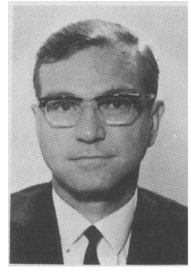
nuclear technology

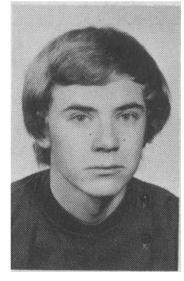
AUTHORS — DECEMBER 1972

REACTORS

DISTRIBUTION OF TRITIUM IN A PRESSURIZED WATER POWER REACTOR PLANT

Pekka A. O. Jauho
Lasse J. Mattila

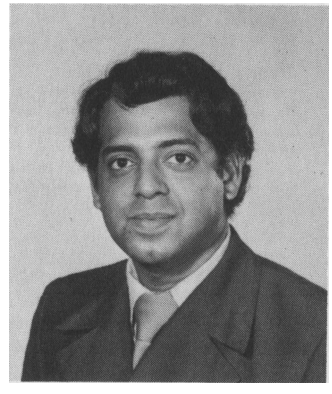




Pekka A. O. Jauho (left) (PhD, University of Helsinki, 1951) was professor in technical physics from 1957 to 1970 at the Helsinki University of Technology. He is now director general of the State Institute for Technical Research, Helsinki, Finland. His special interests include atomic energy and related problems of security and reliability; slow neutron physics and positronium physics; and application of mathematical models within the field of industry. Lasse J. Mattila (MS, nuclear engineering, Helsinki University of Technology), a research assistant at the Reactor Laboratory of the State Institute for Technical Research, Helsinki, Finland, has special interests in reactor safety and reliability, and radiation physics.

ANALYTICAL INVESTIGATION AND DESIGN OF A MODEL HYDRODYNAMICALLY SIMULATING A PROTOTYPE PWR CORE

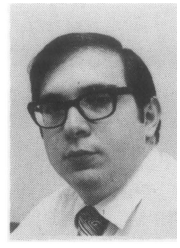
E. U. Khan

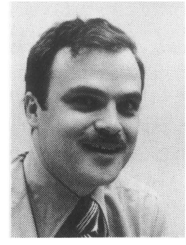


Ehsan U. Khan (B Tech, I.I.T. Kanpur, India; MS, Illinois Institute of Technology, Chicago, 1967) is a senior lead engineer in the methods development section of Babcock & Wilcox, Nuclear Power Generation Division. His current work includes the development of analytical methods, experimental correlations, and computer programs leading to improved thermal-hydraulic performance of PWR cores. He joined Westinghouse Atomic Power Division in February 1967 and worked in the area of LMFBR design and safety. His current interests include single- and two-phase mixing, flow blockage, and flow transients in PWRs.

ANALYTICAL STUDIES OF ELEMENTAL IODINE REMOVAL BY SPRAYS IN THE DONALD C. COOK NUCLEAR PLANT

S. J. Milioti
A. Sherman
R. L. Ritzman
J. A. Gieseke





Stephen J. Milioti (top left) (MS, nuclear engineering, Pennsylvania State University, 1964; MS, mechanical engineering, New York University, 1965) is assistant division head of the Nuclear Engineering Division of American Electric Power Service Corporation. He is responsible for the safety and licensing aspects of the Donald C. Cook Nuclear Plant. He is a registered professional engineer in New York. Albert Sherman (top right) (MS, nuclear engineering, University of Michigan, 1971) is an associate engineer at American Electric Power Service Corporation. His responsibilities include the analyses of engineered safety systems performance for the Donald C. Cook Nuclear Plant. Robert L. Ritzman (bottom left) (PhD, physical chemistry, Rensselaer Polytechnic Institute, 1961) is a senior chemist in the Ecology and Environmental Systems Division of Battelle's Columbus Laboratories. For several years he has directed work on fission product behavior in reactor fuels and in nuclear reactor safety analysis. He is also involved in evaluation of the environmental effects of nuclear power facilities. James A. Gieseke (bottom right) (PhD, chemical engineering, University of Washington, 1964) is an associate fellow in the Fluid and Gas Dynamics Division of Battelle's Columbus Laboratories. His recent research has involved experimental and theoretical work on the dynamics of aerosols, and analytical studies of fission product behavior in reactor containment systems under accident conditions.

MATERIALS

CHARACTERIZATION OF THE FRACTURE TOUGHNESS OF ZIRCALOY

T. J. Walker

Thomas J. Walker (PhD, mechanical engineering, Carnegie Mellon University) has worked in the fields of nuclear power plant analysis, nuclear design for advanced cores and irradiation tests, and fracture or fatigue failure of materials. He is presently employed by Westinghouse, Bettis Atomic Power Laboratory, his principal current interest being in the development of fracture or failure criteria for cases which cannot be treated with linear elastic fracture mechanics techniques.

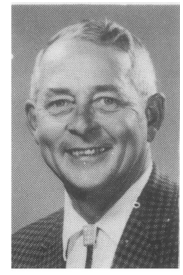
HOLD-TIME EFFECTS ON THE ELEVATED TEMPERATURE FATIGUE-CRACK PROPAGATION OF TYPE 304 STAINLESS STEEL

Lee A. James

Lee A. James (MS, mechanical engineering, University of Washington, 1965) spent eight years as a stress analyst and structural designer with the Boeing Company. He then moved to the Hanford Works where, for the past five years, he has been engaged in fracture mechanics and fatigue-crack propagation research.

