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AUTHORS — JUNE 1986

FISSION REACTORS

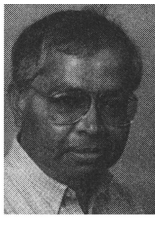
STATISTICAL ANALYSIS OF DUPLEX-TUBE PERFORMANCE IN EXPERIMENTAL BREEDER REACTOR II SUPERHEATER SU-712

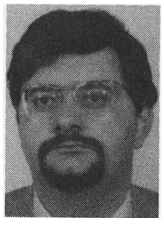
Kenny C. Gross
B. R. Seidel

Kenny C. Gross (top) (BS, 1975; MS, 1976; and PhD, 1977, nuclear engineering, University of Cincinnati) is with the Experimental Breeder Reactor II (EBR-II) Division of Argonne National Laboratory (ANL). His current technical interest is in the development of systems for detection, monitoring, and identification of failed fuel elements in liquid-metal-cooled reactors. **B. R. Seidel** (BS, metallurgy, Montana College of Mineral Science and Technology, 1967; MS, 1969, and PhD, 1975, materials science, Northwestern University; MRE, Religious Education, North American Baptist Seminary) has been responsible for the qualification and performance characterization of fuel, control, and blanket materials and related integral reactor components of the EBR-II fast breeder reactor for more than 11 years within the EBR-II Division of ANL. Currently, in addition to assessing fuels and materials performance and reliability, he manages the fuel technology activities that support demonstration of metallic fuel for the innovative liquid-metal reactor designs.

A CONCEPT OF A SMALL CONTROLLED, FILTERED VENTING SYSTEM AND AN ADD-ON DECAY HEAT REMOVAL SYSTEM TO MITIGATE THE CONSEQUENCES OF CORE-MELT ACCIDENTS

Sabyasachi Chakraborty
Bruno Covelli
Peter Michael Herttrich





Sabyasachi Chakraborty (top) [BS, physics, Calcutta University, India, 1961; diploma, nuclear physics, University of Kiel, Federal Republic of Germany (FRG), 1969] joined the Swiss Federal Nuclear Safety Inspectorate in 1975 after a variety of research work in the field of nuclear physics. He was head of risk and containment enhancement studies. His current interest is in the realistic estimate of the risk profiles of nuclear power plants and the associated safety goals. **Bruno Covelli** (bottom) (Dr. Sc. Techn., Swiss Institute of Technology, Zurich, Switzerland, 1976) is a physicist at Tecova Consulting Company. Since 1974,

he has been working in the field of thermohydraulics, in particular multiphase flow and chemical engineering. His current interest is in the study of mitigation concepts for coping with severe accidents in nuclear power plants. He is a consultant to the Swiss Federal Nuclear Safety Inspectorate. **Peter Michael Herttrich** (right) (Dr. ser. nat, University of Bonn, FRG, 1975) is Regierungsdirektor in the Directorate Safety of Nuclear Installations in the Federal Ministry of the Interior. His current interest is in the application of results and insights gained by safety research and probabilistic safety analyses for the optimization of nuclear safety.

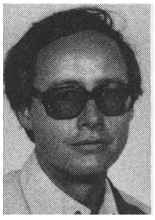
SKYSHINE RADIATION FROM A PRESSURIZED WATER REACTOR CONTAINMENT DOME

Wu-Hung Peng

Wu-Hung Peng (BS, nuclear engineering, Tsing-hua University, Taiwan, 1969; Dr. Eng. Sc., Columbia University, 1977) is a nuclear technology engineer at Stone & Webster Engineering Corporation. His current interest is in the analyses of gamma-ray scattering from cubicle labyrinth and wall penetrations.

EFFECTS OF FUEL ENRICHMENT ON THE PHYSICS CHARACTERISTICS OF PLUTONIUM-FUELED LIGHT WATER HIGH CONVERTER REACTORS

Rakesh Chawla
Rudolf Seiler
Kurt Gmür



Rakesh Chawla (top) (PhD, Imperial College, University of London, England, 1970) worked at the U.K. Atomic Energy Establishment, Winfrith, and the Indian Institute of Technology, Kanpur, before joining the Swiss Federal Institute for Reactor Research (EIR) in 1978. He is currently responsible for the Institute's light water high converter reactor project, in the framework of which experiments are under way on reactor physics and thermal-hydraulics aspects. **Rudolf Seiler** (center) (Dipl. Phys., 1976, and Dr. sc. nat., 1983, Swiss Federal Institute of Technology, Zurich, Switzerland) joined the EIR in 1981 after his dissertation in the field of Auger electron spectroscopy. He has been engaged in experimental reactor physics research with specific interests in reaction rate techniques. **Kurt Gmür** (bottom) (Dipl. Phys., 1968, and Dr. phil., 1973, nuclear physics, University of Zurich, Switzerland) has been working as an experimental physicist at the EIR since 1975. His interests focus on reaction rate measurements. Currently he is responsible for the operation of the PROTEUS zero-energy reactor.

