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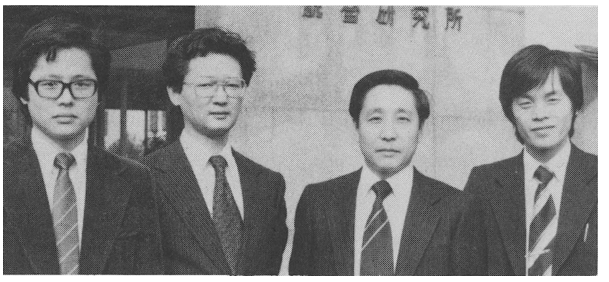
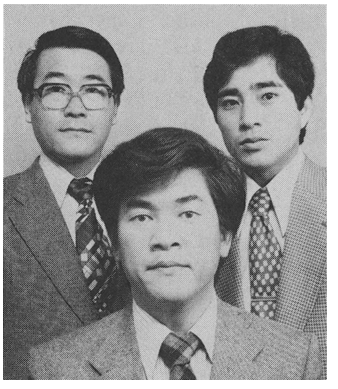
AUTHORS — JANUARY 1981

REACTORS

ANALYSIS ON THE PRIMARY SYSTEM RADIATION CONTROL AT TSURUGA BOILING WATER REACTOR PLANT

Kenji Yamazaki
Shigeharu Fujita
Toshimasa Kamata
Yoshitake Morikawa
Kunio Numata
Kenji Osamura
Yoshinori Meguro

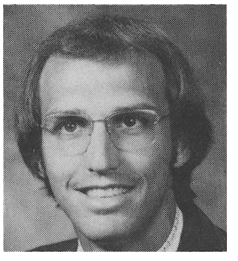




Kenji Yamazaki (top photo, left) (BS, 1974, and MS, 1976, radiochemistry, Kanazawa University) is a staff member of the Reactor Chemistry Department at the NAIG Nuclear Research Laboratory, where he has been active in water chemistry of boiling water reactors (BWRs). **Shigeharu Fujita** (top photo, right) (BS, metallurgy, Tohoku University, 1978) has been involved in the Reactor Chemistry Department at the NAIG Research Laboratory. His interest lies in the corrosion in high temperature and high pressure water. **Toshimasa Kamata** (top photo, second from right) (BS, chemistry, Toyama University, 1960) is a senior researcher of the Reactor Chemistry Department at the NAIG Nuclear Research Laboratory, where he has been the manager of the Water Chemistry Group. **Yoshitake Morikawa** (top photo, second from left) (BS, applied chemistry, Gumma University, 1967) is a deputy manager, Nuclear Energy Group, Toshiba Corporation, where he has been active in the water chemistry of BWRs. **Kunio Numata** (bottom photo, right) (chemistry, Ibaraki Technical College, 1975) is a staff member in the Engineering Department at The Japan Atomic Power Company, where he has been active in the water chemistry field of light water reactors (LWRs). **Kenji Osamura** (bottom photo, center) (chemistry, Takefu Industrial Senior High School, 1965) is a member of the chemical staff in the Tsuruga Nuclear Power Station of The Japan Atomic Power Company. His interest lies in the chemical analysis of LWRs. **Yoshinori Meguro** (bottom photo, left) (BS, chemistry, Yokohama National University, 1963) is a senior chemical engineer in the Engineering Department at The Japan Atomic Power Company, where he leads the primary system radiation dose rate reduction study of the Tsuruga Nuclear Power Plant.

TWO-DIMENSIONAL NEUTRONICS CALCULATION FOR THE HIGH YIELD LITHIUM INJECTION FUSION ENERGY CONVERTER

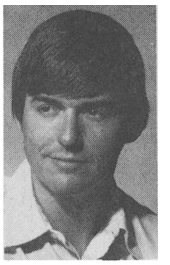
Wayne R. Meier

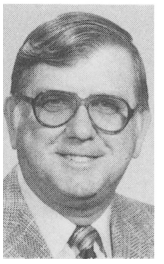


Wayne R. Meier (BS, physics, Western Illinois University, 1974; MS, nuclear engineering, University of Illinois, 1976) is a research engineer in the Energy and Military Applications Group of the Laser Fusion Program at Lawrence Livermore National Laboratory. He has been involved in the conceptual design of various reactor concepts for inertial confinement fusion (ICF) for the past four years. His current technical interests include neutronics, fusion-fission hybrids, and the economics of ICF electric power plants.

