

# **Fusion** technology™

**CONTENTS / SEPTEMBER 1988 — VOL. 14, NO. 2**  
**PART 2A (pp. 399–890)**  
**PART 2B (pp. 891–1290)**

**Proceedings of the  
THIRD TOPICAL MEETING ON  
TRITIUM TECHNOLOGY IN FISSION, FUSION  
AND ISOTOPIC APPLICATIONS  
(Toronto, Ontario, Canada, May 1–6, 1988)**

- xi** Comments / *George Miley*  
**xiii** Preface / *Carole D. Burnham, William J. Holtslander*

## **NATIONAL FUSION TRITIUM PROGRAMS**

- 401** Overview of Canadian Fusion Fuels Technology Program on Safety / *D. P. Dautovich, R. R. Stasko*  
**407** Fusion Tritium Program in the United States / *James L. Anderson, John R. Bartlit*  
**412** Fusion Tritium Program in Japan / *M. Okamoto, H. Yoshida, Y. Naruse*  
**418** Tritium Technology Development in EEC Laboratories—Contributions to Design Goals for NET / *P. Dinner, M. Chazalon, H. Dworschak, L. Maineri, A. Bruggeman, D. Leger, J. Darvas, H. D. Rohrig, R. D. Penzhorn*  
**424** Tritium Activities for Fusion Technology in Bruyères-le-Châtel Center-CEA-France / *B. Hircq*

## **TRITIUM PROCESSING**

- 431** Operating Experience with the Hydrogen Isotope Separation System at Mound / *Michael C. Embury, Michael G. Erwin, Douglas A. Levan*  
**438** Experience of TSTA Milestone Runs with 100 Grams-Level of Tritium / *James L. Anderson, John R. Bartlit, Richard V. Carlson, Don O. Coffin, F. Antonio Damiano, Robert H. Sherman, R. Scott Willms, Hiroshi Yoshida, Toshihiko Yamanishi, Taisei Naito, Shingo Hirata, Yuji Naruse*  
**444** Recovery of Tritium from Water / *Charles J. Sienkiewicz, James E. Lentz*  
**450** A Catalytic Plasma Exhaust Purification System / *R.-D. Penzhorn, R. Rodriguez, M. Glugla, K. Günther, H. Yoshida, S. Konishi*  
**456** The NET Integrated Tritium Systems. Proposed Concepts for Safety and Reliability Analyses / *D. Leger, H. Brunnader, P. Dinner*

(Continued)

# CONTENTS / SEPTEMBER 1988—VOL. 14, NO. 2

## PARTS 2A and 2B

(Continued)

- 461** General Overview of the Active Gas Handling System at JET / *R. Haange, A. Bell, C. Caldwell-Nichols, A. Dombra, C. Gordon, J. Gowman, E. Groskops, J. L. Hemmerich, A. Konstantellos, E. Küssel, M. Tschudin, K. Walter*
- 466** Design of a Large Magnetic-Bearing Turbomolecular Pump for NET / *K.-H. Bernhardt, A. Conrad, D. Perinic, P. J. Dinner, G. Simon*
- 472** Commissioning and First Operating Experience at Darlington Tritium Removal Facility / *R. B. Davidson, P. Von Hatten, M. Schaub, D. Ulrich*
- 480** The Tritium Extraction Facility at the Institute Laue-Langevin Experience of Operation with Tritium / *G. P. Pautrot*
- 484** The Chalk River Tritium Extraction Plant Construction and Early Commissioning / *W. J. Holtslander, T. E. Harrison, J. D. Gallagher*
- 489** Single Column and Two-Column H-D-T Distillation Experiments at TSTA / *T. Yamanishi, H. Yoshida, S. Hirata, T. Naito, Y. Naruse, R. H. Sherman, J. R. Bartlit, K. M. Gruetzmacher, J. L. Anderson*
- 495** Experimental Apparatus for Cryogenic Hydrogen Isotope Separation Process in the Tritium Process Laboratory / *Toshihiko Yamanishi, Mikio Enoeda, Hiroshi Yoshida, Yuji Naruse, Hiroshi Fukui, Hiroyuki Nagai, Yutaka Imamura, Kenji Muta*
- 501** Enrichment and Volume Reduction of Tritiated Water Using Combined Electrolysis Catalytic Exchange / *D. A. Spagnolo, A. E. Everatt, P. W. K. Seto, K. T. Chuang*
- 507** Combined System of Monothermal Chemical Exchange Process with Electrolysis and Thermal Diffusion Process for Enriching Tritium / *Asashi Kitamoto, Katsuo Hasegawa, Takashi Masui*
- 513** Tritium-Enrichment via CECE-Process with High Temperature Steam Electrolysis (HOT ELLY) / *W. Keil, E. Erdle*
- 518** Separation and Recovery of Tritium by Hydrogen-Water Isotopic Exchange Reaction / *S. Isomura, K. Suzuki, M. Shibuya*
- 524** A Comparison of Process Characteristics for the Recovery of Tritium from Heavy Water and Light Water Systems / *K. M. Kalyanam, S. K. Sood*
- 529** FLOSHEET—A Computer Program for Simulating Hydrogen Isotope Separation Systems / *A. Busigin, S. K. Sood*
- 536** Progress in Laser-Based Tritium Separation / *F. E. Bartoszek, H. D. Morrison, J. R. Robins, K. B. Woodall*
- 541** Experimental Investigations into Cryosorption Pumping of Plasma Exhaust: Status Report / *Dražen Perinić, August Mack*
- 546** Code Development for Analysis of TSTA Compound Cryopumps / *K. Ashibe, H. Yoshida, Y. Naruse, C. R. Walthers, J. L. Anderson*
- 552** The Cryogenic Forevacuum System for the JET Active Gas Handling Plant / *E. Küssel, J. Gowman, J. L. Hemmerich, K. Walter*

