



AUTHORS — DECEMBER 1986

FISSION REACTORS

CANDU-600 HEAT TRANSPORT SYSTEM FLOW STABILITY

William J. Garland (top) (BS, engineering physics, 1970; MS, engineering physics, 1971; and PhD, chemical engineering, 1975, McMaster University, Canada) specialized in reactor physics at McMaster University and published in the areas of transport theory and space-time kinetics. From 1975 to 1983, he worked in the Canadian nuclear industry specializing in CANDU heat transport system analysis and design. The major effort from early 1980 to mid-1983 was in heat transport system stability investigations. This included pre- and posttest analysis, coordination of Atomic Energy of Canada, Ltd.'s (AECL) process team, test planning, and liaison. Presently, he is associate professor at McMaster University conducting research on large thermal-hydraulic and nuclear reactor systems. Specific areas include pressurizer modeling, heat transport loop stability, rate forms for the equation of state, and expert system applications to equation derivation.

Simon H. Pang (BSc, mechanical engineering, National Taiwan University, 1962; MSc, 1964, and PhD, 1973, mechanical engineering, Queen's University) has been with AECL since 1980 and is currently section head of the Heat Transport Systems Section. In this capacity, he supervises a group of engineers, mainly responsible for the design of the heat transport and auxiliary systems. Prior to joining AECL-CANDU operations, he worked for Ontario Hydro, Canada, from 1975 in various capacities. As supervising design engineer, heading a containment group, he was involved in containment safety and design assist analyses. As design engineer specialist for the Darlington Nuclear Generating Station project, he was responsible for the design of the primary heat transport and auxiliary systems. Publications include heat transfer in spray flows and metastable equilibrium in nozzle flows.

*William J. Garland
Simon H. Pang*



A DYNAMIC RELIABILITY MODEL FOR DAMAGE ACCUMULATION PROCESSES

Dov Ingman (top) (PhD, Laboratory of Applied Nuclear Physics, Institute of Solid Fuel Materials, Moscow, USSR, 1975) currently works at Technion-Israel Institute of Technology, Haifa, in the areas of physical reliability models, nondestructive testing, and neutron physics. **Leib Reznik** (MSc, 1978, and DSc, 1985, nuclear engineering, Technion, Haifa, Israel) is a safety analysis engineer at the Israel Electric Corporation, Haifa. Areas

*Dov Ingman
Leib Reznik*



of interest include reliability and safety analyses of components and complex systems.

A TRANSIENT TWO-PHASE VELOCITY DIFFERENCE MODEL FOR DRIFT CALCULATION IN CANDU THERMOHYDRAULIC CODES

Samir M. Sami



Samir M. Sami (B.Sc.A., M.Sc.A., and PhD, Université de Montréal, Canada, 1981) has worked in the area of two-phase flow at various industries and institutions since graduation. He has specialized in the transient analysis of thermohydraulics and particularly thermohydraulic code developments for CANDU reactors. He is currently a professor of mechanical engineering, Université de Sherbrooke, and is involved in various projects with Atomic Energy of Canada Ltd., Westinghouse Canada Ltd., Rolls-Royce Canada, Canairtech Inc., and ASEA Ltd.

ACCELERATED TWO-PHASE FLOW THROUGH PERFORATED PLATES

*Mario Dalle Donne
Giacinto P. Tartaglia*



Mario Dalle Donne (top) (PhD, engineering science, Bologna University, Italy, 1956) worked from 1956 to 1959 at Agip Nucleare, Italy, and from 1959 to 1963 at the Dragon Project, England. Since 1963 he has worked in the Federal Republic of Germany (FRG) at the Kernforschungszentrum Karlsruhe (KfK) Institut für Neutronenphysik und Reaktortechnik. Since 1976 he has been adjoint professor at Karlsruhe University. He has worked in the fields of gas-cooled, water, and liquid-metal-cooled fission reactors and of blankets for fusion reactors. His main technical interests are thermohydraulics, safety, and reactor assessment. **Giacinto P. Tartaglia** (BS, Bologna University, Italy, 1979; PhD, nuclear engineering, Karlsruhe University, FRG, 1985) has worked on seismic analysis of fast breeder reactors at the Nuclear Energy Agency, Bologna, and Commissariat à l'Énergie Atomique, and on heat transfer and fluid dynamics at KfK. Presently he works on radiation damage and shielding at the European Organization for Nuclear Research (CERN).

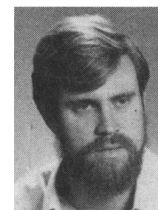


NUCLEAR SAFETY

GASEOUS FISSION PRODUCT RETENTION BY SOLID SURFACES: ITS ROLE IN THE SOURCE TERM REDUCTION

*Shlomo Ron
Zeev B. Alfassi
Michael Baer*

Shlomo Ron (top) (BSc, chemistry, Tel-Aviv University, 1973; MSc, nuclear engineering, Ben-Gurion University, 1976) joined the Israel Electric Company in 1976. Since 1979 he has been employed at the Israel Atomic Energy Commission. His current interests include safety issues, risk evaluations of nuclear power plants, and molecular dynamics. **Zeev B. Alfassi** (center) [PhD, Weizman Institute of Science and Soreq Nuclear Research Center (SNRC), 1970] has worked at Stanford Research Institute in the field of chemical kinetics and also in the Department of Nuclear Engineering of the Ben-Gurion University of the Negev, where he is now department chairman. In 1976-77, he worked at the SNRC. His current interests are chemical kinetics of free radicals, chemical analysis by activation methods, radioisotope production, and labeling and eliminating electrolytes from aqueous solutions. **Michael Baer** (bottom) (PhD, chemical physics,



The Hebrew University of Jerusalem, 1969) has been employed at SNRC since 1964. His current interest is in molecular dynamics of chemical reactions in the gas phase.

