



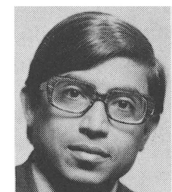
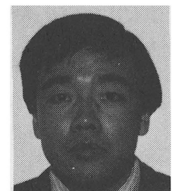
AUTHORS — MAY 1977

REACTORS

REACTOR CONTAINMENT HEAT REMOVAL BY PASSIVE HEAT SINKS FOLLOWING A LOSS-OF-COOLANT ACCIDENT

P. S. Ayyaswamy (top) (PhD, University of California, Los Angeles, 1971) is an assistant professor of mechanical engineering at the University of Pennsylvania at Philadelphia. His interests are in natural convection in enclosures, stability of plasma arcs, various aspects of nuclear reactor analysis and safety, and thermal storage problems for solar energy utilization. He also sometimes works with turbulent transport problems. Jacob Nan-Chu Chung (center) (MS, nuclear engineering, University of Missouri-Columbia, 1973) is currently a nuclear engineer in the Thermophysical Group in the Nuclear Discipline of United Engineers and Constructors, Inc. He has been working in the area of thermohydraulic safety analysis of fluid systems and containment safety evaluation. K. K. Niyogi (bottom) (PhD, mechanical engineering, The University of Pennsylvania at Philadelphia, 1972) is the manager of the Thermophysical Group in the Nuclear Discipline of United Engineers and Constructors, Inc. He has been involved in plant protection systems for light water reactor and high-temperature gas-cooled reactor plants.

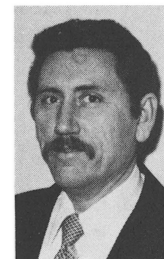
P. S. Ayyaswamy
J. N. Chung
K. K. Niyogi



A STUDY OF POST-ACCIDENT MOLTEN FUEL DOWNWARD STREAMING THROUGH THE AXIAL SHIELD STRUCTURE IN THE LIQUID-METAL FAST BREEDER REACTOR

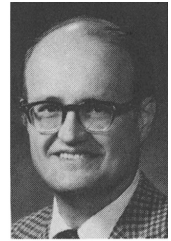
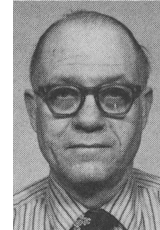
R. D. Gasser (top) (MS, nuclear engineering, University of California at Los Angeles, 1974) is a nuclear engineer at Brookhaven National Laboratory. He is currently involved in liquid-metal fast breeder reactor (LMFBR) post-accident heat removal analysis. M. S. Kazimi (PhD, nuclear engineering, Massachusetts Institute of Technology, 1973) is currently assistant professor of nuclear engineering at MIT. Prior to joining MIT in 1976, he was section leader in the Department of Applied Science at Brookhaven National Laboratory. He has been active in experimental and analytical investigations of thermal-hydraulic phenomena of LMFBR safety. His interests lie primarily in the engineering aspects of nuclear reactor design and safety analysis.

Ronald D. Gasser
Mujid S. Kazimi

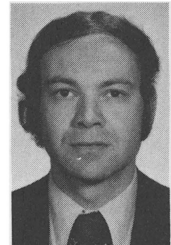
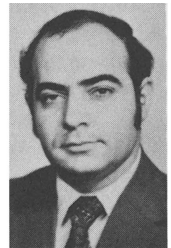


REMOVAL OF IODINE FROM REACTOR FUEL SOLUTIONS AS INSOLUBLE PdI₂*J. C. Mailen
D. E. Horner*

James C. Mailen (top) (PhD, chemical engineering, University of Florida, 1964) is a group leader at Oak Ridge National Laboratory (ORNL). His current interests include reprocessing of liquid-metal fast breeder and light water reactor fuels. Donald E. Horner (BS, chemistry, Georgia Institute of Technology; MS, chemistry, Emory University, 1946) is a chemist in the Chemical Technology Division of ORNL. He has been engaged for many years in solvent extraction research and development work aimed at separations of many elements including uranium, plutonium, and fission products. His present work involves the development of chemical processes for processing spent reactor fuels.

