

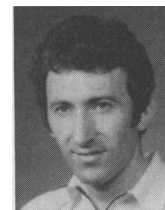
AUTHORS — AUGUST 1987

FISSION REACTORS

A THREE-FIELD DIFFUSION MODEL OF THREE-PHASE, THREE-COMPONENT FLOW FOR THE TRANSIENT THREE-DIMENSIONAL COMPUTER CODE IVA2/001

Nicolay Ivanov Kolev (MS, 1977, and PhD, 1978, nuclear engineering, Technical University of Dresden, German Democratic Republic) works in the area of reactor safety. He joined the Institute for Nuclear Research and Nuclear Energy of the Bulgarian Academy of Science in Sofia, Bulgaria, in 1978. From 1984 to 1986 he was a visiting scientist at the Kernforschungszentrum Karlsruhe. His primary interests are in the physics of two-phase flow and numerical solution of multi-phase fluid-dynamic problems.

Nicolay Ivanov Kolev



REAL-TIME STABILITY MONITORING METHOD FOR BOILING WATER REACTOR NUCLEAR POWER PLANTS

Kohyu Fukunishi (top) (PhD, control engineering, Osaka University, Japan, 1977) has worked in control engineering and information processing of nuclear fission and fusion at Energy Research Laboratory (ERL), Hitachi, Ltd. He is presently working in the field of neuroscience at Advanced Research Laboratory, Hitachi, Ltd. **Satoshi Suzuki** (MS, electrical engineering, Tokyo Metropolitan University, Japan, 1973) is a researcher at ERL. He works in the area of monitoring and control of nuclear power plants. He is currently interested in system identification, computer control, and software reliability.

*Kohyu Fukunishi
Satoshi Suzuki*



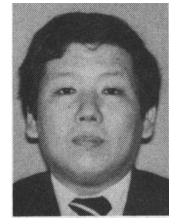
ANALYSIS OF EX-CORE DETECTOR RESPONSE MEASURED DURING NUCLEAR SHIP MUTSU LAND-LOADED CORE CRITICAL EXPERIMENT

Masafumi Itagaki (right) (MS, nuclear engineering, Hokkaido University, Japan, 1976) has been engaged in reactor physics analyses of the nuclear ship *Mutsu* since joining the Japan Nuclear Ship Research and Development Agency (JNSRDA) in 1976. The JNSRDA merged with the Japan Atomic Energy

*Masafumi Itagaki
Jun-ichi Abe
Katsuaki Kuribayashi*



Research Institute (JAERI) in 1985, and he is presently a member of the Department of Nuclear Ship Engineering of JAERI. His current interest is in the core management of the *Mutsu* reactor. **Jun-ichi Abe** (top) (MS, civil engineering, Chuo University, Japan, 1977) has worked for 9 years in the area of computer-aided engineering. Since 1981, he has been a member of the Japan Information Service, Ltd. (JAIS), responsible for reactor physics analyses. His current interest is in the use of personal computers for reactor analyses. **Katsuaki Kuribayashi** (bottom) (BS, mathematics, Science University of Tokyo, Japan, 1984) has worked for 2 years in the field of reactor physics analyses at JAIS. His current interest includes numerical techniques for reactor analyses.

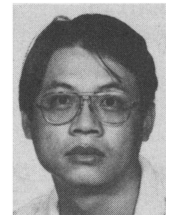
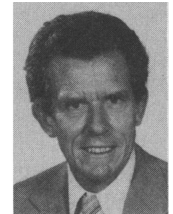


CHEMICAL PROCESSING

RAPID CALCULATION OF STEADY-STATE CONCENTRATION PROFILES WITH NONEQUILIBRIUM MASS TRANSFER IN CONTACTORS USING THE PUREX PROCESS

*John F. Geldard
Adolph L. Beyerlein
Houn-lin Chiu*

John F. Geldard (top) (BSc, chemistry, 1958; MSc, 1959, and PhD, 1964, organic chemistry, University of Sydney, Australia) is an associate professor at Clemson University (CU). His research interests include chelate chemistry, transition metal chemistry, the mathematical modeling of nuclear reprocessing, and the dynamics of inorganic molecules. **Adolph L. Beyerlein** (center) (BS, chemistry, Fort Hays Kansas State College, 1960; PhD, physical chemistry, University of Kansas, 1966) is currently a professor of chemistry at CU. Before joining the CU faculty in 1967, he was a Welch Foundation postdoctoral fellow at Rice University for 1 year. His areas of interest lie in theoretical chemistry, transport phenomena, thermal diffusion, and nuclear reprocessing. **Houn-lin Chiu** (bottom) (BS, chemistry, Tamkang University, Taiwan, 1979; MS, National Taiwan Normal University, Taiwan, 1982) is a graduate student in the PhD curriculum in the Department of Chemistry and Geology, CU.

