 ITER-Like Tokamak Exhaust Gases in JET Active Gas Handling System: Process Optioneering
P. Camp, E. Belonohy, I. S. Carvalho, S. Knipe, X. Lefebvre, S. A. Medley, R. Olney,
S. Romanelli, R. C. R. Shaw, R. Smith, B. Wakeling, R. J. Walker, D. Wilson

467 Upgraded Analytical Gas Composition Technique in the Tritium Fuel Cycle of JET
S. G. Romanelli, R. Tulloch, A. Withycombe, A. Hollingsworth, B. Wakeling, P. G. Camp,
R. Smith

473 Preparation of Benzo-15-Crown-5 Adsorbents for the Separation of Lithium Isotopes
by Displacement Chromatography
Takahiko Sugiyama, Kei Sugiura

478 Performance Testing of a Potential Replacement for Normetex Pump
Gregg A. Morgan

485 Status of the Karlsruhe Tritium Neutrino Mass Experiment KATRIN
Lutz Bornschein, Beate Bornschein, Sylvia Ebenh"och, Moritz Hackenjos, Florian
Priester, Marco R"ollig, Michael Sturm, Thomas Th"ummler, KATRIN Collaboration

491 Deuterium Retention in Helium and Neutron Irradiated Molybdenum
C. N. Taylor, Y. Yamauchi, M. Shimada, Y. Oya, Y. Hatano

496 Tritium Counting Using a Europium Coordination Complex
Masanori Hara, Haruna Sakaguchi, Masato Nakayama, Shinsuke Abe, Masao
Matsuyama, Takayuki Abe, Tsukasa Aso

501 Study on Transfer Behavior of Hydrogen Isotopes from Fluidized Li to Y for Li Blanket
Y. Yamasaki, S. Fukada, K. Hiyane, K. Katayama

507 Polymer Performance and Aging in a Tritium Environment
Elise B. Fox, Mark D. Kranjc, Thomas E. Skidmore

—continued—
Contents continued

VOLUME 71 · NUMBER 4 · MAY 2017

514 Study on Equilibrium Compositions of HTO/H₂ Mixture in Purge Gas Flow in Tritium Breeding Blanket
Michiko Ahn Furudate, Seungyon Cho

520 Experiment on Recovery of Hydrogen Isotopes from Li₁₇Pb₈₃ Blanket by Liquid-Gas Contact
M. Kinjo, S. Fukada, K. Katayama, Y. Edao, T. Hayashi

527 Experimental Investigation of ZrCo Getter Beds as Candidate Process for the Tritium Extraction Systems of the European Test Blanket Modules
A. Bükki-Deme, P. Calderoni, D. Demange, E. Fanghänel, T.-L. Le, M. Sirch, I. Ricapito

532 Theoretical Analysis for Setting Up a Catalyst-Packing Mixture that Equip a Catalytic Isotopic Exchange Column
Anisia Bornea, Marius Zamfirache, Ioan Stefanescu

537 Tritium Extraction from Lithium-Lead in the EU DEMO Blanket Using Permeator Against Vacuum
V. D’Auria, S. Dulla, P. Ravetto, L. Savoldi, M. Utili, R. Zanino

544 Tritium Production in Secondary Neutron Sources in Pressurized Water Reactors
Kim Burns, Ed Love, Monte Elmore

549 Tritium Production and Partitioning from the Irradiation of Lithium-Beryllium Fluoride Salt
David Carpenter, Michael Ames, Guiqiu Zheng, Gordon Kohse, Lin-wen Hu

TECHNICAL NOTES

555 Tritium Aging Effects in Some Pd - Cr, Ni, and Co Alloys
Kirk L. Shanahan

565 Tritium Aging of LaNi₄.₁₅Al₀.₈₅ (LANA.₈₅)
David W. James, Gregory C. Staack, Simona E. Hunyadi Murph

570 Determination of In Vitro Lung Solubility and Intake-to-Dose Conversion Factors for Tritiated LaNi₄.₁₅Al₀.₈₅ and 13X Zeolite
Greg Staack, Yung-Sung Cheng, Yue Zhou, Tom LaBone