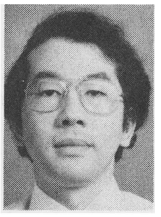
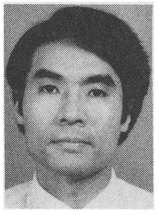
NUCLEAR SAFETY

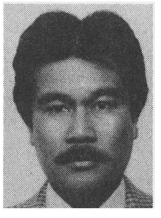
BLIND-BLIND PREDICTION BY RELAP5/MOD1 FOR A 0.1% VERY SMALL COLD-LEG BREAK EXPERIMENT AT ROSA-IV LARGE-SCALE TEST FACILITY

Yasuo Koizumi
Hiroshige Kumamaru
Yutaka Kukita
Masahiro Kawaji
Masahiro Osakabe
Richard R. Schultz
Mitsugu Tanaka
Kanji Tasaka

Yasuo Koizumi (right) (PhD, mechanical engineering, University of Tokyo, Japan, 1977) is a research engineer for the Rig of Safety Assessment (ROSA) program. His current interests include analysis of thermal-hydraulic behavior during a loss-of-coolant accident (LOCA) with emphasis on two-phase flow characteristics and heat transfer. **Hiroshige Kumamaru** (left) (PhD,

nuclear engineering, University of Tokyo, Japan, 1980) is a research engineer for the ROSA program. His current interests include core heat transfer under LOCA conditions. **Yutaka Kukita** (top right) (PhD, mechanical engineering, University of Tokyo, Japan, 1975) is now delegated to the Centre d'Etudes Nucléaires de Grenoble, as part of the technical exchange between the Japan Atomic Energy Research Institute (JAERI) ROSA-IV program and the French BETHSY/CATHARE programs on pressurized water reactor small-break LOCAs. **Masahiro Kawaji** (top left) (BASc, engineering science, University of Toronto, Ontario, Canada, 1978; MS and PhD, nuclear engineering, University of California, Berkeley, 1984) is a research engineer for ROSA-IV program at JAERI. His research activities are in two-phase flow and boiling and convective heat transfer. **Masahiro Osakabe** (center right) (PhD, mechanical engineering, University of Tokyo, 1985) is a research engineer for the ROSA program. His current technical interest is in the investigation of the two-phase interfacial shear stress and the flow transition in rod bundle. **Richard R. Schultz** (center left) (BS, mechanical engineering, University of Florida, 1967; MS, mechanical engineering, Rensselaer Polytechnic Institute, 1971) is currently employed at the Idaho National Engineering Laboratory and is responsible for analyzing ROSA-IV program experiments using advanced thermal-hydrualic codes. He was the U.S. Nuclear Regulatory Commission resident engineer responsible for code applications at JAERI from 1983 to 1985. **Mitsugu Tanaka** (bottom right) (PhD, chemical engineering, University of Kyushu, Japan, 1972) is a senior engineer at JAERI. He worked in the field of light water reactor (LWR) safety until June 1985. He is currently a group leader for project engineering of the Japan Power Demonstration Reactor dismantlement. **Kanji Tasaka** (bottom left) (PhD, nuclear engineering, University of Tokyo, Japan, 1976) worked in LWR safety research for 10 years at JAERI. He is the project manager of the ROSA program. His current interests include analysis of thermal-hydraulic behavior during a LOCA and an anticipated transient without scram in LWRs.

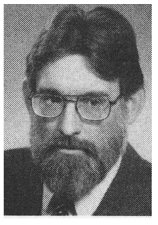
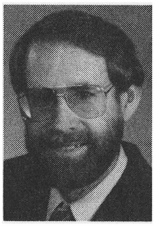
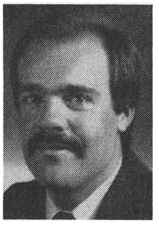




UNCERTAINTY AND SENSITIVITY ANALYSIS OF A MODEL FOR MULTICOMPONENT AEROSOL DYNAMICS

J. C. Helton
R. L. Iman
J. D. Johnson
C. D. Leigh

J. C. Helton (top right) (BS, mathematics, Southwest Texas State College, 1967; MA, 1968, and PhD, 1970, mathematics, University of Texas) is an associate professor of mathematics at Arizona State University and has worked on research projects at Sandia National Laboratories (SNL) involving reactor safety and radioactive waste disposal. His current research interests include environmental modeling, reactor safety, and uncertainty and sensitivity analysis techniques for computer models. **R. L. Iman** (top left) (BS, mathematics, Kansas State University, 1962; MA, mathematics, Emporia State University, 1965; MS, 1970, and PhD, 1973, statistics, Kansas State University) is a member of the technical staff at SNL. He has been responsible for the development of techniques for performing uncertainty and sensitivity analyses with computer models since 1975. Other research interests are in nonparametric statistics. **J. D. Johnson** (bottom right) (BS, ceramic engineering, Iowa State University, 1976; MS, nuclear engineering, University of New Mexico, 1979) is an employee of Science Applications International Corp. and has worked on SNL research projects related to radiation exposure and nuclear reactor safety. His current research interests include reactor safety and environmental modeling of radioactive releases. **C. D. Leigh** (bottom left) (BS, chemical engineering,


Arizona State University, 1981; MS, chemical engineering, Stanford University, 1982) is an engineer at SNL and has worked on research projects involving reactor safety since 1982. Her current research interests include aerosol behavior and validation of computer models.

