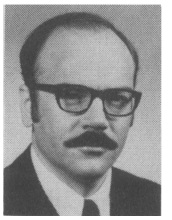
nuclear technology

AUTHORS — SEPTEMBER 1973

REACTORS

THE EFFECT OF NONCONDENSABLES ON THE RATE OF SODIUM VAPOR CONDENSATION FROM A SINGLE-RISING HCDA BUBBLE

T. G. Theofanous
H. K. Fauske

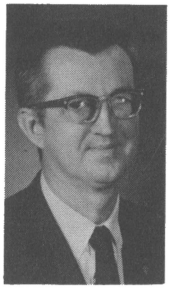


T. G. Theofanous (left) (PhD, University of Minnesota, 1969) is associate professor of chemical engineering at Purdue University. Starting with his graduate days, he has maintained a strong interest in the field of reactor safety. His previous experience, as well as current work, is in the broad area of transport phenomena in turbulent and multiphase systems. Hans K. Fauske (DSc, the Norwegian Institute of Technology, 1963) is senior scientist and manager, Coolant Dynamics and Energy Conversion Section, Reactor Analysis and Safety Division, Argonne National Laboratory. He has written numerous articles on heat transfer and fluid flow problems associated with thermal and fast reactor safety.

CHEMICAL PROCESSING

PURIFICATION OF BERYLLIUM BY SOLVENT EXTRACTION FROM CARBONATE SOLUTIONS WITH QUATERNARY ALKYLAMMONIUM CARBONATE

Forest G. Seeley
David J. Crouse

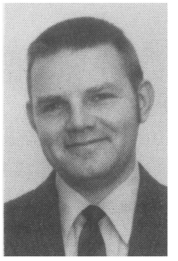


Forest G. Seeley (left) (BS, chemistry, Hastings College, 1944) is a staff member in the Chemical Technology Division, Oak Ridge National Laboratory. He has been involved in extraction chemistry and its application in metal separations. He is currently studying methods of separation or control of various radionuclides with respect to the environment. David J. Crouse (BS, chemical engineering, Pennsylvania State University, 1942) is an assistant section chief in the Chemical Technology Division, Oak Ridge National Laboratory. He was a member of the group that pioneered development of solvent extraction processes for recovering uranium from ores and since has worked in applying solvent extraction and other separation techniques to fission product recovery and the processing of spent nuclear reactor fuels.

MATERIALS

FATIGUE-CRACK PROPAGATION IN FAST-NEUTRON-IRRADIATED TYPES-304 AND -316 STAINLESS STEELS

L. A. James
R. L. Knecht

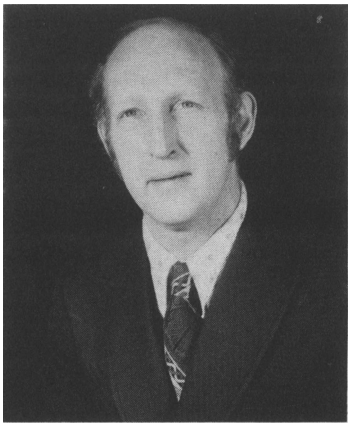


Lee A. James (left) (MS, mechanical engineering, University of Washington, 1965) spent eight years as a stress analyst and structural designer with the Boeing Company. He then moved to the Hanford Works where, for the past six years, he has been engaged in fracture mechanics and fatigue-crack propagation research. Robert L. Knecht (BS, metallurgical engineering, University of Michigan, 1952) is manager of Applied Materials at the Hanford Engineering Development Laboratory. He is currently engaged in development and application work in mechanical properties of breeder reactor structural materials.

RADIOISOTOPES

FUEL CAPSULE VENT SYSTEM DEVELOPMENT FOR THE VIKING RADIOISOTOPE THERMOELECTRIC GENERATOR

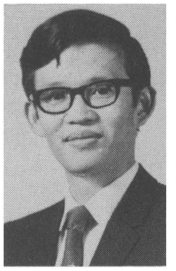
Frederick A. Schumann



F. A. Schumann (MS, aeronautical engineering, Drexel University, 1963) is a project engineer for the Energy Systems Division of Teledyne-Isotopes. For more than ten years, he has been involved with nuclear power systems, particularly in the areas of solid mechanics. His current interests are in the design and development of isotopic heat sources for space missions.

PRECESSION DAMPING OF SOLAR PROBES BY RE-RADIATIVE FORCES

Philip T. Choong
Edward A. Mason



Philip T. Choong (left) (PhD, Massachusetts Institute of Technology, 1969) is currently a senior engineer at the Nuclear Energy Division of General Electric Company. His present interest is in the development of nuclear analysis methods for the LWR core design and the reload fuel management. Edward A. Mason (ScD, chemical engineering, Massachusetts Institute of Technology, 1950), chairman of the Nuclear Engineering Department at Massachusetts Institute of Technology, has been actively involved in various aspects of nuclear power technology. His present research interests are in nuclear fuel management.

