

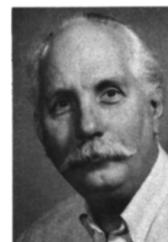
## AUTHORS — SEPTEMBER 1991

### FUSION REACTORS

#### PROGRESS IN COMMERCIAL MAGNETIC FUSION ENERGY REACTOR DESIGNS

*R. A. Krakowski*

**R. A. Krakowski** (BS and MS, chemical engineering, Ohio State University; PhD, nuclear engineering, University of California-Berkeley, 1967), after working on nuclear materials problems at the Euratom Research Centre in Ispra, Italy, and teaching nuclear engineering at Ohio State University, joined Los Alamos National Laboratory in 1972 to work on materials problems related to space nuclear propulsion. He has since worked extensively on systems analyses of a wide variety of magnetic fusion energy approaches, with more recent emphasis on the tokamak. In addition to fusion, he is currently investigating a variety of problems dealing with nuclear power in general.



### SHIELDING

#### DEFINITION OF ALL RELEVANT LOCAL NUCLEAR RESPONSES AND THE TOTAL HEATING IN THE TOROIDAL FIELD COILS DURING THE CONCEPTUAL DESIGN PHASE OF ITER

*Sergei A. Zimin*

**Sergei A. Zimin** (technical physics, Moscow Engineering-Physics Institute, 1982) has worked at the Kurchatov Institute of Atomic Energy since 1981, where he is a research associate in the neutron physics laboratory. He is also a member of the International Thermonuclear Experimental Reactor (ITER) Team, involved in the design of the magnet shielding. His research interests include magnet shielding and blanket neutronics.



#### SHIELDING DESIGN OPTIMIZATION FOR THE COMPACT IGNITION TOKAMAK TEST CELL BUILDING

*Seng Liek Liew  
Long-Poe Ku*

**Seng Liek Liew** (top) (MS and DES, nuclear engineering, Columbia University) is a project engineer in the Engineering Analysis Division of the Princeton Plasma Physics Laboratory (PPPL), where his activities are mainly in fusion neutronics and nuclear design analysis. **Long-Poe Ku** (PhD, nuclear engineering, Columbia University, 1976) has been a staff member at PPPL since 1978, where he is responsible for nuclear radiation analyses and shielding designs.



### NEW HIGH-TEMPERATURE ISOTOPIC EXCHANGE FUEL PROCESSING LOOP DESIGN FOR ITER

**Anthony Busigin** (top) (MAsc, 1971, and PhD, 1990, chemical engineering, University of Toronto, Canada) was formerly with Ontario Hydro and is now the president of Nitek Corporation. He has worked in the areas of hydrogen isotope separation and fusion fuel processing and is the author of Ontario Hydro's FLOSHEET process simulation code. He is also one of the principal designers of the International Thermonuclear Experimental Reactor isotope separation system. **S. K. Sood** (center) (PhD, chemical engineering, University of Leeds, United Kingdom, 1971) is a supervising design engineer at Ontario Hydro, where he designs tritium handling facilities and fusion fuel systems for the Canadian Fusion Fuels Technology Project. **K. M. Kalyanam** (bottom) (MS, chemical engineering, City University of New York, 1972) is a design engineer at Ontario Hydro. His main activities include the design of tritium handling systems as well as the design and development of fusion fuel processing technologies.

*Anthony Busigin  
S. K. Sood  
K. M. Kalyanam*



### EXPERIENCE USING METAL HYDRIDES FOR PROCESSING TRITIUM

**Arthur Nobile, Jr.** (PhD, chemical engineering, University of South Carolina, 1986) is a research engineer at the Savannah River Laboratory. His work involves research and design in support of new tritium facilities at the Savannah River Site. He has conducted research on the effects of aging on the thermodynamic behavior of metal and intermetallic tritides.

*Arthur Nobile, Jr.*



### A STUDY OF NEUTRAL BEAM INJECTION FOR THE ADVANCED TOROIDAL FACILITY

**R. H. Fowler** (top) (BS, physics, University of Georgia, 1963; MS, 1965, and PhD, 1968, physics, Clemson University) is head of the computational physics department of the Computer Sciences Division at Oak Ridge National Laboratory (ORNL). For several years, he was involved in the computation of the properties of gases and liquids from intermolecular interactions. Currently, his primary area of work is in the computational modeling of energetic particle effects in tokamaks. **Robert N. Morris** (center) (BS, electrical engineering, Wayne State University, 1978; MS, 1979, and PhD, 1984, Georgia Institute of Technology) is a computational physicist in the Computing and Telecommunications Division at ORNL. He is currently involved in the alignment of the Advanced Toroidal Facility coil sets, the beamline systems, and the positioning of plasma diagnostics. **James A. Rome** (bottom) (BS, MS, and ScD, Massachusetts Institute of Technology) has been a senior scientist in the Fusion Energy Division of ORNL for 15 years.

*R. H. Fowler  
Robert N. Morris  
James A. Rome*



### IGNITION ACCESS CONDITION BASED ON THE GENERALIZED SADDLE POINT IN A MAGNETIC FUSION REACTOR

**Osamu Mitarai** (top) (MS, mechanical engineering, 1977, and PhD, nuclear engineering, 1979, Kyushu University, Japan) is an associate professor of electrical engineering at Kumamoto University of Technology. He worked in the Department of Physics at the University of Saskatchewan from 1981 to 1984, where he built the STOR-1M tokamak. His current interests are in the areas of alternating current tokamaks, current drive, ignition studies for deuterium-tritium and D-<sup>3</sup>He tokamak reactors, spin-polarized fusion, transport studies, and cosmology based on plasma physics. **Akira Hirose** (center) (BE, 1956, and ME, 1967, Yokohama National University, Japan; PhD, University of Tennessee, 1969) is currently engaged in tokamak (STOR-M) experiments and theoretical work on anomalous transport. He is interested in waves and instabilities in plasmas. **Harvey M. Skarsgard** (bottom) (BE, engineering physics, 1949, and MSc, physics, 1950, University of Saskatchewan, Canada; PhD, nuclear physics, McGill University, Canada, 1955) is a member of the faculty of the physics department at the University of Saskatchewan, where he started a plasma physics research laboratory. He has worked mainly on plasma heating experiments with the Plasma Betatron and STOR tokamaks.

