



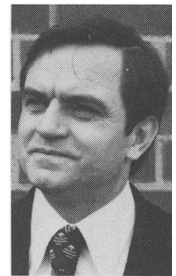
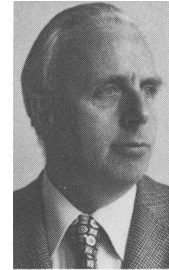
## AUTHORS — OCTOBER 1977

### REACTORS

#### A TECHNICAL SCALE GAS GENERATOR FOR STEAM GASIFICATION OF COAL USING NUCLEAR HEAT

*H. Jüntgen*  
*K. H. van Heek*

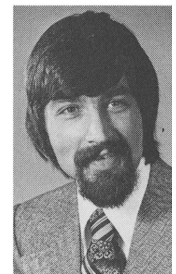
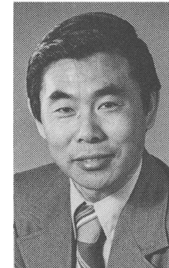
Harald Jüntgen (top) (PhD, physical chemistry, University of Heidelberg, 1955; professor, University of Heidelberg, 1966) is head of the Department of Physical Chemistry of Bergbau-Forschung (BF), Essen, Federal Republic of Germany. He is responsible for research and development in the field of adsorption by activated carbon for processes of gas and water cleaning and fundamental and applied work in the field of coal gasification and pyrolysis. Karl H. van Heek (PhD, physical chemistry, Technische Hochschule, Aachen, 1965) is group leader in the Department of Physical Chemistry at BF. His research interest is gasification of coal, and he is coordinating the work of BF concerning the Nuclear Coal Gasification Project.



#### SOPHT—A COMPUTER MODEL FOR CANDU-PHWR HEAT TRANSPORT NETWORKS AND THEIR CONTROL

*Charles Yung Fen Chang*  
*John Skears*

C. Y. F. Chang (top) (PhD, mechanical engineering, University of Saskatchewan, Canada, 1968) is technical superintendent of analyses at Ontario Hydro. His current interests are in analytical methods and techniques of two-phase thermohydraulic flow in piping networks. J. Skears (MSc, nuclear physics and reactor engineering, Birmingham University, England, 1965) is a computer application mathematician at Ontario Hydro. His interests are centered around computer application and mathematical modeling of nuclear plant systems.



#### THE EFFECT OF INTERNAL CIRCULATION ON THE HEAT TRANSFER OF A NUCLEAR REACTOR CONTAINMENT SPRAY DROPLET

*J. N. Chung*  
*P. S. Ayyaswamy*

J. N. Chung (top) (MS, nuclear engineering, University of Missouri, Columbia, 1973) is presently a candidate for the PhD degree in mechanical engineering at the University of Pennsylvania in Philadelphia. His interests include nuclear reactor heat transfer and fluid system study and containment heat removal. P. S. Ayyaswamy (PhD, heat and mass transfer, University of California, Los Angeles, 1971) is presently an assistant professor of mechanical engineering and applied mechanics at the University of Pennsylvania. His current interests include nuclear reactor containment heat transfer, arc physics, and natural convection.

**FISSION AND EXPLOSIVE ENERGY RELEASES OF PuO<sub>2</sub>, PuO<sub>2</sub>-UO<sub>2</sub>, UO<sub>2</sub>, AND UO<sub>3</sub> ASSEMBLIES**

*J. J. Koelling  
G. E. Hansen  
C. C. Byers*

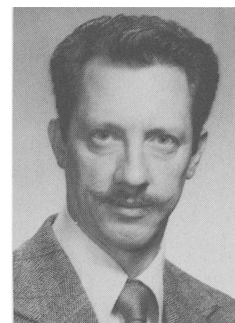
J. J. Koelling (top) (PhD, engineering science, Washington State University, 1971), G. E. Hansen (center) (PhD, physics, University of Michigan, 1950), and C. C. Byers (bottom) (PhD, physics, Oregon State University, 1955) are staff members in the Critical Experiments and Diagnostics Group at Los Alamos Scientific Laboratory. Their current common interests include reactor physics and criticality safety.



**A GENERALIZED PARAMETRIC MODEL FOR TRANSIENT GAS RELEASE AND SWELLING IN OXIDE FUELS**

*E. E. Gruber*

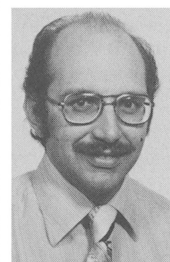
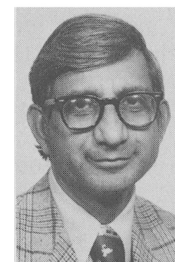
Eugene E. Gruber (BS, metallurgical engineering, University of Pennsylvania, 1959; MS, 1962, PhD, 1974, metallurgical engineering, Carnegie-Mellon University) is a metallurgist in the Reactor Analysis and Safety Division of Argonne National Laboratory (ANL). He has investigated the behavior of gas bubbles in solids since 1963, when he first joined the Basic Radiation Damage Group in the Metallurgy Division at ANL. His current interests are in transient fuel behavior in the liquid-metal fast breeder reactor, with emphasis on the roles of fission gas and volatile fission products on fuel motion.