**FUELS****NUCLEAR HEATING IN A CONTROL ELEMENT OF A GAS-COOLED FAST BREEDER REACTOR***A. Razani
S. Yee
M. Nagel*

Arsalan Razani (top) (BS, nuclear engineering, Kansas State University, 1966; MS and PhD, nuclear engineering, Purdue University, 1967 and 1969) is presently associate professor and chairman of the Department of Nuclear Engineering at Pahlavi University, Shiraz, Iran. His current technical interests are in nuclear radiation transport and shielding calculations, nuclear heat transport, and reactor safety analysis. Samuel Yee (center) (BS, chemical engineering, University of Utah, 1950; MS, chemical engineering, University of Washington, 1957; MS, nuclear engineering, University of Washington, 1962; PhD, nuclear engineering, University of Arizona, 1971) is a member of nuclear analysis branch of the Gas-Cooled Fast Breeder Reactor (GCFR) Program at General Atomic Company. His current interests are in GCFR core physics design and radial blanket management. Michael Z. Nagel (bottom) (PhD, physics, University of Illinois at Urbana-Champaign, 1970) is presently a fellow at the Center for Advanced Engineering Study, Massachusetts Institute of Technology, pursuing energy strategy assessment studies. He is on leave of absence from the Gas-Cooled Fast Breeder Reactor Division of General Atomic Company.

**NONEQUILIBRIUM EVAPORATION AND CONDENSATION IN LIQUID-METAL FAST BREEDER REACTOR FUEL EXPANSION***J. G. Refling
A. B. Reynolds
P. L. Garner
S. P. Rao*

Jack G. Refling (right) (PhD, nuclear engineering, University of Virginia, 1976) is currently concerned with developing analytical methods for thermal reactor safety analysis at Babcock & Wilcox. He has three years experience in various phases of thermal reactor design and analysis and has also spent two years under contract to the U.S. Nuclear Regulatory Commission working on various

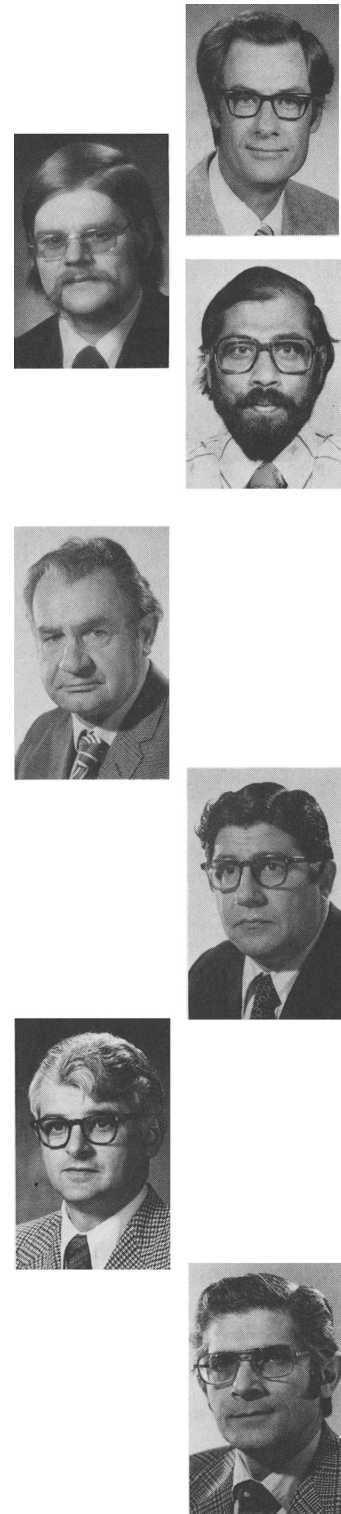


phases of fast reactor accident analysis. Albert B. Reynolds (top) (ScD, chemical engineering, Massachusetts Institute of Technology, 1959) is an associate professor of nuclear engineering at the University of Virginia. During the current year he is on leave in France where he is working on fast reactor safety in the Service des Transferts Thermiques at the Centre d'Etudes Nucleaire de Grenoble. Patrick L. Garner (center) (MS, nuclear engineering, University of Virginia, 1974) is a doctoral candidate at the University of Virginia and is doing dissertation research in the area of fast reactor safety analysis. Surendar P. Rao (bottom) (ME, nuclear engineering, University of Virginia, 1976) worked in the area of reactor safety analysis while completing his masters degree. He is currently performing transient thermodynamics calculations in the Nuclear Safety Department at Combustion Engineering.