SMOOTHED VALUES OF THE ENTHALPY AND HEAT CAPACITY OF UO_2

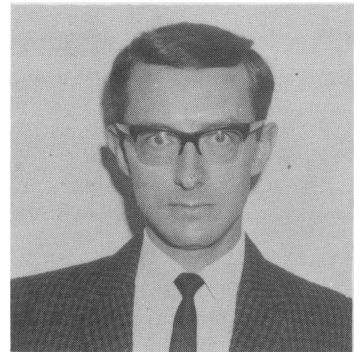
Jerry F. Kerrisk
David G. Clifton



Jerry F. Kerrisk (left) (PhD, physical chemistry, University of New Mexico, 1968) is a staff member in the Chemical and Metallurgical Division, Los Alamos Scientific Laboratory. His current research interests are in transport properties and thermal properties of solids, and safety analysis of advanced reactor fuels. David G. Clifton (PhD, physical chemistry, Ohio State University, 1955) is a staff member of the Chemical and Metallurgical Division, Los Alamos Scientific Laboratory. His current research interests are in thermodynamics, physical properties, and safe analysis of advanced reactor fuels.

ANNEALING BEHAVIOR OF NEUTRON-IRRADIATED SILICON CARBIDE TEMPERATURE MONITORS

R. J. Price

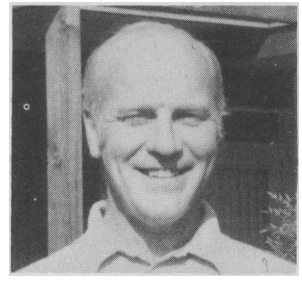


R. J. Price (PhD, metallurgy, University of Cambridge, England, 1962) is a member of the Fuels and Materials Division of Gulf General Atomic Company. He has worked on a variety of problems involving the structure, properties, and irradiation behavior of carbons, graphites, silicon carbide, and other high temperature reactor materials. He is presently carrying out research on the effects of fast-neutron irradiation on nuclear graphites and pyrolytic silicon carbide in support of the High Temperature Gas-Cooled Reactor program.

NUCLEAR EXPLOSIVES

TEMPERATURE IN A CHIMNEY FORMED BY AN UNDERGROUND NUCLEAR EXPERIMENT

D. E. Parks

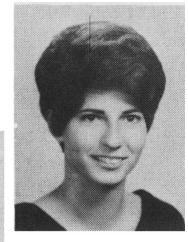


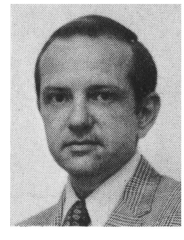
Donald E. Parks (PhD, physics, Carnegie Institute of Technology, 1958) is a senior research scientist at Systems, Science, and Software in La Jolla, California. His current research focuses primarily on the interaction of electrons and electromagnetic radiation with matter.

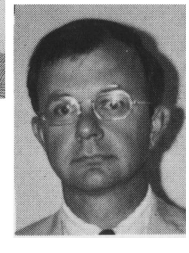
RADIATION

EFFECTS OF GAMMA RADIATION ON THE LOW-TEMPERATURE DILUTE-ACID HYDROLYSIS OF CELLULOSE

Nance D. Kunz
John L. Gainer
James L. Kelly







Nance D. Kunz (top) (MS, chemical engineering, University of Virginia, 1970) was formerly a research assistant at the University of Virginia. She is presently employed by the Philadelphia Water Department as assistant to the chief of treatment, while working part time toward a PhD in chemical engineering at Drexel University. John L. Gainer (center) (PhD, University of Delaware, 1964) is associate professor of chemical engineering at the University of Virginia. His current research interests include mass transport in biological systems with and without irradiation. James L. Kelly (bottom) (PhD, Louisiana State University, 1962) has been an associate professor of nuclear engineering at the University of Virginia since 1964. His current research interests include various aspects of nuclear chemical engineering and reactor safety.

REACTORS

A STORAGE CONTAINER FOR FISSILE MATERIALS

C. L. Schuske
D. C. Hunt

C. L. Schuske (left) (MS, physics, University of Southern California) is director of the Nuclear Safety Group at Dow Chemical USA, Rocky Flats Division. His areas of interest are critical mass physics and process plant nuclear criticality safety. D. C. Hunt (PhD, University of Colorado) has been associated with the Nuclear Safety Group of Dow Chemical USA, Rocky Flats Division, for eight years. He is a senior research physicist and has worked in criticality experimentation, data analysis, and theoretical methods.

MATERIALS

SILICON OXYNITRIDE—A NEW CERAMIC MATERIAL FOR NUCLEAR APPLICATIONS

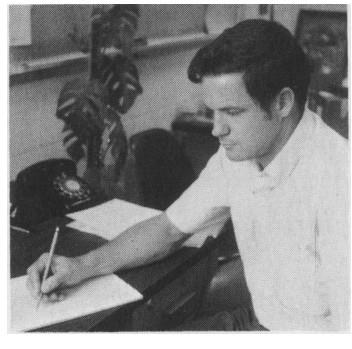
G. W. Keilholtz
R. E. Moore

Gerald W. Keilholtz (left) (PhD, Oregon State University, 1942) is currently the coordinator for the Environmental Reports Project and his current interests are in the storage and retrieval of technical information in computer systems. Roger E. Moore (PhD, University of Chicago, 1950) is currently working with the Health Physics Division of Oak Ridge National Laboratory and is making a study of tritium in natural gas resource systems.

RADIOISOTOPES

DEVELOPMENT OF FISSION GAS PRODUCTION REACTOR LOOP

Milton E. McLain, Jr.



Milton E. McLain, Jr. (MS, chemistry, University of Idaho, 1960) has been a senior research scientist at the Georgia Tech Nuclear Research Center for the past eight years. He is concerned principally with development of special isotopes for medical applications, neutron activation analysis applications to environmental problems, and other utilizations of the Georgia Tech Research Reactor.