(Continued)

# CONTENTS / SEPTEMBER 1988—VOL. 14, NO. 2

## PARTS 2A and 2B

(Continued)

- 557 The Impurity Processing Loop for the JET Active Gas Handling Plant / *J. L. Hemmerich, A. Dombra, C. Gordon, E. Groskopfs, A. Konstantellos*
- 562 The Gas Chromatographic Isotope Separation System for the JET Active Gas Handling Plant / *F. Botter, J. Gowman, J. L. Hemmerich, B. Hircq, R. Lässer, D. Leger, S. Tistchenko, M. Tschudin*
- 567 Large Scale Gas Chromatographic Demonstration System for Hydrogen Isotope Separation / *C. H. Cheh*
- 574 Gas Chromatographic Separation of Hydrogen Isotopes on Molecular Sieves / *R. Vogd, H. Ringel, H. Hackfort, T. Schober, C. Dieker*
- 579 Separation of Hydrogen Isotopes by a Flowing Bed Process / *V. P. Singh*
- 585 Experimental Apparatus for Thermal Diffusion Process in the Tritium Process Laboratory / *Y. Matsuda, N. Yokogawa, H. Yoshida, S. Konishi, Y. Naruse, F. Sakai, M. Yorozu, T. Ide, J. Mitsui*
- 590 Pressure Dependence of Separative Characteristics of Thermal Diffusion Column for H<sub>2</sub>-HT Isotope Separation / *Ichiro Yamamoto, Akira Kaba, Akira Kanagawa*
- 596 Experimental Apparatus for the Fuel Cleanup Process in the Tritium Process Laboratory / *Satoshi Konishi, Masahiko Inoue, Hiroshi Yoshida, Yuji Naruse, Hiroyuki Sato, Kenji Muta, Yutaka Imamura*
- 602 Preliminary Testing of an Electrolysis Cell for Highly Tritiated Water / *A. Rahier, R. Cornelissen, A. Bruggeman, P. De Regge*
- 608 Tritium Cleanup on Hot Uranium Powder / *P. Schira, E. Hutter*
- 614 Fuel Clean-Up System: Poisoning of Palladium-Silver Membranes by Gaseous Impurities / *J. Chabot, J. Lecomte, C. Grumet, J. Sannier*
- 619 Plasma Exhaust Purification and Hydrogen Isotope Separation Using Modified Zeolites / *G. Pierini, B. Spelta, E. Vansant, J. Verbist, A. Viola*
- 624 Isotopic Exchange in Air Detritiation Dryers / *A. E. Everatt, A. H. Dombra, R. E. Johnson*

