



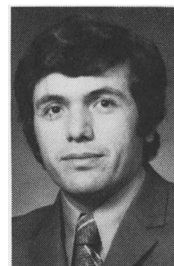
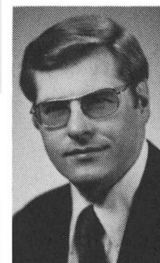
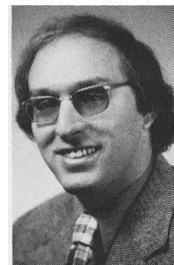
## AUTHORS — JUNE 1975

### ACCELERATORS

#### NEW CONCEPTS FOR CONTROLLED FUSION REACTOR BLANKET DESIGN

Robert W. Conn (top left) (PhD, California Institute of Technology, 1968) is in the Nuclear Engineering Department of the University of Wisconsin and is director of the Wisconsin Fusion Technology Program. He has worked in nuclear reactor physics and transport theory and on problems related to molecular collision theory. His current interests center on technological problems in fusion systems, particularly plasma analysis, neutronics problems, and fusion reactor design, and on nuclear materials safeguards. Gerald L. Kulcinski (top right) (PhD, nuclear engineering, University of Wisconsin, 1965) is a professor of Nuclear Engineering at the University of Wisconsin. He has directed research on the effects of radiation on metals at the Battelle Northwest Laboratories from 1965-1971 and his current interests lie with the technological problems associated with the production of power from thermonuclear fusion reactions. Halil I. Avci (bottom left) (BS, University of Wisconsin, 1974) is a graduate student at the University of Wisconsin, doing research on radiation damage in CTR first-wall and structural materials. Mohamed A. El-Maghrabi (bottom right) (BS, University of Alexandria; MS, University of Wisconsin) has worked as a research associate in the Reactors Department of the Egyptian Atomic Energy Authority. He is presently studying toward the PhD degree in the Nuclear Engineering Department of North Carolina State University.

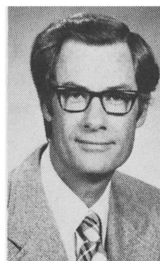
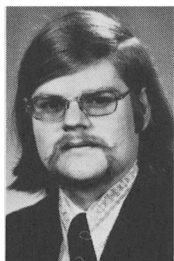
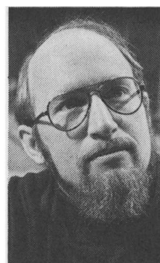
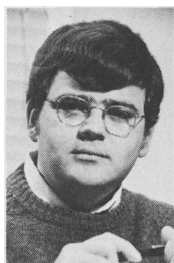
*Robert W. Conn  
Gerald L. Kulcinski  
Halil Avci  
Mohamed El-Maghrabi*



#### NONCOHERENCE AND TWO-PHASE HEAT TRANSFER IN LMFBR FUEL-COOLANT INTERACTION

Paul M. Haas (top left) (PhD, University of Virginia, 1974) is an assistant engineer in the Department of Applied Science, Fast Reactor Safety Division, Brookhaven National Laboratory. This work was performed while he was a graduate student at the University of Virginia. Carl A. Erdman (top right) (PhD, University of Illinois, 1971) is an assistant professor of nuclear engineering at the University of Virginia. This year he is on leave at the Brookhaven Nuclear Laboratory where he is working in the Fast Reactor Safety Division. Patrick L. Garner (bottom left) (MS, nuclear engineering, University of Virginia, 1974) is currently engaged in doctoral studies at the University of Virginia. He has been working in the area of fast reactor safety analysis since 1971. Albert B. Reynolds (bottom right) (ScD, Massachusetts Institute of Technology, 1959) is an associate professor of nuclear engineering at the University of Virginia where he is currently working on fast reactor safety.