RETRIEVAL OF DAMAGED SUBASSEMBLY FROM EXPERIMENTAL BREEDER REACTOR II PRIMARY TANK

Ronald W. King
Erwin C. Filewicz

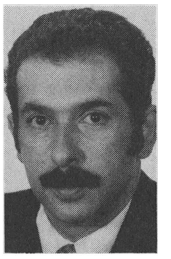


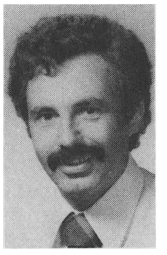


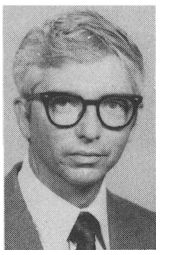
Ronald W. King (top) (BS, mechanical engineering, University of Idaho, 1970) was employed at Pratt and Whitney Aircraft's Florida Research and Development Center from 1970 to 1974. In 1974, he accepted his current position with Argonne National Laboratory (ANL) as a staff mechanical engineer for the Experimental Breeder Reactor II (EBR-II) project near Idaho Falls, Idaho. He has responsibility for engineering surveillance and evaluation of the EBR-II in-tank fuel-handling equipment, as well as certain in-core and ex-core experiments. He has had special assignments on conceptual design studies for future EBR-II modifications and programs in support of the national liquid-metal fast breeder reactor program. **Erwin C. Filewicz** has 30 years of experience at ANL in design and engineering on nuclear projects. He has been active in the EBR-II project since 1960, on engineering of initial concepts and final reactor system installations. He has several years of experience on engineering and developing sodium analysis systems on sodium technology projects. His present responsibilities are as leader of a group and job manager of a test facility to be provided for in-reactor instrumented experiments in EBR-II.

AN ANALYSIS OF THE THERMAL BEHAVIOR OF A STAGNANT POOL FOR FAST REACTOR SAFETY

S. J. Hakim
T. H. Bauer
R. O. McNary





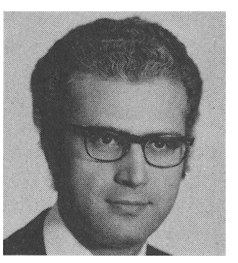


Shafik J. Hakim (top) (PhD, physics, University of Michigan) served as an assistant professor of physics at Kuwait University. In the period between 1974 and 1979, he worked on the transition phase of a fast breeder reactor's loss-of-flow accident. He is the author of numerous papers in numerical heat transfer and fluid dynamics, and currently is employed at Bell Telephone Laboratories, Naperville, Illinois. **T. H. Bauer** (center) (PhD, physics, Cornell University, 1970) has worked since 1977 in the Transient Reactor Test (TREAT) Program of the Reactor Analysis and Safety (RAS) Division of Argonne National Laboratory (ANL). His current interests lie in the effective use of experiments in the analysis of reactor safety problems. **R. O. McNary** (bottom) (PhD, mechanical engineering, University of Illinois, 1967) has been a lead experimenter for the In-Pile Experiments Section, RAS Division, ANL, and is currently planning transition phase experiments in TREAT related to pool boilup.

FUEL CYCLES

AN ECONOMIC MODEL FOR FUEL CYCLE COST

Charles Abou-Ghantous

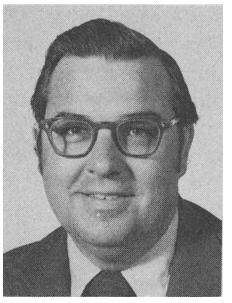


Charles Abou-Ghantous (MS, nuclear engineering, University of Cincinnati, 1979) worked with the French Commissariat à l'Energie Atomique in Grenoble in 1977 with the dosimetry group, Piles Department. Currently, he is a PhD candidate in nuclear engineering at the University of Cincinnati.

CHEMICAL PROCESSING

RAPID DISSOLUTION OF PLUTONIUM METAL IN SULFAMIC ACID FOLLOWED BY CONVERSION TO A NITRIC ACID MEDIUM

Leonard W. Gray

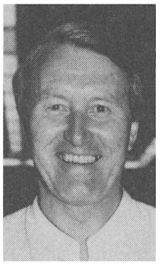


Leonard W. Gray (PhD, inorganic chemistry, University of South Carolina, 1972) is a research chemist in the Actinide Technology Division, Separations Processes Group at the E. I. du Pont de Nemours and Company Savannah River Laboratory. His research interests include the study of process upsets, process optimization, development of new processes, and control of undesirable side reactions.