### TRITIUM PROPERTIES AND INTERACTIONS WITH MATERIALS

- 631 Measurement of the Solubility of Tritium in Copper and Gold at High Pressures / *W. A. Swansiger*
- 637 Aging Induced Property Changes in Metal Tritides / *T. Schober*
- 643 NMR Studies of Aging Effects in Palladium Tritide / *G. C. Abell, A. Attalla*
- 649 The CRITIC-I Irradiation of Li<sub>2</sub>O-Tritium Release and Measurement / *J. M. Miller, R. A. Verrall, D. S. MacDonald, S. R. Bokwa*
- 657 The Blanket Interface to TSTA: Requirements for Liquid Lithium Blanket Processing Systems / *R. G. Clemmer, P. A. Finn, T. L. Grimm, D. K. Sze, J. L. Anderson, J. R. Bartlit, Y. Naruse, H. Yoshida*

(Continued)

# CONTENTS / SEPTEMBER 1988—VOL. 14, NO. 2

## PARTS 2A and 2B

(Continued)

- 663 The Impact of Tritium Solubility and Diffusivity on Inventory and Permeation in Liquid Breeder Blankets / *M. Caorlin, G. Gervasini, F. Reiter*
- 671 Aqueous Salt Blanket Tritium Systems for the TITAN-II Reversed-Field Pinch Fusion Reactor Design / *P. J. Gierszewski, R. C. Martin, K. Kalyanam, J. Bartlit, D. K. Sze, TITAN Research Group*
- 677 Tritium Module for ITER/TIBER System Code / *P. A. Finn, S. Willms, A. Busigin, K. M. Kalyanam*
- 683 On the Synthesis, Selfradiolysis, and Catalytic Decomposition of Tritiated Ammonia and Methane / *M. Glugla, R. D. Penzhorn, J. L. Anderson, J. R. Bartlit*
- 689 PDP of Hydrogen Isotopes in a Low Temperature Plasma / *M. Okamoto, T. Yoshida, M. Takizawa, M. Aida, M. Nomura, Y. Fujii*
- 695 Solubility of Tritium in Pd<sub>1-Y</sub>Ag<sub>Y</sub> Alloys (Y = 0.00, 0.10, 0.20, 0.30) / *R. Lässer, G. L. Powell*
- 701 Increase of Tritium Permeation Through Resistant Metals at 323 K by Lattice Defects / *J. L. Maienschein, F. E. McMurphy, V. L. Duval*
- 707 Implantation-Driven Tritium Permeation in Vanadium Alloy Fusion Reactors / *D. F. Holland, R. A. Anderl*
- 713 Experimental Apparatus for Tritium Permeation Studies in Tritium Process Laboratory / *Kenji Okuno, Shigeru O'hira, Hiroshi Yoshida, Yuji Naruse, Tatsushi Suzuki, Shingo Hirata, Masahiro Misumi*
- 719 Hydrogen Depth Profiling Using the  $^1\text{H}(^{15}\text{N}, \alpha\gamma)^{12}\text{C}$  Reaction in Stainless Steel Pre-Irradiated with Helium Ions / *M. Ogawa, K. Saneyoshi, T. Harada, K. Imai*
- 723 Thermal Diffusion of Tritium and Protium in Alpha Phase of Zirconium / *M. Sugisaki, H. Furuya, H. Sekiya, K. Hashizume*
- 729 Gettering of Hydrogen Isotopes by Zr-Ni Alloys / *Kuniaki Watanabe, Kenji Ichimura, Kan Ashida, Masao Matsuyama, Toyosaburo Takeuchi*
- 735 Trap and Release of Hydrogen, Deuterium and Tritium by/from Graphite / *Kan Ashida, Masao Matsuyama, Kuniaki Watanabe*
- 741 He<sup>3</sup> Outgassing from Four Working Palladium and Uranium Beds / *P. R. Coronado, E. M. Fearon, R. G. Garza, J. F. Shaw, P. C. Souers, R. K. Stump, R. T. Tsugawa*
- 744 Some New Techniques in Tritium Gas Handling as Applied to Metal Hydride Synthesis / *Joseph E. Nasise*
- 750 Pyrophoricity of Tritium-Storage Bed Materials / *G. R. Longhurst*
- 756 Metal Getters for Tritium Storage / *E. Willin, M. Sirch, R.-D. Penzhorn, M. Devillers*
- 764 Storage of Hydrogen Isotopes in Uranium Alloys / *T. Yamamoto, Supardjo, T. Terai, F. Ono, S. Tanaka, M. Yamawaki*

