



AUTHORS — MID-DECEMBER 1978

REACTORS

THE EFFECT OF DROP EVAPORATION RATE ON CONTAINMENT PRESSURE TRANSIENTS

K. K. Almenas (top) (PhD, University of Warsaw, 1968) is an associate professor at the University of Maryland. His technical interests include neutral particle transport and light water reactor safety research. **J. M. Marchello** (PhD, chemical engineering, Carnegie-Mellon University, 1959) is chancellor of the University of Missouri-Rolla. His interests are in heat and mass transfer and air pollution control.

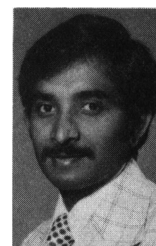
*Kazys K. Almenas
Joseph M. Marchello*



AN ASSESSMENT OF THE CONSEQUENCES OF BOILING IN THE RADIAL BLANKET DUE TO HYPOTHETICAL MAJOR PIPE LEAKS

N. Prasad Kadambi (top) (PhD, nuclear engineering, The Pennsylvania State University, 1971) has worked on liquid-metal fast breeder reactor (LMFBR) safety analysis at the Westinghouse Advanced Reactors Division (WARD) since 1974. He is currently associated with the accident analysis for the Clinch River Breeder Reactor, emphasizing material dynamics and thermal-hydraulic effects. **Roger W. Tilbrook** [BSc(Eng.), mechanical engineering, Queen Mary College, University of London, 1962] has worked in the field of LMFBR safety, first at the Nuclear Power Group, England, and since 1968 at WARD. He is currently the manager of the Reactor Safety Engineering Group.

*N. Prasad Kadambi
Roger W. Tilbrook*



A SPACE-TIME ANALYSIS OF VOID REACTIVITY FEEDBACK IN BOILING WATER REACTORS

Hsiang-Shou (Sam) Cheng (center) (BS, electrical engineering, National Taiwan University, 1960; MS, nuclear engineering, National Tsinghua University, 1963; PhD, nuclear engineering, Massachusetts Institute of Technology, 1968), **Ming-Shih Lu** (left) (BS, physics, National Taiwan University, 1969; MS, 1972, PhD, 1975, engineering and applied physics, Cornell University), and **David J. Diamond** (right) (BS, engineering physics, Cornell University, 1962; MS, nuclear engineering, University of Arizona, 1963; PhD, nuclear engineering, Massachusetts Institute of Technology, 1968) are all members of the Reactor Core Safety Analysis Group at Brookhaven National Laboratory, of which D. J. Diamond is the group leader. Their interests lie in the areas of reactor physics and thermal-hydraulics and the application of these disciplines to core safety problems. They have been involved in the development of physics and engineering models and numerical methods used in safety analysis codes. In addition, they have done analyses of a wide range of light water reactor safety and core performance problems.

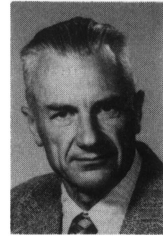
*Hsiang-Shou Cheng
Ming-Shih Lu
David J. Diamond*



SPUTTERING EROSION IN INERTIAL CONFINEMENT FUSION REACTORS

I. O. Bohachevsky (top) (BAE magna cum laude, New York University, 1956; PhD, applied mathematics, New York University, 1961) is a staff member in the Laser Division at Los Alamos Scientific Laboratory (LASL). His current work is in the area of inertial confinement fusion systems and applications studies, where he is especially concerned with the identification and solution of technical problems associated with the commercialization of fusion energy. His previous work was in the areas of fluid mechanics, numerical analysis, magneto-hydrodynamics, and mathematical modeling. **J. F. Hafer** (BS, electrical engineering, Pennsylvania State University, 1957; MS, computer science, University of New Mexico, 1977) is a staff member in the System Analysis Group of the Laser Division at LASL. His present work and interest is in computer code development of laser fusion reactor concepts.

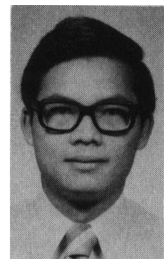
*I. O. Bohachevsky
J. F. Hafer*



AN SAS3D ANALYSIS OF UNPROTECTED LOSS-OF-FLOW TRANSIENTS FOR 1200-MW(electric) LIQUID-METAL FAST BREEDER REACTOR HOMOGENEOUS AND HETEROGENEOUS CORE DESIGNS

T. A. Shih (top) (PhD, nuclear engineering, Iowa State University, 1974) has worked at General Electric Company (GE) in the area of liquid-metal fast breeder reactor safety analysis since 1976. His current interests are hypothetical core disruptive accident analysis, sodium boiling model development, and fuel bundle transient thermal-hydraulic tests. **Mark Temme** (BS, mechanical engineering, University of California, 1954; MS, computer science, Stanford University, 1966) is manager of safety criteria and assessments for the GE Advanced Reactor Systems Department. His current activities include development of probabilistic risk assessment methods, establishment of safety criteria, and performance of safety analysis in breeder reactor design projects.