FUELS

MECHANICAL PROPERTIES OF ADVANCED FUELS UNDER COMPRESSIVE DEFORMATION

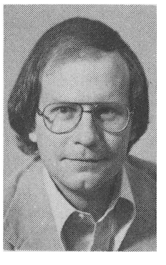
P. Werner
H. Blank

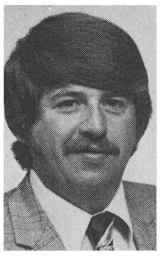


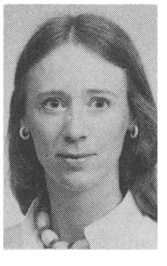
P. Werner (top) (MS, mechanical engineering, 1961; engineering assistant for machine tools, 1963, Technical University of Karlsruhe) joined the Institute for Transuranium Elements at the Joint Research Centre of the European Community, Karlsruhe, in 1964. He has been involved with the development of high-precision hot-cell equipment since 1976. His current research interests include the mechanical properties of ceramic fast breeder fuels. **Hubert P. C. Blank** (PhD, metal physics, Technical University of Stuttgart, 1957; Max-Planck-Institut for Steel Research, Düsseldorf, 1959; Karlsruhe Nuclear Research Centre, 1961) has since 1964 been with the Institute for Transuranium Elements, Joint Research Centre of the European Community, Karlsruhe. From 1961 to 1964 he was guest scientist at the Nuclear Research Centre, Mol, Belgium. His special interests are in the materials science of fast breeder fuels.

FILM BOILING BEHAVIOR OF A PRESSURIZED WATER REACTOR TYPE FUEL BUNDLE

F. S. Gunnerson
D. T. Sparks
D. K. Kerwin





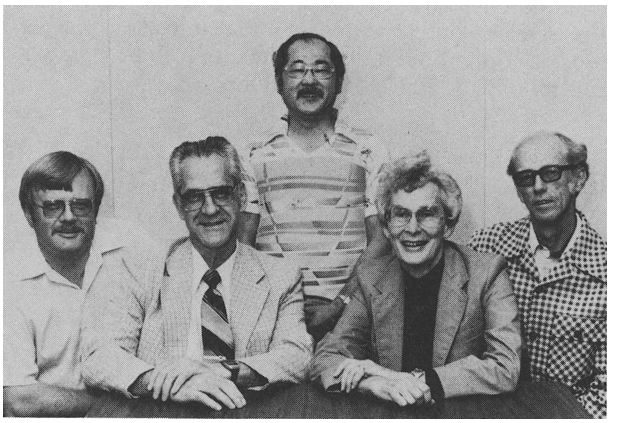


Fred S. Gunnerson (top) (PhD, nuclear engineering, University of New Mexico, Albuquerque, 1979) is an assistant professor of mechanical engineering and aerospace sciences at the University of Central Florida. His research interests include thermal hydraulics, boiling heat transfer, interfacial phenomena, and nuclear reactor safety. **Daniel T. Sparks** (center) (BS, applied physics, 1974, and MS, nuclear engineering, 1979, Idaho State University) is a project engineer for EG&G Idaho, Inc., at the Idaho National Engineering Laboratory. His research interests include thermal hydraulics, heat transfer, fuel behavior, pellet-cladding interaction, and operational transient experiments. **Deborah K. Kerwin** (bottom) (BS, engineering physics, University of Arizona, 1974; MS, mechanical engineering, University of Idaho, 1980) is a senior engineer at EG&G Idaho, Inc. She has worked primarily in the area of nuclear fuel rod materials behavior research for the past five years.