(Continued)

# CONTENTS / SEPTEMBER 1988—VOL. 14, NO. 2

## PARTS 2A and 2B

(Continued)

- 769** Hydrogen Isotope Sorption Properties of  $\text{LaNi}_3\text{Mn}_2$  Alloy as a Candidate for the Tritium Storage Material / *T. Ide, F. Sakai, M. Yorozu, K. Hirata, J. Mitsui, H. Yoshida, Y. Naruse*
- 775** Tritium Storage in Ion-Exchanged Zeolites / *J. L. Maienschein, F. E. McMurphy, F. S. Uribe*
- 783** Parameters Important in the Oxidation of Tritium at a Stainless Steel Surface / *P. A. Finn, E. H. Van Deventer*
- 791** Effect of the Self-Pumped Limiter Concept on the Tritium Fuel Cycle / *P. A. Finn, D. K. Sze, A. Hassanein*
- 798** Lithium Test Module on ITER/TIBER: Engineering Design of the Tritium Recovery System / *P. A. Finn*
- 804** Tritium Separation from Pb-17Li by Permeation into Na or NaK and Cold Trapping: First Experiments on Recovery from Cold Traps / *J. Reimann*
- 808** Tritium Extraction from Pb-17Li Samples / *G. Saibene, R. Sartori, F. Reiter*
- 816** Adsorption and Exchange Reaction of Hydrogen Isotopes on Solid Breeding Materials / *S. Tanaka, A. Kawamoto, K. Yamaguchi, M. Yamawaki, H. Mohri, T. Terai, Y. Takahashi*
- 822** Recovery of Tritium from an Aqueous Lithium Salt Blanket on the NET Fusion Device / *M. R. Galley, S. K. Sood, P. J. Gierszewski, M. Schaub, A. I. Miller, P. J. Dinner*
- 828** Radiolysis Aspects of the Aqueous Self-Cooled Blanket Concept and the Problem of Tritium Extraction / *A. Bruggeman, M. Snykers, P. De Regge, M. J. Embrechts*
- 833** Tritium Labeling of Amino Acids and Peptides with Liquid and Solid Tritium / *C. T. Peng, R. L. Hua, P. C. Souers, P. R. Coronado*
- 840** Applications of High Resolution  $^3\text{H}$  NMR Spectroscopy / *Philip G. Williams*
- 845** Measurement of Tritium Partial Pressure in Fueling System for ICF Target by Means of Fluorescent Powder / *M. Takagi, T. Norimatsu, Y. Kato, S. Nakai, C. Yamanaka*
- 850** Infrared Analysis of Liquid and Solid D-T / *P. C. Souers, E. M. Fearon, R. K. Stump, R. T. Tsugawa*
- 855** Triton Memory Time in Solid DT and Its Nuclear Polarization / *P. C. Souers, E. M. Fearon, E. R. Mapoles, J. D. Sater, G. W. Collins, J. R. Gaines, R. H. Sherman, J. R. Bartlit*
- 864** Synthesis and Stability of Liquid Molecular DT / *E. M. Fearon, R. G. Garza, C. M. Griffith, S. R. Mayhugh, E. R. Mapoles, J. D. Sater, P. C. Souers, R. T. Tsugawa, J. R. Gaines, G. W. Collins*
- 869** Effect of Impurities on Ions in Tritium / *G. T. McConville*

(Continued)

# CONTENTS / SEPTEMBER 1988—VOL. 14, NO. 2

## PARTS 2A and 2B

(Continued)

**876** Ammonia in Tritium Systems / *J. T. Gill, R. E. Ellefson, R. P. Paulick, C. M. Colvin, R. L. Yauger, E. E. Johns, R. L. Anderson, E. L. Lewis, P. H. Lamberger, R. E. Vallee*

**884** Depth Profiling of Tritium in Materials for Fusion Technology / *J. A. Sawicki*

### CONTAINMENT, CONTROL, AND MAINTENANCE OF TRITIUM SYSTEMS

**893** The Safety Record at the Tritium Systems Test Assembly / *Don O. Coffin*

**899** Tritium Emissions Reduction Facility / *R. E. Wieneke, R. P. Bowser, W. H. Hedley, T. J. Kissner, P. H. Lamberger, F. G. Morgan, J. F. Van Patten, M. A. Williams*