*P. M. Haas  
C. A. Erdman  
P. L. Garner  
A. B. Reynolds*

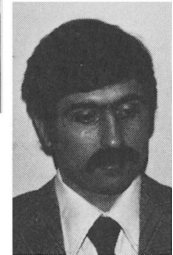
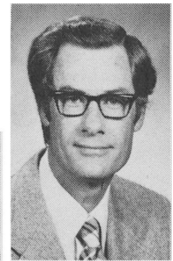
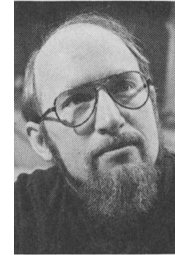


## REACTOR SITING

### FUEL VAPOR GENERATION IN LMFBR CORE DISRUPTIVE ACCIDENTS

Albert B. Reynolds (top) (ScD, Massachusetts Institute of Technology, 1959) is an associate professor of nuclear engineering at the University of Virginia where he is currently working on fast reactor safety. Carl A. Erdman (center) (PhD, University of Illinois, 1971) is an assistant professor of nuclear engineering at the University of Virginia. This year he is on leave at the Brookhaven Nuclear Laboratory where he is working in the Fast Reactor Safety Division. Mehmet Kirbiyik (bottom) (MS, University of Ankara) is currently a graduate student at the University of Virginia.

*A. B. Reynolds  
C. A. Erdman  
M. Kirbiyik*

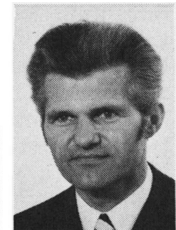


## FUELS

### INVESTIGATION OF RADIAL PLUTONIUM REDISTRIBUTION IN MIXED OXIDE FUELS IRRADIATED IN A FAST FLUX

M. Bober (top) (PhD, nuclear engineering, University Karlsruhe, 1968) and G. Schumacher (center) (PhD, nuclear engineering, University Karlsruhe, 1970) have been working since 1961 at the Institut für Neutronenphysik und Reaktortechnik of the Kernforschungszentrum Karlsruhe in the field of thermodynamics of nuclear materials. Their main interests are transport processes in fuel pins. H. Kleykamp (bottom) (Dr rer nat, physical chemistry, University München, 1967) joined the Institut für Material- und Festkörperforschung of the Kernforschungszentrum Karlsruhe in 1967. His work involves thermodynamic studies and microprobe analyses, especially of irradiated fuels.

*M. Bober  
H. Kleykamp  
G. Schumacher*

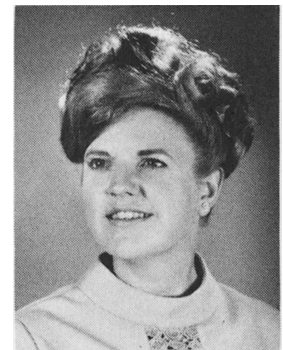


## MATERIALS

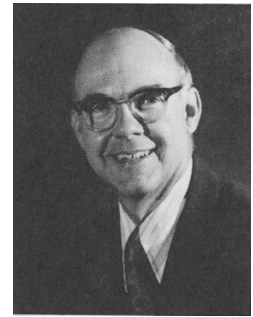
### DEVELOPMENT OF BRAZING FILLER METALS FOR MOLYBDENUM

Nancy C. Cole (left) (BS, metallurgical engineering, University of Tennessee, 1963) has been employed by Oak Ridge National Laboratory in corrosion engineering and the Welding and Brazing Laboratory of the Metals and Ceramics Division. Cole has been responsible for development of procedures for the gas tungsten-arc and electron-beam welding of refractory metals such as tungsten, molybdenum, and their alloys. She has conducted studies of welds in stainless steels, and developed improved filler metals for gas tungsten-arc welding of austenitic stainless steels for reactor applications. Cole has patents for several brazing filler metals for high-temperature applications, including a filler metal that was used in fabricating components for a

*N. C. Cole  
G. M. Slaughter*



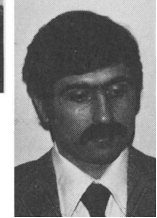
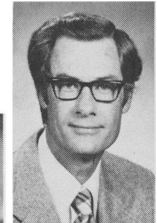
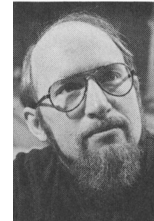
large molybdenum chemical processing system. Gerald M. Slaughter (MS, metallurgical engineering, Rensselaer Polytechnic Institute, 1951) is employed by Oak Ridge National Laboratory as supervisor of the Welding and Brazing Laboratory of the Metals and Ceramics Division. Slaughter has studied the welding behavior of a wide range of iron- and nickel-base materials as well as refractory metals, and has developed procedures for joining of these materials into reactor components. He has worked extensively to develop and test new brazing filler metals to join cermets, refractory metals, graphite, and aluminum, and he is the holder of eight U.S. patents for brazing filler metal alloys and procedures.