575 Tritium Recovery Efficiency from an Array of PbLi Droplets in Vacuum
Fumito Okino, Laetitia Frances, David Demange, Ryuta Kasada, Satoshi Konishi

—continued—
Contents continued

VOLUME 71 · NUMBER 4 · MAY 2017

584 Tritium Control and Capture in Salt-Cooled Fission and Fusion Reactors
   Charles W. Forsberg, David M. Carpenter, Dennis G. Whyte, Raluca Scarlat, Liu Wei

590 Theoretical Considerations for Purification System Used in Hydrogen Isotopes Separation Plants
   Marius Zamfirache, Anisia Bornea, Ioan Stefanescu

595 Relevance of Night Production of OBT in Crops
   Dan Galeriu, Anca Melintescu

600 A New Device for Activity Measurement of Tritiated Water
   Florian Priester

605 Conceptual Design of Multi-Purpose Heavy Water Detritiation Plant
   S. D. Bondarenko, I. A. Alekseev, O. A. Fedorchenko, K. A. Konoplev, T. V. Vasyanina

610 Romanian Tritium for Nuclear Fusion
   Richard J. Pearson, Olivia Comsa, Liviu Stefan, William J. Nuttall

616 TEACUP: A Tritium Management and Supplemental Core Follow Program
   Jennifer Lyons, Edward Love, Kim Burns

622 Detritiation Technology Development for Environmental Protection
   Hongsuk Chung, Yeanjin Kim, Kwangjin Jung, Seungwoo Paek, Hee-Seok Kang,
   Ki Hyun Kim, Woojung Shon, Sung Paal Yim, Hyun-Goo Kang, Min Ho Chang,
   Sei-Hun Yun, Ki Jung Jung, Ki Hwan Kim, Do-Hee Ahn

628 Tritium Contamination Prevention Using Sacrificial Materials
   Paul Korinko, Simona Hunyadi Murph, George Larsen

634 Isotope Effects on Hydrogen Getter Rate
   Bruce Schmitt, Monte Elmore, Ed Love, Kim Burns

639 Progress of ISO Standards on the Confinement Systems in Fusion Facilities Using Tritium
   L. Lepetit, P. Cortes, L. Thomas

644 Tritium Management and Control Using Carbon in a Fluoride-Salt-Cooled High-Temperature Reactor
   Stephen T. Lam, John Stempien, Ronald Ballinger, Charles Forsberg

—continued—
Contents continued

VOLUME 71 · NUMBER 4 · MAY 2017

649 Aspects Concerning Manufacture of Reproducible and Homogeneous Batches of Pt/C/PTFE Catalyst for Hydrogen-Water Isotopic Exchange
   Gheorghe Ionita, Ioan Stefanescu, Ciprian Bucur

654 Tritium Accountancy and Relevant Instrumentation for the WDF from Cernavoda NPP
   Mirela Mihaela Draghia, Ion Cristescu, Nicolae Trantea, Gheorghe Pasca, Alin Fuciu

660 Titanium Tritide Films as Betavoltaic Power Sources
   Brian L. Ellis, H. Fritzche, J. Patel, J. Lang, S. Suppiah

666 Reduction of Glovebox Stripper System Water Loading
   Jason Wilson, James Klein, Kirk Shanahan, Paul Korinko, Anita Poore

671 Source Term Analysis of Tritium in HTR-10
   Yi Xu, Hong Li, Feng Xie, Jianzhu Cao, Jiejuan Tong

679 Tritium Plant Technology Development for a DEMO Power Plant
   Rachel Lawless, Barry Butler, Anthony Hollingsworth, Patrick Camp, Rebecca Shaw

687 Operational Experience of Tritium Handling Facilities in the Japan Atomic Energy Agency’s Tritium Process Laboratory
   Rie Kurata, Masayuki Yamada, Takumi Suzuki, Hirofumi Nakamura, Yasunori Iwai,
   Kanetsugu Isobe, Takumi Hayashi

INDEXES/CONTENTS

693 Author Index

696 Subject Index

vii Contents of Volume 71