*T. A. Shih
M. I. Temme*



CHEMICAL PROCESSING

EXTRACTION OF ACTINIDE ELEMENTS BY TRILAURYL-AMMONIUM NITRATE CARBOXYLIC ACID MIXTURES AND APPLICATIONS

Charles Madic (left) (PhD, analytical chemistry, Paris, 1967; PhD, science, Paris, 1975, Pierre and Marie Curie University), after completing his doctoral dissertation on the electrochemistry of nonaqueous solvents, joined the Commissariat à l'Énergie Atomique (CEA) Fontenay-aux-Roses Nuclear Research Center in 1969, where he completed another dissertation on the synergistic mechanisms observed during the extraction of transuranium elements. Since 1974, he has been working in the Transuranium Preparation Section as a chemical engineer and is mainly involved in research on new separation techniques. **Gerard Koehly** (engineering degree, Paris, 1963; advanced diploma, analytical chemistry, Paris, 1964, Pierre and Marie Curie University) has been working at CEA since 1957 at the Fontenay-aux-Roses Nuclear Research Center. From 1963 to 1971, he worked as a chemical engineer on the development of

*Charles Madic
Gerard Koehly*



many transuranium element separation methods. Since 1971, he has headed the Transuranium Preparation Section, which is concerned mainly with the production of ^{238}Pu for pacemakers, production of the isotopes ^{243}Am and ^{244}Cm , and production of various radioactive sources, such as sources of smoke detectors or neutron emitting.

SAFETY CALCULATIONS AND BENCHMARKING OF BABCOCK AND WILCOX DESIGNED CLOSE SPACED FUEL STORAGE RACKS

William D. Bromley (top) (MS, physics, The Pennsylvania State University) has worked in the areas of nuclear criticality safety, licensing, and core kinetics. Recently, he has developed data to assure the criticality safety of manufacturing processes and spent fuel storage rack designs. He is presently employed in the licensing area by Bechtel Corporation in San Francisco. **James S. Olszewski** (BE, mechanical engineering, Stevens Institute of Technology) worked as a product development engineer on the design of close spaced fuel storage rods. Currently, he is employed as an engineer at Babcock and Wilcox Company working in the reactor internals unit.

William D. Bromley
James S. Olszewski

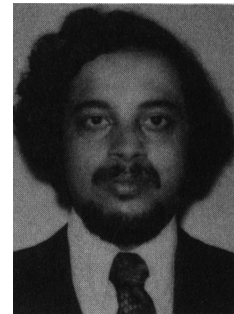


FUELS

RESPONSE OF OXIDE FUEL TO SIMULATED THERMAL TRANSIENTS

G. Bandyopadhyay (M. Tech., chemical engineering and chemical technology, University of Calcutta, India, 1968; MS, PhD, materials science and engineering, University of California, Berkeley, 1970, 1973) has been a staff member of the Materials Science Division at Argonne National Laboratory since 1974. He is currently the principal investigator of direct electrical heating experimental programs studying the fuel and fission gas response during hypothetical transients. He is also a principal investigator of a program studying materials problems in high-temperature batteries.

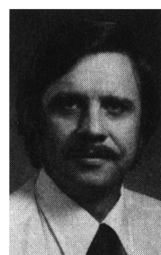
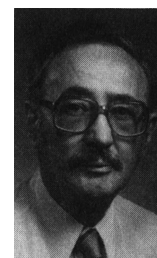
G. Bandyopadhyay



TENSILE PROPERTIES AND ANNEALING CHARACTERISTICS OF H. B. ROBINSON SPENT FUEL CLADDING

Arthur A. Bauer (top) (BS, MS, metallurgical engineering, Columbia University, 1950, 1952) joined Battelle Columbus Laboratories in 1952 to engage in nuclear fuel, cladding, and structural materials research and development. He recently transferred to the Battelle Office of Nuclear Waste Isolation, which is responsible for managing the U.S. Department of Energy program for the disposal of commercial nuclear waste. **Larry Lowry** (BS, engineering physics, Ohio State University, 1971) is a research scientist in the Physics, Electronics, and Nuclear Technology Department at Battelle Columbus Laboratories. His research interests and experience are in the irradiation-induced mechanical property changes in reactor fuel rod cladding, piping, and pressure vessel materials.