CHEMICAL PROCESSING

CRUD FORMATION IN THE PUREX AND THOREX PROCESSES

Erich Zimmer (top) [Dr. rer. nat., chemistry, University of Mainz, Federal Republic of Germany (FRG), 1965] is a section head at the Institute of Chemical Technology of Kernforschungsanlage Jülich (KFA). He has dealt with various aspects of the nuclear fuel cycle: development of processes for nuclear fuel production, reprocessing (head-end and solvent extraction) of spent fuel, and treatment of nuclear wastes. **Joachim Borchardt** (degree, chemical engineering, Fachhochschule Aachen, FRG, 1977) joined KFA in 1977. He has worked on extraction of uranium from seawater and solvent extraction of spent fuel. His current research work is on nuclear fuel production.

*Erich Zimmer
Joachim Borchardt*

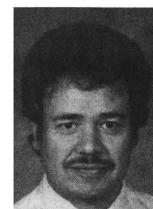


RADIOACTIVE WASTE MANAGEMENT

PROBABILISTIC MODELING OF RADIONUCLIDE RELEASE AT THE WASTE PACKAGE SUBSYSTEM BOUNDARY OF A REPOSITORY IN BASALT

Budhi Sagar (top) (PhD, hydrology, University of Arizona, 1973) is currently a principal engineer at Rockwell Hanford Operations. He has over 20 years of experience including teaching, research, and consultation. His primary interest is in mathematical modeling. **Paul W. Eslinger** (center) (PhD, statistics, Southern Methodist University, 1983) joined Boeing Computer Services in 1984. Since then, he has consulted for Rockwell Hanford Operations on the Basalt Waste Isolation Project. His primary interests lie in stochastic modeling. **Robert G. Baca** (bottom) (MS, mechanical engineering, Washington State University, 1980) was manager of the Performance Assessment Group for the Basalt Waste Isolation Project at Rockwell Hanford Operations from 1983 to 1986. He has worked in numerical modeling for 16 years on water pollution, nuclear waste management, and probabilistic risk assessment problems. His special interests lie in computer simulation of fluid flow and transport processes.

*Budhi Sagar
Paul W. Eslinger
Robert G. Baca*



AMERICIUM CONCENTRATIONS IN SOLUTIONS CONTACTING AMERICIUM-DOPED GLASS

Dhanpat Rai (right) (PhD, soil chemistry, Oregon State University, 1970) is a technical leader/staff scientist at Pacific Northwest Laboratory (PNL). His research at PNL has dealt with environmental chemistry of plutonium, neptunium, and americium, specifically as it applies to radioactive waste disposal in

*Dhanpat Rai
Janet A. Schramke
Dean A. Moore
Gary L. McVay*



geologic repositories. **Janet A. Schramke** (top) (PhD, geochemistry and mineralogy, The Pennsylvania State University, University Park, 1984) is a research scientist at PNL. Her research at PNL has dealt with radionuclide release during nuclear waste-water-rock interactions, and the environmental chemistry of the actinide elements. **Dean A. Moore** (center) (BS, Washington State University, 1976) is a technical specialist at PNL. His research at PNL has dealt with radio- and analytical chemistry of actinides and fission products. **Gary L. McVay** (bottom) (BS, metallurgical engineering, University of Missouri-Rolla, 1966; MS, 1967, and PhD, 1970, ceramic engineering, University of Missouri-Rolla) is a section manager in the materials science and technology department at PNL. His current activities include basic research on metals and ceramics with an emphasis on environmental interactions and degradation.



MATERIALS

FOUR NONDESTRUCTIVE ELECTROCHEMICAL TESTS FOR DETECTING SENSITIZATION IN TYPE 304 AND 304L STAINLESS STEELS

Azar P. Majidi (top) (BS, metallurgical engineering, Arya-Mehr University of Technology, Iran; PhD, metallurgy and materials technology, University of Surrey, England) is currently a research associate with the Center for Composite Materials at the University of Delaware. Prior to her involvement with composites, she spent a number of years studying potentiodynamic methods for detecting sensitization in stainless steel alloys. **Michael A. Streicher** (BS and MS, chemical engineering, Syracuse University; PhD, metallurgy, Lehigh University) has been a research professor at the University of Delaware since 1979. Previously, he was a research fellow at the Du Pont Experimental Station, Wilmington, Delaware. For more than 30 years he has been active in corrosion research, testing, and alloy development of stainless steels.

*Azar P. Majidi
Michael A. Streicher*



BEHAVIOR OF ALLOY A-286 REACTOR VESSEL INTERNALS BOLTING MATERIAL

R. S. Piascik (top) (MS, material science, University of Virginia, 1981) is currently a PhD candidate at the University of Virginia where he is conducting short crack studies for the determination of microstructural effects in corrosion fatigue of aluminum-lithium alloys. His interests include the environmental effects on nuclear reactor vessel internals and steam generator materials and the design, development, and processing of nuclear fuel. **K. E. Moore** (BS, material science, San Jose State University, 1963) is currently the supervisor of the materials group within the Babcock & Wilcox Nuclear Power Division. His interests include the environmental effects on power plant materials, reactor vessel surveillance program materials evaluation, plant life extension, and reactor component requalification.

*R. S. Piascik
K. E. Moore*