**904** Tritium Management and Removal at Ontario Hydro's Nuclear Generating Stations / *Frank Guglielmi*

**911** The European Tritium Handling Experimental Laboratory / *G. Vassallo, J. Bourdon, H. Dworschak, J. Pugh, R. Prescott*

**917** The Routine Handling, Processing and Storage of Liquid and Solid Waste at the European Tritium Handling Experimental Laboratory / *F. Mannone, G. Vassallo, H. Dworschak*

**923** TFTR Tritium Program / *R. A. P. Sissingh, R. L. Rossmassler*

**929** Acceleration of Tritons in a Cyclotron / *E. Huenges, H. Morinaga*

**933** Catalyst Study for the Decontamination of Glove-Box Atmospheres Containing Tritium at MPC Levels / *J. Chabot, J. Montel, J. Sannier*

**939** Estimating the Tritiated Hydrocarbon Decontamination Factor by Heavy Methane / *B. J. James, R. L. Nolen, R. L. Hemphill, M. E. Fuehrer*

**943** Operational Experience of a Multipurpose Tritium Laboratory / *S. R. Bokwa, F. B. Gravelle, W. J. Holtlander, R. E. Johnson, R. J. Keyes, J. M. Miller, C. M. Shultz*

**947** A New Tritium Facility—The Weapons Engineering Tritium Facility at Los Alamos National Laboratory / *R. L. Nolen, Jr., B. J. James, R. L. Hemphill, M. E. Fuehrer*

**953** Operating Experience and Procedures at the Tritium Systems Test Assembly / *R. V. Carlson, K. E. Binning, S. P. Cole, E. M. Jenkins, R. C. Wilhelm*

**958** Tips for the Fabrication of Temporary Tritium Experiments / *K. E. Binning, E. M. Jenkins*

**962** The Data Collection System for Failure/Maintenance at the Tritium Systems Test Assembly / *Marjorie A. Casey, Kathleen M. Gruetzmacher, John R. Bartlit, Lee C. Cadwallader*

**966** Transportation of Tritiated Waste from Fusion Facilities / *Kathleen M. Gruetzmacher, Richard V. Carlson, Joseph R. Stencel, Robert A. P. Sissingh*

(Continued)

# CONTENTS / SEPTEMBER 1988—VOL. 14, NO. 2

## PARTS 2A and 2B

(Continued)

- 972** A Tritium-Compatible Piezoelectric Valve for the Tokamak Fusion Test Reactor / *Don O. Coffin, Steven P. Cole, Richard C. Wilhelm*
- 977** Tritium Proof-of-Principle Injector Experiment / *P. W. Fisher, S. L. Milora, S. K. Combs, R. V. Carlson, D. O. Coffin*
- 982** A Tritium Compatible Plasma Exhaust System for a Large Tokamak / *R. L. Rossmassler, P. H. Lamarche, R. Cherdack*
- 988** Technical Aspects of the Upgrade and Commissioning of the Tritium and Related Systems at TFTR / *R. N. Cherdack, C. R. Sarker, J. Palmer, J. M. Tuohy*
- 995** System Design for Disposal of Tritium at TFTR / *J. M. Tuohy, R. Cherdack, N. H. Lacy*
- 1000** Behaviour and Lifetime of Electrolyzers Electrolysing Enriched Tritium Containing Waste Water from Reprocessing / *H. J. Riedel, W. Ullrich*
- 1005** A New Glove-Box System for a High-Pressure Tritium Pump / *S. W. Wilson, R. J. Borree, D. I. Chambers, Y. Chang, J. T. Merrill, P. C. Souers, R. K. Wiggins*
- 1010** Improvements in Efficiency, Capacity, and Reliability of Mound's Effluent Removal System / *W. H. Hedley, P. H. Lamberger, G. E. Gibbs, C. M. Colvin*
- 1014** Cost Benefit Analysis of Tritium Transfer in Fusion Reactor, Code Expert Elaboration / *F. Rancillac, H. Djerassi*