*Osamu Mitarai  
Akira Hirose  
Harvey M. Skarsgard*



### CONCEPT OF A NOVEL MUON-CATALYZED FUSION REACTOR

**Herbert Daniel** (PhD, Universität Heidelberg, 1954) has been professor of physics at the Technische Universität in Munich since 1968.

*Herbert Daniel*



### CARBON MATERIALS NOTES

*J. Winter et al.*

Photographs and biographies were not available for **J. Winter et al.**

## COLD FUSION

### LASER-INDUCED COLD NUCLEAR FUSION IN Ti-H<sub>2</sub>-D<sub>2</sub>-T<sub>2</sub> COMPOSITIONS

**Igor L. Beltyukov** (top right) (experimental physics, Ural Polytechnical Institute, USSR, 1989) has been studying temperature fields. His current interests are calculations of diffusion processes in metal-hydrogen systems and cold fusion. **Nikolay B. Bondarenko** (top left) (molecular physics, Ural Polytechnical Institute, USSR, 1976) has studied metal-hydrogen systems and their applications in technology. His current interests are radiation technology and cold fusion. **Arsen A. Janelidze** (second from top right) (experimental physics, Ural Polytechnical Institute, USSR, 1989) studies metal-hydrogen systems and gas clearing. His current interest is cold fusion. **Mikhail Yu. Gapanov** (second from top left) (molecular physics, Ural Polytechnical Institute, USSR, 1989) is currently interested in surface and cold fusion. **Konstantin G. Griбанov** (third from top right) (quantum electronics, Tomsk University, USSR, 1990) is currently interested in laser physics, lattice dynamics, and cold fusion. **Stanislav V. Kondratov** (third from top left) (physics, Tomsk University, USSR, 1989) is currently interested in laser spectroscopy and cold fusion. **Aleksey G. Maltsev** (fourth from top right) (technology of rare earth metals, Ural Polytechnical Institute, USSR, 1984) has been working on the technology of membrane hydrogen clearing and the radiation behavior of hydrides. His current interest is cold fusion. **Peter I. Novikov** (fourth from top left) (dosimetry and radiation protection, Ural Polytechnical Institute, USSR, 1977) is working on the problem of radiation safety in nuclear research. He is currently working at the Ural Conversion Centre. **Sergey A. Tsvetkov** (bottom right) (molecular physics, Ural Polytechnical Institute, USSR, 1982) has been working on chromatography and mass spectrometry radiation gassing from construction materials for nuclear power reactors. His current interest is cold fusion. **Vyacheslav I. Zakharov** (bottom left) (doctorate, Tomsk University, USSR, 1984) is currently interested in laser physics, quantum optics, cold fusion, and thermodynamics of open nonequilibrium systems.

*Igor L. Beltyukov  
Nikolay B. Bondarenko  
Arsen A. Janelidze  
Mikhail Yu. Gapanov  
Konstantin G. Griбанov  
Stanislav V. Kondratov  
Aleksey G. Maltsev  
Peter I. Novikov  
Sergey A. Tsvetkov  
Vyacheslav I. Zakharov*



## CALORIMETRIC EXPERIMENTS SUPPORTING THE TRANS-MISSION RESONANCE MODEL FOR COLD FUSION

**Robert D. Eagleton** (top) (BS, physics, Abilene Christian College, 1959; MS, 1962, and PhD, 1969, physics, Oklahoma State University) is currently a professor of physics at California State Polytechnic University-Pomona, where he has taught and conducted research since 1969. His current interests include cold fusion, vacuum space structure, and the development of undergraduate laboratory experiments. **Robert T. Bush** (BS, physics, Michigan State University, 1959; MS, physics, University of California-Berkeley, 1961; PhD, physics, Northwestern University, 1971) is currently a professor of physics at California State Polytechnic University-Pomona, where he has taught and conducted research since 1971. His current interests include cold fusion theory and experimentation, plasma physics (relativistic beam-plasma source theory), philosophy of quantum mechanics, history of science, geophysics (seismology), and physics pedagogy.

*Robert D. Eagleton  
Robert T. Bush*



## THE EFFECT OF HYDRIDING ON THE PHYSICAL STRUCTURE OF PALLADIUM AND ON THE RELEASE OF CONTAINED TRITIUM

**Edmund Storms** (right) (PhD, radiochemistry, Washington University) has worked at the Los Alamos National Laboratory (LANL) for more than 30 years. His work has involved mainly high-temperature materials research for space power. His studies have included a wide range of chemical and physical properties including superconductivity, with a major emphasis on thermodynamics and materials science. **Carol Talcott-Storms** (MS, physical chemistry, University of Colorado, 1984) has worked at the LANL for more than 5 years. Her work has involved research on the palladium hydride-hydrogen system using all isotopes of hydrogen. In particular, the studies focused on the effect of surface contamination on kinetic uptake rates, pressure-composition isotherms, conversion of alpha to beta hydride, and diffusion of hydrogen in the beta phase.

*Edmund Storms  
Carol Talcott-Storms*