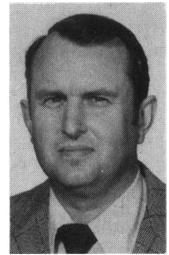
A. A. Bauer
L. M. Lowry



MICROSTRUCTURES AND LEACHABILITY OF VITRIFIED RADIOACTIVE WASTES

W. N. Rankin (top) (BS, metallurgical engineering, North Carolina State University, 1960) is a senior engineer at the Savannah River Laboratory (SRL), operated by E. I. du Pont de Nemours and Company for the U.S. Department of Energy. His current technical interests include characterization of solidified radioactive waste forms and evaluation of compatibility between waste forms and candidate canister materials. **J. A. Kelley** (PhD, chemistry, Georgia Institute of Technology, 1970) was a research supervisor at SRL. He is presently a research supervisor at the Sabine River Works of the E. I. du Pont de Nemours and Company in Orange, Texas.

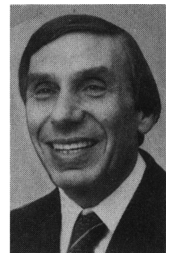
*W. N. Rankin
J. A. Kelley*



A GENERIC HAZARD EVALUATION OF LOW-LEVEL WASTE BURIAL GROUNDS

Bernard L. Cohen (top) (BS, Case Institute, 1944; MS, University of Pittsburgh, 1947; DSc, Carnegie-Mellon University, 1950) worked at Oak Ridge National Laboratory from 1950 to 1958 before coming to the University of Pittsburgh, where he is professor of physics and director of the Scaife Nuclear Physics Laboratory. Until 1974, he worked in experimental nuclear physics, but since then most of his research has been on environmental impacts of nuclear power and other sources of energy, risk assessment, and effects of radiation. **Hong-Nian Jow** (BS, National Tsinghua University, 1971; MS, University of Pittsburgh, 1976) has done research in experimental nuclear physics and environmental health physics. He is currently a graduate student in the Radiation Health Department at the University of Pittsburgh.

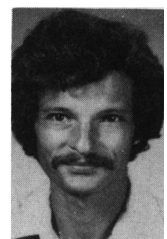
*B. L. Cohen
H. N. Jow*



MINIMIZING RADIOACTIVITY AND OTHER FEATURES OF ELEMENTAL AND ISOTOPIC TAILORING OF MATERIALS FOR FUSION REACTORS

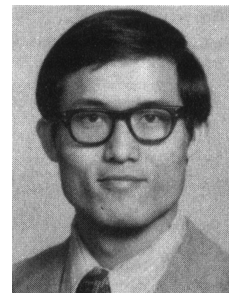
Robert W. Conn (top) (PhD, California Institute of Technology, 1968) spent one year at the Joint Euratom Nuclear Research Center at Ispra, Italy and a year at the Brookhaven National Laboratory before joining the University of Wisconsin (U.W.) in 1970. He has been professor of nuclear engineering since 1975. His primary research interests include fusion reactor physics and technology, neutronics methods for fusion and fission reactors, and molecular collision theory. Since 1974, he has been director of the U.W. Fusion Research Program. **Kevin Okula** (BS, engineering physics, Cornell University, 1975; MS, nuclear engineering, University of Wisconsin, 1977) is a graduate student in the Department of Nuclear Engineering at U.W. He has been involved in the assessment of radioactivity in conceptual fusion reactors for the U.W. Fusion Research Program. **A. Wayne Johnson** (no photo available) is employed at Sandia Laboratories.

*Robert W. Conn
Kevin Okula
A. Wayne Johnson*



APPLICATION OF REACTIVITY WEIGHTING TO ROD EJECTION ACCIDENT ANALYSIS IN A PRESSURIZED WATER REACTOR*S. Bian*

S. Bian (PhD, nuclear engineering, University of Washington, 1973) is a technical staff member in the Nuclear Power Generation Division of Babcock and Wilcox Company. He has worked in the areas of reactor dynamics and thermal-hydraulics. His current activities focus on the multidimensional pressurized water reactor safety analysis.

**SWELLING IN MIXED-OXIDE FUEL PINS***H. Zimmermann*

Heinz Zimmermann (Dr. Ing., mechanical engineering, University of Karlsruhe, 1977) has been involved with various aspects of the fuel cycle since 1964 at Kernforschungszentrum Karlsruhe. For the past few years, his primary areas of activity have been fuel pin postirradiation examinations, fission gas behavior, and fuel swelling. His current interest is in fission gas behavior under transient conditions.