#### TRITIUM ABSORPTION IN TYPE 304L STAINLESS STEEL

M. R. Louthan, Jr. (top) (PhD, metallurgical engineering, University of Notre Dame, 1967), J. A. Donovan (center) (PhD, metallurgical engineering, University of Notre Dame, 1966), and G. R. Caskey, Jr. (bottom) (PhD, materials science, Massachusetts Institute of Technology, 1969) are members of the Nuclear Materials Division of the Savannah River Laboratory. Actively involved in hydrogen in metals research for the past several years, these researchers are particularly interested in hydrogen transport processes and the mechanisms of hydrogen embrittlement. Their studies have included measurements of the effects of hydrogen and its isotopes on a wide range of both high-purity and commercial alloys.

*M. R. Louthan, Jr.  
J. A. Donovan  
G. R. Caskey, Jr.*

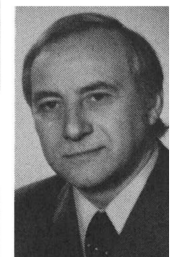


#### RADIOISOTOPES

#### THE DEVELOPMENT OF CALIFORNIUM-252 SEALED SOURCES AT THE COMMISSARIAT A L'ENERGIE ATOMIQUE

Pierre Barthelemy (top left) (Technicien, Institut d'Optique, Paris, 1946; Conservatoire National des Arts et Métiers, 1955) has worked in private companies in the fields of precision optical instruments, metallurgy of steel and nonferrous alloys, and treatment of metallic surfaces until 1957. He is currently working in radioisotopic source design at the Fontenay-aux-Roses Centre for Nuclear Studies of the French Atomic Energy Commission. René Berger (top right) (Licencié es Sciences, University of Clermont Ferrand, Ingénieur chimiste, Ecole Nationale Supérieure de Chimie, Clermont Ferrand, 1948) is deputy head of the Hydrometallurgy and Transuranium Chemistry Service at Fontenay-aux-Roses. His fields of interest are basic chemistry and applied research on transuranium elements. René Boucher (bottom left) (Licencié es Sciences, University of Paris, 1953) has been involved in the metallurgical studies of LMFBR fuel elements since 1956. He is currently group leader and responsible for metallurgical research and development of transuranium sources at Fontenay-aux-Roses. Lucien Hayet (bottom right) (Ingénieur, Ecole Supérieure d'Electrotechnique et d'Electronique, Paris, 1958) has specialized in hot laboratory technology and operation since 1962. He is currently technical manager of the radiometallurgy laboratory at Fontenay-aux-Roses, which is primarily devoted to irradiated LMFBR fuel examination and to neutron source encapsulation.

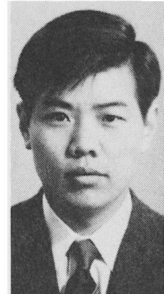
*P. Barthelemy  
R. Berger  
R. Boucher  
L. Hayet*



### EFFECT OF SEPARATION FACTORS ON PRODUCT ASSAY OF AN IDEAL CASCADE COMPOSED OF UF<sub>6</sub> CENTRIFUGES

*Shizuo Yamashita  
Tsuyoshi Okamoto*

Shizuo Yamashita (left) (PhD, engineering, Kyoto University, 1971) is chief of the research section, Sumitomo Atomic Energy Industries, Ltd. He has been involved in studies relating to variations in neutronic characteristics accompanying burnup in a large fast breeder and a large fast converter. His current research interests include dynamics of an isotope separation plant and performance of a centrifuge. Tsuyoshi Okamoto (BE, nuclear engineering, Tokai University, 1970) is on the staff of the Nuclear Engineering Department, University of Tokyo. His current research interests include the control of an isotope separation plant.