DEPLETED URANIUM DIOXIDE POWDER FLOW THROUGH VERY SMALL OPENINGS

S. L. Sutter
J. W. Johnston
P. C. Owzarski
J. Mishima
L. C. Schwendiman

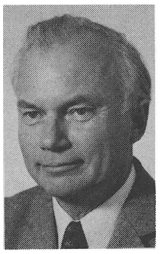
Sue L. Sutter (second from right) (BS, chemistry, Washington State University, 1948) has been a member of the Atmospheric Sciences Department at Pacific Northwest Laboratory (PNL) since 1970. She has worked on source term assessment of the impact of operational and accidental releases of radioactive material from nuclear facilities. Her field of interest is investigating aerosol generation in accident scenarios. Earlier work involved particle deposition/resuspension studies. **James W. Johnston** (far right) (AB, philosophy and classical languages, Gonzaga University; MS, mathematics, St. Mary's University; PhD, statistics, Kansas State University, 1968) joined the Statistical Section at PNL in 1968 and has been a statistical consultant on many projects related to nuclear safety and safeguards and to assessment of environmental impacts of nuclear energy. His current interest is in the analysis of complicated data sets and response surface methodology. **Peter C. Owzarski** (far left) (BS, chemical engineering, University of Wisconsin; PhD, chemical engineering, University of Minnesota, 1967) is a senior research engineer in the PNL Atmospheric Sciences Department. He has been involved in nuclear safety analyses for a decade. His primary contributions have been in defining airborne releases from hypothetical light water reactor accidents (Rasmussen Study) and now is analyzing the consequences of fires and explosions in various types of nuclear fuel cycle facilities. **Jofu Mishima** (center) (BS, chemistry, Wayne University, 1951) joined the Hanford Project in 1951 and is currently a team leader with the Applied Meteorology and Emissions Assessment Section of PNL. His principal interest is the characterization of airborne particulate material from nonnuclear initiated accidents in nuclear fuel cycle facilities. **Lysle C. Schwendiman** (second from left) (BS, chemical engineering, University of Idaho, 1939) is PNL technical program manager for research contracts to the Nuclear Regulatory Commission Office of Nuclear Regulatory Research, Division of Safeguards, Fuel Cycle, and Environmental Research. He has been employed by General Electric Company and PNL at Richland, Washington since 1947 and is interested in the fields of health physics, environmental assessment, airborne nuclear wastes, aerosol physics, accident assessment, and uranium mill and mine environmental impacts and corrective actions.

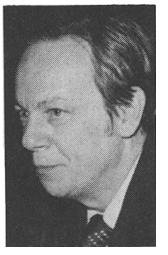


ISOTOPES SEPARATION

URANIUM ENRICHMENT BY THE SEPARATION NOZZLE METHOD WITHIN THE FRAMEWORK OF GERMAN/BRAZILIAN COOPERATION

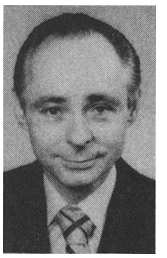
E. W. Becker
P. Nogueira Batista
H. Völcker





Erwin W. Becker (top) (PhD, physical chemistry, University of Munich, 1943) is professor of physics at the University of Marburg/Lahn. Since 1958, he has been head of the Institute of Nuclear Chemical Engineering sponsored by the university and Kernforschungszentrum Karlsruhe. In 1957, he was awarded the Dechema Prize for the invention of the separation nozzle process. **Paulo Nogueira Batista** (bottom) (MSc, politics and international politics, Columbia University) is currently

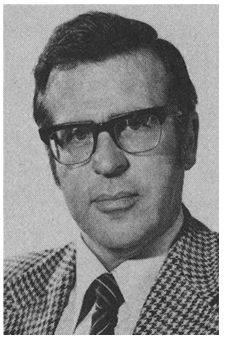
president of Empresas Nucleares Brasileiras–NUCLEBRAS, the Brazilian nuclear energy state-owned holding. **Helmuth Völcker** (right) (PhD, physics, University of Kiel, 1960) worked in the nuclear reactor industry in core design, thermodynamics, and the nuclear fuel cycle since 1962. He joined STEAG Aktiengesellschaft in 1967, where he has been a member of the management board since 1974, responsible for technical matters, in particular the nuclear department and research and development.



ANALYSIS

MEASUREMENT OF SULFUR-35 IN THE COOLANT GAS OF THE WINDSCALE ADVANCED GAS-COOLED REACTOR

F. J. Sandalls

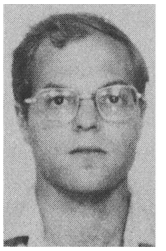


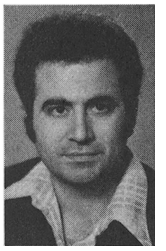
F. J. Sandalls (CChem MRIC) is a senior scientific officer with the United Kingdom Atomic Energy Authority at Harwell. After joining the Authority in 1958, he specialized in actinide and fission product analysis and later spent several years with the High Temperature Gas-Cooled Reactor Project (DRAGON) studying diffusion of fission products in graphite. In 1973, he joined the Environmental and Medical Sciences Division at Harwell and is now involved in atmospheric chemistry studies.