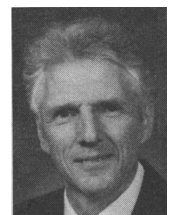


NUCLEAR FUELS

EXPERIMENTAL STUDIES OF FISSION PRODUCT RELEASE FROM COMMERCIAL LIGHT WATER REACTOR FUEL UNDER ACCIDENT CONDITIONS

*Morris F. Osborne
Jack L. Collins
Richard A. Lorenz*

Morris F. Osborne (right) (BA, physics, University of North Carolina at Chapel Hill, 1953) has worked at Oak Ridge National Laboratory (ORNL) for more than 30 years in a variety of research areas. Since 1966, he has specialized in studies of the safety of both light water reactors (LWRs) and high-temperature gas-cooled reactors. His primary interests are in the areas of fuel behavior and fission product release and behavior, especially under accident conditions. He represented the U.S. Nuclear Regulatory Commission (NRC) as a visiting scientist in



core melt research at Kernforschungszentrum Karlsruhe, Federal Republic of Germany from 1975 to 1977. **Jack L. Collins** (top) (BS, chemistry, University of Tennessee, 1963) has worked in nuclear-related fields during most of his 23 years as a staff member at ORNL. His work activities have been in the areas of transuranium chemistry, advanced breeder reactor fuel development, and LWR safety studies. He has a special interest in characterizing the chemical behavior of released fission products under severe LWR accident conditions. **Richard A. Lorenz** (bottom) (BS, chemical engineering, Iowa State University) has worked at ORNL since 1951. He began LWR safety studies in 1960, specializing in fission product release tests and modeling. He now supervises NRC research programs at ORNL in the fields of fission product release, iodine behavior in containment, and aerosol transport and resuspension.

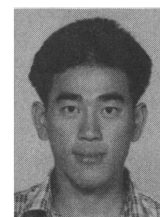


RADIOACTIVE WASTE MANAGEMENT

THE IMPACT OF HEAT TRANSFER MODELS ON CORE/CONCRETE INTERACTION

Lainsu Kao (top) (BS, nuclear engineering, National Tsing-Hua University, Taiwan, 1978; MS, nuclear engineering, University of Missouri-Rolla, 1983) is currently a PhD candidate in the Department of Nuclear Engineering at the Massachusetts Institute of Technology (MIT). His areas of technical interest are thermal hydraulics and severe accident analysis. **Mujid S. Kazimi** (PhD, nuclear engineering, MIT, 1973) worked at Westinghouse Electric Corporation and Brookhaven National Laboratory before joining the faculty of MIT where he is currently professor of nuclear engineering. His interests are mainly in the areas of fission and fusion reactor safety and multiphase flow and heat transfer.

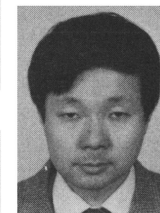
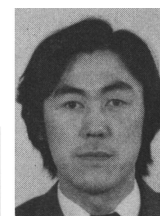
*Lainsu Kao
Mujid S. Kazimi*



STABILITY OF CEMENT-GLASS PACKAGES CONTAINING SODIUM BORATE SALT GENERATED FROM PRESSURIZED WATER REACTOR POWER PLANTS

Tatsuo Izumida (top right) (BS, 1976, and MS, 1978, unit process engineering, and Dr. Eng., 1981, Hokkaido University, Japan) is a researcher at the Energy Research Laboratory (ERL), Hitachi, Ltd. His interests and activities are irradiation chemistry, radioactive waste treatment, and fuel reprocessing. **Fumio Kawamura** (top left) (BS, chemical engineering, Gunma University, Japan, 1970; MS, 1972, and Dr. Eng., 1976, Tohoku University, Japan) is a senior researcher at ERL. He is involved in radioactive waste management and fuel reprocessing. **Koichi Chino** (bottom right) (BS, 1972, and MS, 1974, mechanical engineering, Tokyo Institute of Technology, Japan; Dr. Eng., Nagoya University, Japan, 1985) is a senior researcher at ERL. He is involved in radioactive waste management. **Makoto Kikuchi** (bottom left) (BS, chemistry, Tohoku University, Japan, 1968; PhD, chemistry, University of New York at Buffalo, 1973) is a senior engineer at Hitachi Works, Hitachi, Ltd., and is responsible for research and development of radioactive waste systems.

*Tatsuo Izumida
Fumio Kawamura
Koichi Chino
Makoto Kikuchi*



THE RECYCLE VALUE OF FUEL DISCHARGED FROM LIGHT WATER REACTORS

Nasir Majid Mirza (top) (BSc, physics, Punjab University, Pakistan, 1977; MSc, physics, 1981, and nuclear engineering, 1983, Quaid-i-Azam University, Pakistan) joined the Center for Nuclear Studies, Pakistan Institute of Nuclear Science and Technology as a faculty member in 1983. He is currently studying toward his PhD at the School of Nuclear Engineering, Purdue University. His current areas of interest and activities include neutronics, fuel cycle analysis, fuel management, fast reactor physics, and computational methods development. **Ansar Parvez** (MSc, physics, Punjab University, Pakistan, 1969; MSc, nuclear technology, Qaid-i-Azam University, Pakistan, 1971; PhD, nuclear engineering and science, Rensselaer Polytechnic University, 1977) has taught at the Center for Nuclear Studies, Pakistan Institute of Nuclear Science and Technology, and at Purdue University. He is currently working in the fuel management section at the Karachi Nuclear Power Plant. His areas of interest include core neutronics, fuel cycle analysis, nuclear fuel management, computer applications, and interactive graphics computing.

Nasir Majid Mirza
Ansar Parvez