**THORIUM-BASED FUELS IN FAST BREEDER REACTORS**

*Bal Raj Sehgal  
Joseph A. Naser  
Ching-lu Lin  
Walter B. Loewenstein*

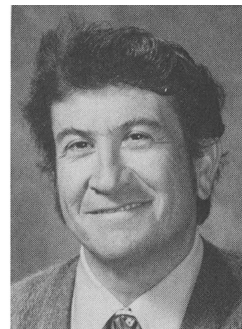
B. R. Sehgal (top left) (PhD, nuclear engineering, University of California, Berkeley, 1961) is program manager of the Safety and Analysis Department, Nuclear Power Division, of the Electric Power Research Institute (EPRI) at Palo Alto, California, with responsibilities for the projects in the liquid-metal fast breeder reactor (LMFBR), the advanced thermal reactors, and the light water reactor (LWR) safety code development. Joseph A. Naser (top right) (PhD, nuclear engineering, University of California, Berkeley, 1976) is a project scientist at EPRI. His current research interests are alternate designs for LMFBR cores, LWR safety analysis, and advanced thermal reactor concepts. Ching-lu Lin (bottom left) (PhD, physics, University of Cincinnati, 1973) is a project scientist at EPRI. Her current research interests are in conceptual design of LMFBR cores, LWR safety analysis, and spectrum-shift-controlled water reactors. Walter B. Loewenstein (bottom right) (PhD, physics, Ohio State University, 1954) is presently director of the Nuclear Safety and Analysis Department of the Nuclear Power Division at EPRI. His current responsibilities and interests include LWR safety analysis and tests, LWR nuclear code development, and LMFBR safety analysis and experimentation.



## TRANSPORT OF DEUTERIUM IN Nb-1 wt% Zr

R. M. Alire

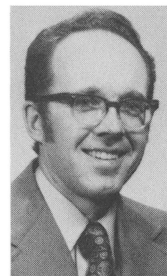
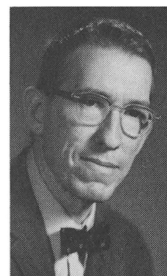
Richard M. Alire (PhD, physical chemistry, University of New Mexico, 1962) is a group leader in physical and surface chemistry at Lawrence Livermore Laboratory. His early interests included gas-solid interactions. His current interests include diffusion processes of gas-gas, gas-solid, and gas-liquid.



## INTERACTIONS OF REFRACTORIES AND REACTOR MATERIALS WITH SODIUM

J. K. Fink  
J. J. Heiberger  
R. Kumar  
R. A. Blomquist

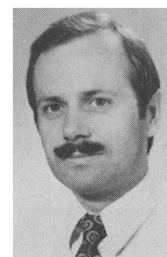
Joanne K. Fink (top left) (PhD, physics, University of Pittsburgh, 1972) is an assistant physicist at Argonne National Laboratory (ANL). Since coming to ANL, she has been involved in both theoretical and experimental research in the area of reactor safety. Her studies include computer modeling for postaccident heat removal and high-temperature experiments on reactor materials interactions. John J. Heiberger (top right) (BS, biology-chemistry, Illinois Benedictine College, 1962) is a scientific assistant at ANL. His early research interests were in the area of nuclear-fuel-reprocessing-related chemistry. His current interest is in the field of reactor materials interactions. Romesh Kumar (bottom left) (PhD, chemical engineering, University of California, Berkeley, 1972) is a chemical engineer at ANL. His early work included studies of tritium transport in the sodium-cooled fast breeder reactor and reactor safety analysis. His current interests are in the general field of environmental chemistry. Robert A. Blomquist (bottom right) (BS, chemistry, Illinois Institute of Technology, 1963) is a scientific associate at ANL. His current research interest is in the measurement of physical properties at high temperatures.



## IN-LINE DETERMINATION OF FISSILE MATERIAL IN HIGH-ACTIVITY SOLUTIONS

G. Schulze  
H. Würz

G. Schulze (top) (MS, Technische Hochschule Karlsruhe, 1969) joined Kernforschungszentrum Karlsruhe in 1974. His current interests are application of nuclear methods for mineral exploration and process control of reprocessing plants. Formerly, he was engaged in metal physics. H. Würz (PhD, Technische Hochschule Karlsruhe, 1973) has been employed by the Kernforschungszentrum Karlsruhe since 1967. There he has been involved in experimental neutron physics work and in mineral exploration using nuclear methods. His current interests are criticality safety and in-line process control of reprocessing plants.



**ELASTIC-PLASTIC ANALYSIS OF PRESSURIZED DUCTS  
WITH ROUNDED CORNERS***H. J. Petroski*

Henry J. Petroski (PhD, theoretical and applied mechanics, University of Illinois, 1968) is a mechanical engineer in the Reactor Analysis and Safety Division at Argonne National Laboratory. He works in the Engineering Mechanics Program and is responsible for the fracture mechanics effort that addresses safety questions pertaining to liquid-metal fast breeder reactor systems and containment response.