### MEASUREMENT OF TRITIUM

- 1021** A Review of the Need for Species Specific Tritium Monitors / *R. G. C. McElroy, J. R. Johnson*
- 1026** Time-of-Flight Mass Spectrometer for Investigating Hydrogen Isotope Interactions; H/D Exchange Rates at Stainless Steel and Silicon Surfaces / *J. T. Gill, D. B. Watkins, J. N. Rigano, W. A. Clift, R. A. Watkins, A. L. Burwinkle, J. A. Schultz, L. R. Anderson, H. K. Schmidt*
- 1036** Measurement and Prediction of Tritium Holdup / *R. E. Ellefson, C. N. Lindsay, E. E. Johns*
- 1041** Solid-State Nuclear Detectors for Monitoring Low Levels of Tritium / *W. J. McGann, G. Entine, R. F. Farrell, A. Clapp, M. R. Squillante*
- 1047** TFTR Health Physics Tritium Measurements Following D-D Operations / *J. R. Stencel, J. D. Gilbert, O. A. Griesbach, J. M. Greco*
- 1054** An Evaluation of the CRNL/CFFTP HT/HTO Discriminating Monitor / *K. G. Harrison, J. C. Waldron, J. A. B. Gibson*
- 1058** Tritium Detectors Employed at the Tokamak Fusion Test Reactor / *C. A. Gentile, Jr.*
- 1061** Tritium Monitoring and Analysis in the CRNL Tritium Laboratory / *C. M. Shultz, S. R. Bokwa, R. E. Johnson, J. M. Miller*

(Continued)

# CONTENTS / SEPTEMBER 1988—VOL. 14, NO. 2

## PARTS 2A and 2B

(Continued)

- 1066** Process Tritium Monitors in Use at Chalk River Nuclear Laboratories / *R. A. Surette, R. J. Booth, S. R. Bokwa, R. G. C. McElroy*
- 1071** Tritium Detection and Measurement at Darlington's Tritium Removal Facility (TRF) / *N. Sion*
- 1079** A Versatile Tritium-in-Air Monitor for Dedicated or Systems Application / *S. S. Nargolwalla, O. J. Legrady, D. Greenberg, J. Suckling*
- 1085** Performance of a Wetproofed Catalyst in an Ambient Temperature Discriminating Tritium Sampler / *R. J. Quaiattini, W. R. C. Graham, M. J. Wood, R. G. C. McElroy, G. L. Ogram, K. E. Curtis*
- 1090** Radiogas-Chromatographic Determination of Chemical and Isotopic Purity of Tritium Gas in Tritium Production / *M. Tanase, K. Kurosawa, M. Fujie, H. Sugai, S. Okane, M. Kato*
- 1096** Physical Inventory by Use of Modeling for the Tritium Aqueous Waste Recovery System / *Charles J. Sienkiewicz, James E. Lentz, Donald V. Wiggins*
- 1102** Analysis of Tritium Laboratory Accountancy Data / *Rudolf Avenhaus, Gert Spannagel*

### TRITIUM SAFETY

- 1111** Dispersion of HT and HTO Following an Unplanned Release of Tritium to the Atmosphere / *Robert J. Kurzeja, Charles E. Murphy, Jr., Robert W. Taylor*
- 1115** A Model for Global Cycling of Tritium / *G. G. Killough, D. C. Kocher*
- 1121** Safety Evaluation of the Tritium Removal Facility (TRF) at Darlington NGS / *J. S. Nathwani, A. Busigin, R. Tulk*
- 1130** Preliminary Risks Associated with Postulated Tritium Release from Production Reactor Operation / *K. R. O'Kula, W. H. Horton*
- 1136** Comments on the Gas-Phase Initial Rate of Tritiated Water Formation / *R. A. Failor, P. C. Souers, S. G. Prussin*
- 1141** Regrowth, Retention and Evolution of Tritium from Stainless Steel / *R. A. Surette, R. G. C. McElroy*
- 1147** Metabolism and Dosimetry of Tritium from Tritium Gas Contaminated Surfaces / *J. R. Johnson, E. S. Lamothe, J. S. Jackson, R. G. C. McElroy*
- 1153** Validation of Tritium Measurements in Biological Materials / *M. A. Kim, F. Baumgärtner*