FUEL CYCLES

FEASIBILITY OF THE ONCE-THROUGH THORIUM FUEL CYCLE FOR CANDU REACTORS

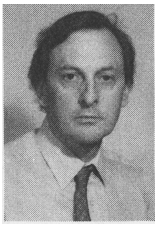
Alex Galperin

Alex Galperin (PhD, nuclear engineering, Ben-Gurion University of the Negev, Beer-Sheva, Israel, 1979) is a senior lecturer in the Department of Nuclear Engineering of Ben-Gurion University. His research interests are in nuclear fuel cycle analysis and plant engineering.

NUCLEAR FUELS

STRUCTURAL CHEMISTRY OF SOLID SOLUTIONS IN THE UO_2-Gd_2O_3 SYSTEM

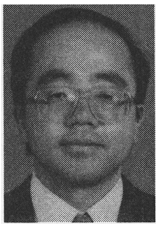
S. M. Ho
K. C. Radford



S. M. Ho (photo not available) (PhD, inorganic chemistry, University of Pittsburgh, 1970) is a senior scientist in the Materials Science Division of the Westinghouse Research and Development Center. His interests include high-temperature materials and crystal chemistry. **K. C. Radford** (right) (BSc, metallurgy, 1963, and PhD, metallurgy, 1967, Imperial College, London University) is manager of ceramics in the Materials Science Division of the Westinghouse Research and Development Center. Since 1968, he has been involved with sintering research and development of UO_2 fuel pellets for the Westinghouse Nuclear Fuel Division, and also with the development of the Al_2O_3-B_4C and integral fuel burnable absorbers now being marketed by Westinghouse. His current interests in addition to nuclear fuels are in electrical and high-temperature structural ceramics and composite materials.

AN EVALUATION OF THE INFLUENCE OF FUEL DESIGN PARAMETERS AND BURNUP ON PELLET/CLADDING INTERACTION FOR BOILING WATER REACTOR FUEL ROD THROUGH IN-CORE DIAMETER MEASUREMENT

Kazuaki Yanagisawa



Kazuaki Yanagisawa (BS, 1974, and MS, 1976, mechanical engineering, Gunma University, Japan) works for the Department of Fuel Safety Research of the Japan Atomic Energy Research Institute on pellet/cladding interaction in light water reactor (LWR) fuels. His current interests include fission product gas release behavior during a steady-state and a load-follow operation in LWRs.

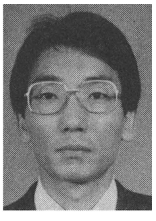
EFFECT OF HEAT FLUX ON THE CONCENTRATION FACTOR IN CREVICES OF NUCLEAR STEAM GENERATORS

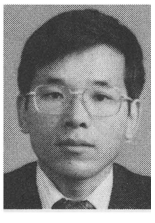
Sang Woon Shin
Hee Cheon No

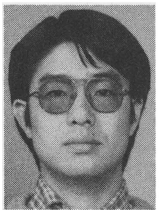
San Woon Shin (top) (BS, chemical engineering, Aju University, 1982; MS, nuclear engineering, Korea Advanced Institute of Science and Technology, 1984) works at the research center of Korea Electric Power Corporation. His current interest is waste management. **Hee Cheon No** (BS, nuclear engineering, Seoul National University, 1976; PhD, nuclear engineering, Massachusetts Institute of Technology, 1983) is an assistant professor in the Department of Nuclear Engineering at the Korea Advanced Institute of Science and Technology. His current research areas include thermal-hydraulic analysis of light water reactors, mechanical analysis of fuel elements, and application of modern control theory to nuclear power plants.

SMALL CALCINER FOR DRYING AND CALCINATION OF SYNROC SLURRY

Hisayoshi Mitamura
Takashi Murakami
Tsunetaka Banba
Takayuki Amaya







Hisayoshi Mitamura (top right) (BS, 1975, and MS, 1977, chemical engineering, Kyoto University, Japan) has been a member of the Department of Environmental Safety Research at Japan Atomic Energy Research Institute (JAERI) since 1977. His research interests have included crystallization of waste glass and leaching mechanisms of glass and ceramic waste forms. **Takashi Murakami** (top left) (BS, 1975; MS, 1977; and PhD, 1980, crystallography and mineralogy, University of Tokyo, Japan) works in the area of high-level waste management for JAERI. His interest is in the microstructures and leaching mechanisms of glass and ceramic waste forms and also in radiation effects on materials. **Tsunetaka Banba** (bottom right) (BS, 1972, and MS, 1974, chemical engineering, Nagoya University, Japan) has been a research scientist for JAERI since 1974. His work has involved many aspects of the field of waste management. His main interest is in the mechanisms and modeling of waste form corrosion. **Takayuki Amaya** (bottom left) (BS, 1981, and MS, 1983, nuclear engineering, Hokkaido University, Japan) is a member of the Nuclear Research Center at JGC Corporation. He has worked at JAERI since 1985. His current interest is in the area of waste treatment in the fuel cycle.