TECHNIQUES

NONDESTRUCTIVE ANALYSIS OF RADWASTE CONTAINERS

Yakov Ben-Haim
Ezra Elias
Alexander Knoll

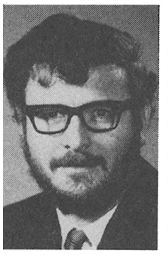


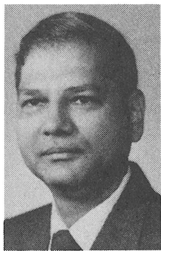


Yakov Ben-Haim (top) (BA, mathematics and chemistry, Beloit College, 1973; MS, nuclear engineering, and PhD, chemistry, University of California, Berkeley, 1978) has been a postdoctoral fellow at the Technion since 1978. His interests are in nondestructive analysis, x-ray fluorescence, and reactor safety and control. **Ezra Elias** (BSc, chemical engineering, 1968, and MSc and DSc, nuclear engineering, 1975, Technion) has been a senior lecturer at the Technion since 1978. He has worked on the application of nuclear techniques in industry for the last five years. He is also currently involved in research on two phase flow and thermal hydraulic aspects of nuclear reactor safety. Photo and biographical information for **Alexander Knoll** were not available at time of publication.

RESPONSE TO LARGE CAVITY ION CHAMBERS TO SPACE PROTONS

John W. Wilson
Govind S. Khandelwal





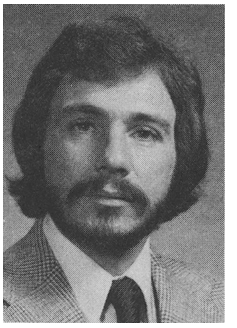
John W. Wilson (top) (PhD, physics, College of William and Mary, 1975) is a research scientist at the National Aeronautics and Space Administration, Langley Research Center and adjunct associate professor of physics at Old Dominion University. His current interests are radiation interaction and transport, and radiation chemistry with applications in radiation protection, direct nuclear pumped lasers, solar pumped gas lasers, and radiation chemistry of polymeric materials. **Govind S. Khandelwal**

(PhD, physics, University of North Carolina, 1966) is a professor of physics at Old Dominion University, Norfolk, Virginia. His fields of interest are theoretical atomic, nuclear, and radiation physics.

FUELS

A NOTE ON TRANSIENT FUEL BEHAVIOR MAPS FOR OXIDE NUCLEAR REACTOR FUEL

R. J. DiMelfi

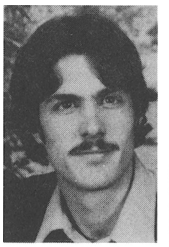


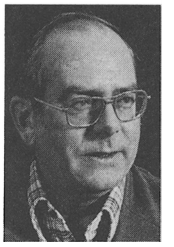
Ronald J. DiMelfi (PhD, materials science and engineering, Stanford University, 1975) is a staff metallurgist in the Reactor Analysis and Safety Division of Argonne National Laboratory. He has experience in the fields of high temperature mechanical behavior and fracture of stressed materials. His current interests include modeling the transient behavior of reactor fuel and cladding material based on microstructural considerations, the effects of environment on material failure, and the fundamental aspects of material deformation.

RADIATION

GAMMA-INDUCED ELECTRON EMISSION FROM CONDUCTING SURFACES

James D. Wolcott
J. N. Anno





James D. Wolcott (top) (BS, physics, University of Kentucky, 1976; MS, nuclear engineering, University of Cincinnati, 1978) is currently a station nuclear engineer at the Brown's Ferry Nuclear Plant. His interests are in radiation effects on materials and in nuclear plant response to transients and accidents. **James N. Anno** (BS, 1955, MS, 1961, and PhD, 1965, physics, Ohio State University) has been active in radiation-related research since 1955, with emphasis on the effects of radiation on materials and components. Currently, he is a professor of nuclear engineering at the University of Cincinnati, having joined the faculty in 1970.