### TRITIUM RELEASE EXPERIMENTS

- 1159** An Overview of Experiments at Chalk River on HT Dispersion in the Environment / *C. D. Burnham, R. M. Brown, G. L. Ogram, F. S. Spencer*

(Continued)



# CONTENTS / SEPTEMBER 1988—VOL. 14, NO. 2

## PARTS 2A and 2B

(Continued)

- 1165** Field Studies of HT Behaviour in the Environment: 1. Dispersion and Oxidation in the Atmosphere / *R. M. Brown, G. L. Ogram, F. S. Spencer*
- 1170** Field Studies of HT Behaviour in the Environment: 2. The Interaction with Soil / *G. L. Ogram, F. S. Spencer, R. M. Brown*
- 1176** Field Studies of HT Behaviour in the Environment: 3. Tritium Deposition and Dynamics in Vegetation / *F. S. Spencer, G. L. Ogram, R. M. Brown*
- 1182** U.S. Team Measurements During the June 1987 Experimental HT Release at the Chalk River Nuclear Laboratories, Ontario, Canada / *Roland A. Jalbert, Charles E. Murphy*
- 1187** Tritium Behavior Observed in the Canadian HT Release Study / *Hiroshi Noguchi, Tomoaki Matsui, Mikio Murata*
- 1193** Modelling Elemental Tritium Deposition, Conversion and Reemission Using Ontario Hydro's Tritium Dispersion Code / *S. B. Russell, G. L. Ogram*
- 1199** Operational Experience with the DATS Sampler During the Canadian Tritium Modeling Experiment / *O. A. Griesbach, J. R. Stencel*
- 1203** Re-Emission of HTO into the Atmosphere After HT/HTO Conversion in the Soil / *H. Foerstel, K. Lepa, H. Trierweiler*
- 1209** A Local Compartment Model for Dispersion of HT and HTO / *Ove Edlund*
- 1216** Overview of the Tritium Release Experiment in France / *Henri Djerassi, Werner Gulden*
- 1222** Tritium Release Experiment in France, Presentation, Organization and Realization / *Ph. Paillard, H. Clerc, J.-P. Calando, R. Gros, B. Hircq*
- 1226** Tritium Release Experiment in France Results Concerning HT/HTO Conversion in the Air and Soil / *Ph. Paillard, J.-P. Calando, H. Clerc, R. Gros, Y. Belot*
- 1231** Emission to Atmosphere of Tritiated Water Formed at Soil Surface by Oxidation of HT / *Y. Belot, J. Guenot, C. Caput*
- 1235** Conversion of Molecular Tritium to HTO and OBT in Plants and Soils / *S. Diabate, D. Honig*
- 1241** HT to HTO Conversion in the Soil and Subsequent Tritium Pathway: Field Release Data and Laboratory Experiments / *H. Foerstel*
- 1247** HTO Reemission from Soil After HT Deposition and Dose Consequences of HT Releases / *B. Wiener, M. Täschner, C. Bunnenberg*
- 1253** Laboratory Investigations of HTO Deposition to Soils / *J. Feinhals, C. Bunnenberg*
- 1258** Uptake of Tritium in the Organically Bound Form into the Biomass of the Soil / *H. Förstel, H. Papke, I. Hillmann*
- 1264** HT Dispersion and Deposition in Soil After Experimental Releases of Tritiated Hydrogen / *M. Täschner, B. Wiener, C. Bunnenberg*

(Continued)

# CONTENTS / SEPTEMBER 1988—VOL. 14, NO. 2 PARTS 2A and 2B

(Continued)

## LATE PAPERS

- 1273** Operation of the TSTA Isotope Separation System with 100 Gram Tritium / *Robert H. Sherman, John R. Bartlit, Kathleen M. Gruetzmacher, Hiroshi Yoshida, Toshihiko Yamanishi, Taisei Naito, Shingo Hirata, Yuji Naruse*
- 1277** Ontario Hydro Research Division Tritium Laboratory: Design and Operating Experience / *A. G. Heics, W. T. Shmayda, K. D. Geiger, N. P. Kherani*
- 1282** The Purification of Inert Glove Box Atmospheres Using Hot Reactive Metals / *R. E. Johnson, F. B. Gravelle, C. M. Schultz*

## DEPARTMENT

- 1287** Author Index