THE DETERMINATION OF DEFECTIVE PARTICLE FRACTION IN HIGH-TEMPERATURE GAS-COOLED REACTOR FUELS

D. E. LaValle (top left) (BS, chemistry, Michigan State University, 1942; MS, chemistry, University of Tennessee, 1963) has been continuously active in the field of materials preparation at Oak Ridge National Laboratory (ORNL) since 1950, and has had considerable experience with chlorination systems. At present, he is still interested in the applications of chlorine to the analysis of reactor fuels and continues in the synthesis of inorganic materials. Dante A. Costanzo (top right) (PhD, analytical chemistry, Michigan State University, 1965) is group leader of the Reactor Programs Group in the Analytical Chemistry Division at ORNL. His major interest is in analytical chemistry in nuclear technology, especially in the areas of chemical characterization of advanced reactor fuels and reactor fuel reprocessing. W. J. Lackey (bottom left) (BS, metallurgical and ceramic engineering, 1961; PhD, ceramic engineering, 1969, North Carolina State University) is group leader of the Fuel Cycle Technology Group in the Metals and Ceramics Division at ORNL. He is involved in the fabrication and evaluation of nuclear fuels. A. J. Caputo (bottom right) (BS, chemical engineering, Case Institute of Technology, now Case-Western Reserve, 1952) is employed at ORNL. He is presently working on the process and equipment development for the fabrication of high-temperature gas-cooled reactor fuel elements, with the main emphasis being on a remotely operable process for use with hot recycle fuel. He was formerly with the Union Carbide Nuclear Y-12 Plant in Oak Ridge, where he was associated with the development of the fuel elements for the NERVA (Nuclear Engine Rocket Vehicle Applications) program. Prior to this, he worked on the development of a process for producing Ceramic Grade UO_2 for precision forming of fuel slugs by cold pressing and sintering.

*D. E. LaValle
D. A. Costanzo
W. J. Lackey
A. J. Caputo*



INSTRUMENTS

NEW METHODS FOR MEASURING NEUTRON SPECTRA WITH ENERGY FROM 0.4 eV TO 10 MeV BY TRACK AND ACTIVATION DETECTORS

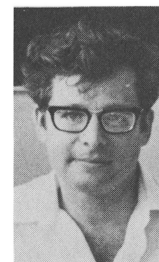
*J. J. Doroshenko
S. N. Kravitor
T. V. Kuznetsova
K. K. Kushnereva
E. S. Leonov*

Photographs and biographies not available.

DUAL GAUGING UTILIZING PENETRATING AND SCATTERED PHOTON FLUXES

E. Elias (top) (DSc, nuclear engineering, Technion-Israel Institute of Technology, 1975) has worked at the Department of Nuclear Engineering on the development and optimization of nuclear gauging systems. At present he is a postdoctoral fellow at the Department of Nuclear Engineering of the University of California at Berkeley. Y. Segal (center) (DSc, nuclear engineering, Technion-Israel Institute of Technology, 1964) is an associate professor of nuclear engineering at Technion-Israel Institute of Technology. His main interests include radiation transport analysis and optimization of nuclear gauging systems. A. Notea (bottom) (PhD, Hebrew University, Jerusalem, 1969) is a senior lecturer in the Department of Nuclear Engineering at Technion-Israel Institute of Technology. He has also worked at the Israeli IRR-1 Reactor of the Israel Atomic Energy Commission. For the past six years, he has been engaged in radiation engineering—the development and applications of radiation gauging techniques for industry.

E. Elias
Y. Segal
A. Notea



FUELS

PRESSURE DROP OF SPACER GRIDS IN SMOOTH AND ROUGHENED ROD BUNDLES

Klaus Rehme (Dr. Ing., mechanical engineering, University of Karlsruhe, Germany, 1967; Priv.-Doz., thermo- and fluid-dynamics, University of Karlsruhe, 1974) has been a member of the Institute of Neutron Physics and Reactor Technology of the Karlsruhe Nuclear Research Center since 1962. His principal research interests are in fluid flow and heat transfer in noncircular channels, especially in rod bundles of liquid-metal fast breeder reactor and gas-cooled fast reactor designs.

K. Rehme



MATERIALS

THE SPATIAL VARIATION OF THE DAMAGE ENERGY AND GAS PRODUCTION IN THE EXPERIMENTAL VOLUME OF A Li(D,n) NEUTRON RADIATION DAMAGE FACILITY

R. G. Alsmiller, Jr. (top) (PhD, physics, University of Kansas, 1957) is leader of the Applied Physics Calculations Group of the Neutron Physics Division at Oak Ridge National Laboratory. For several years he has directed the theoretical research in this division in the areas of high-energy nucleon reactions and high-energy nucleon transport with applications to the shielding of manned spacecraft and high-energy accelerators. J. Barish (BS, mathematics and physical sciences, Memphis State University, 1962) is a research staff member of the Computer Sciences Division of Union Carbide Corporation's Nuclear Division. Since 1963 he has worked with the Applied Physics Calculations Group of the Neutron Physics Division at Oak Ridge National Laboratory. His major interest is in the development of numerical techniques to carry out high-energy nucleon transport calculations.

R. G. Alsmiller, Jr.
J. Barish