INSTRUMENTS

FFTF PROBE-TYPE EDDY-CURRENT FLOWMETER: WET VERSUS DRY PERFORMANCE EVALUATION IN SODIUM

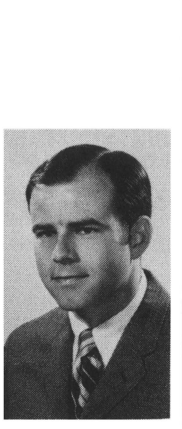
T. J. Costello
R. L. Laubham
W. R. Miller
C. R. Smith

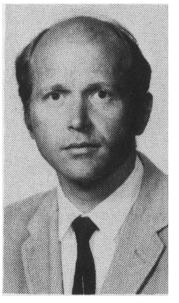
R. L. Laubham (left) (BS, chemistry, Duquesne University), W. R. Miller (center left), and C. R. Smith (center right) (BS, mechanical engineering, Purdue) are members of the Sodium Components Technology Group (Large Loop Section), and T. J. Costello (right) is a member of the Test Engineering Group (Instrumentation Section) at the Westinghouse Advanced Reactors Division located at the Waltz Mill Site in Pennsylvania. Laubham (engineer), Miller (engineer), and Smith (manager) have been involved for more than six years in the developmental testing of sodium-cooled fast breeder reactor components, utilizing the division's two large sodium loops—General Purpose Loops 1 and 2. T. J. Costello (engineer) has over six years' experience in the application of instrumentation used for developmental testing of sodium-cooled fast breeder reactor components.

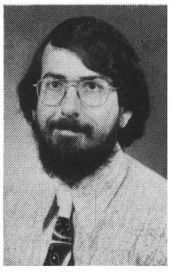
ANALYSIS

A PHOTONEUTRON ANTIMONY-124—BERYLLIUM SYSTEM FOR FISSILE MATERIALS ASSAY

H. O. Menlove
R. A. Forster
D. L. Matthews



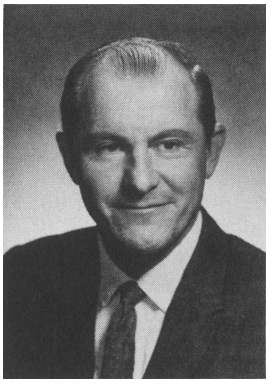




H. O. Menlove (top) (PhD, nuclear engineering, Stanford University) and R. A. Forster (center) (PhD, nuclear engineering, University of Virginia) are staff members at the Los Alamos Scientific Laboratory, working in the Nuclear Analysis Research Group. Their research activities have included the application of radioactive neutron sources to the nondestructive assay of fissionable materials. D. L. Matthews (bottom), a PhD candidate in physics at the University of Texas, Austin, contributed to this work while employed in the Summer Graduate Program at the Los Alamos Scientific Laboratory.

TRACK-ETCH RADIOGRAPHY: ALPHA, PROTON, AND NEUTRON

Harold Berger



Harold Berger (MS, physics, Syracuse University, 1951) is a senior physicist with the Materials Science Division, Argonne National Laboratory, and also serves as leader of the Division's Nondestructive Test Group. At Argonne since 1960, he has been active in the development of image techniques for nondestructive testing, with particular emphasis on radiography with x rays, neutrons, and protons.

ASSAY OF LIGHT WATER REACTOR RODS FOR THEIR URANIUM-235 CONTENT

K. Böhnel

K. Böhnel (MS, physics, Technische Hochschule München, Germany, 1964) has been at the Kernforschungszentrum Karlsruhe since 1965; there he has been involved in experimental neutron and reactor physics work. His present interest is directed toward nondestructive assay methods in the field of nuclear safeguards.

RADIOISOTOPES

NEUTRON YIELD FROM A SMALL HIGH PURITY $^{238}PuO_2$ SOURCE

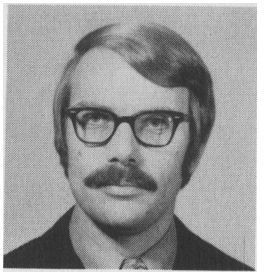
J. K. Bair
H. M. Butler

Joe K. Bair (left) (BA, physics, Rice Institute, 1940) has been associated with the Van de Graaff group at Oak Ridge National Laboratory since 1950. His interests include low energy nuclear physics, particularly nuclear spectroscopy. Recently his research has involved the yield of neutrons. Hal M. Butler, Jr. (MS, physics, Vanderbilt University, 1958), an employee of Oak Ridge National Laboratory, is assigned to the Health Physics Division and functions as an area leader in the Radiation and Safety Surveys Section. He was an AEC Radiological Physics Fellow.

INSTRUMENTS

AN IN-REACTOR TEMPERATURE MONITOR

G. L. Hofman



Gerald L. Hofman (PhD, University of Florida, 1971) is an assistant metallurgist with Argonne National Laboratory's EBR-II Project. He has been involved with solid-state diffusion research, and is currently engaged in the evaluation of fast reactor fuel element behavior and radiation damage to fast reactor components.