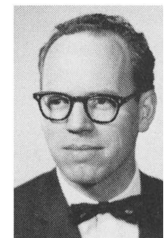
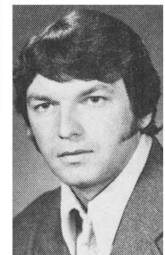
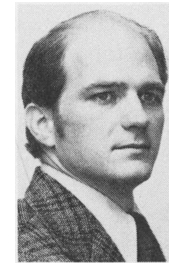


### ANALYSIS

### FEASIBILITY STUDY OF IN SITU SEDIMENT ANALYSIS BY X-RAY FLUORESCENCE

*J. A. Cooper  
H. L. Nielson  
N. A. Wogman  
R. W. Perkins*

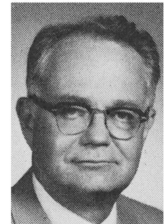
John A. Cooper (top left) (BS, chemistry, Humboldt State College, 1962; PhD, nuclear chemistry, University of California, Berkeley, 1966) joined Battelle-Northwest's radiological chemistry group as a senior research scientist in 1966. He conducted numerous investigations in the areas of x- and gamma-ray spectroscopy and developed instrumentation and methods for the measurement of both stable and radioactive elements before leaving Battelle in 1974 for ORTEC, Inc., where he has increasing interest in environmental analyses problems. Howard L. Nielson (top right) (BS, chemical engineering, Brigham Young University, 1972) is involved in the development of x-ray analysis for environmental samples and methods for the *in situ* monitoring of radionuclides in the general environment surrounding nuclear facilities. Ned A. Wogman (bottom left) (PhD, chemistry, Purdue University, 1966), a research associate at Battelle-Northwest, is engaged in research programs that develop analytical methods of trace element or trace radionuclide analysis of environmental samples. R. W. Perkins (bottom right) (MS, chemistry, Utah State University, 1952), manager of radiological chemistry at Battelle's Pacific Northwest Laboratory, pioneered the development of high sensitivity gamma-ray spectrometry and is principal investigator for an Apollo lunar sample studies program.



### FABRICATION OF THIN URANIUM DIOXIDE FILMS FOR NEUTRON FLUX MEASUREMENTS

Karl D. Feintuch (left) (MS, nuclear engineering; PhD, engineering physics, University of Virginia) is a staff training specialist with the Singer Company, Simulation Products Division, Silver Spring, Maryland, where the research on thin uranium dioxide films was performed. Currently he is responsible for developing industrial and power plant training programs and training client instructors in the use of Singer training devices. J. L. Meem (BS, chemistry, Virginia Military Institute, 1939; PhD, nuclear physics, Indiana University, 1949) has been chairman of the Nuclear Engineering Department and director of the Nuclear Reactor Facility at the University of Virginia since 1957. His prior experience was with Alco Products (Army Package Power Reactor) and Oak Ridge National Laboratory (Bulk Shielding Reactor and Aircraft Reactor Experiment).

*K. D. Feintuch  
J. L. Meem*



### VAPOR PRESSURE MEASUREMENTS OF OXIDE FUEL BETWEEN 3000 AND 5000 K USING LASER HEATING

M. Bober (right) (Dr. Ing., University of Karlsruhe), H. U. Karow (center) (Dr. Ing., University of Karlsruhe), and K. Schretzmann (left) (Dr. rer. nat., University of Karlsruhe) are members of the Institute for Neutron Physics and Reactor Technology at the Nuclear Research Center Karlsruhe, Germany. They are currently involved in the field of high-temperature thermodynamics of nuclear materials. The activities of Bober include investigations of transport processes in fuel pins. Karow has been engaged in energy conversion, plasma physics, and high-temperature technologies. Schretzmann's main interests are applications of physical thermodynamics and high-temperature physics for reactor technology and advanced energy production systems.

*M. Bober  
H. U. Karow  
K. Schretzmann*

