

NUCLEAR APPLICATIONS & TECHNOLOGY



CONTENTS

JUNE 1970

VOL. 8/NO. 6

PAPERS

FUEL CYCLES



INCREASING MAXIMUM ENRICHMENT PROCESSING CAPABILITY 482 THROUGH CRITICALITY CALCULATIONS

D. L. Dunaway, G. P. Miller, W. A. Johnson

D. L. Dunaway (top right) is chief of Nuclear Safety and G. P. Miller (top left) is a senior process engineer at the National Lead Company of Ohio. W. A. Johnson (bottom) is chief of the Health and Nuclear Safety Branch of the AEC-Oak Ridge Operations Safety Division, Oak Ridge, Tennessee.

FUELS



GAS PULSE IMPREGNATION OF GRAPHITE WITH CARBON 488

R. L. Beatty, D. V. Kiplinger

R. L. Beatty (left) (BS, ceramics, Pennsylvania State University, 1961 and MS, metallurgical engineering, University of Tennessee, 1966) has been associated with the Oak Ridge National Laboratory since 1961, principally in the area of pyrolytic carbon development. He is currently doing graduate work at the University of Washington, Seattle, Washington. D. V. Kiplinger (BS, industrial engineering, University of Tennessee, 1969) was associated with ORNL from 1965 through July 1969, also in the area of pyrolytic carbon development. He is currently working with Burlington Industries.

PLUTONIUM RECYCLING IN HEAVY-WATER-MODERATED THORIUM 496 REACTOR SYSTEMS

J. Darvas, U. Hansen, E. Teuchert



J. Darvas (left) (PhD, theoretical physics, University of Göttingen) came to the Kernforschungsanlage (KFA) in Jülich in 1963. He is mainly concerned with theoretical core analysis for thermal reactors. U. Hansen (right) (PhD, nuclear engineering, University of Aachen) joined the KFA in 1965 and has mainly been engaged in theoretical studies of burnup and power plant operation. E. Teuchert (center) (PhD, theoretical physics, University of Cologne) joined KFA in 1964. He has been engaged in project work and investigations of heterogeneity effects, studies of mixed spectrum superheater reactors (at GE, San Jose) and studies of HWR. All authors are currently working on core analysis for helium turbine high-temperature reactor systems.

MATERIALS



COMPATIBILITY OF $(U, Th)O_2$ WITH GRAPHITE DURING IRRADIATION 507

J. A. Conlin, D. R. Cuneo, E. L. Long, Jr., C. L. Segasser

The authors represent the Reactor, Metals and Ceramics, and Reactor Chemistry Divisions of Oak Ridge National Laboratory. Individually, their interests in irradiation programs are: J. A. Conlin, Jr. (right) (BS, Massachusetts Institute of Technology), nuclear fuels since 1954; D. R. Cuneo (center right) (BS, University of Chattanooga), evaluation of fuels; E. L. Long, Jr. (center left) (BS, University of Tennessee), microstructural changes; and C. L. Segasser (left) (MS, University of Tennessee), testing of fuels for gas-cooled reactors.

INSTRUMENTS



THE RAPID ACQUISITION AND ANALYSIS OF GAMMA-SPECTROMETER DATA USING A SMALL COMPUTER 516

N. I. Sax, J. C. Daly

N. Irving Sax (left) is a specialist in microanalytical chemistry. Since 1946, he has divided his time between radiological science and industrial hygiene—environmental pollution problems. Presently, he is heading up the environmental pollution consulting activities of Cambridge Technology, Inc., Newton Upper Falls, Massachusetts. James C. Daly is an associate radiological chemist with the New York State Department of Health. He has worked in the area of gamma spectroscopy for some time. Presently, he supervises the radiochemistry laboratory in the Radiological Sciences Laboratories.

TECHNIQUES



USE OF A PULSE DETECTOR FOR REACTOR NOISE MEASUREMENTS 522

J. R. Trinko, Jr., S. H. Hanauer, D. P. Roux, J. T. DeLorenzo

J. R. Trinko, (top) (PhD, University of Tennessee, 1967) is a nuclear engineer with Ebasco Services Inc. The work presented here was performed in the Instrumentation and Controls Department of Oak Ridge National Laboratory. At Ebasco he is involved in an evaluation of the Molten-Salt Reactor Concept and in nuclear fuel management. Prior to employment with Ebasco he was with ANL-Idaho on the EBR-2 project. Stephen H. Hanauer (right) has been professor of nuclear engineering at the University of Tennessee since 1965. Prior to that he was, for 15 years, a member of the Reactor Controls Department at Oak Ridge National Laboratory. Dominique P. Roux (bottom) (PhD, Physics University of Geneva, Switzerland, 1958) has been a member of the ORNL Instrumentation and Controls Division since 1960. He is currently in charge of the Reactor Controls Research and Development group. He is also associate professor in the Nuclear Engineering Department, University of Tennessee. J. T. DeLorenzo (lower left) (MS, electrical engineering, University of Pennsylvania) has been employed in circuit development in the Instrumentation and Controls Division at Oak Ridge National Laboratory. His primary interests are reactor control pulse-type instrumentation and fast electronics for neutron physics experiments.

EDUCATION



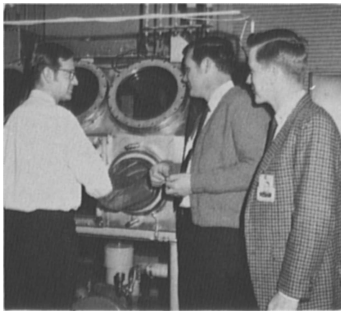
NEUTRON SOURCE-STRENGTH DETERMINATION BY STUDENT LABORATORIES 531

B. W. McGhee, W. W. Graham, III, M. R. Haroon

Brian McGhee (right) (MS, Georgia Institute of Technology, 1969) worked as a nuclear analyst for Sargent and Lundy Engineers, Chicago, upon graduation. He is currently serving as an officer in the U. S. Army Ordnance Corps. W. Waverly Graham, III (top left) (PhD, Georgia Institute of Technology, 1965) is an associate professor of nuclear engineering at Georgia Institute of Technology. He is currently interested in heavy-water reactor kinetics and safety and computer-aided nuclear experimentation and instruction. M. R. Haroon (bottom left) (PhD, University of London) is a senior scientific officer at Pakistan Institute of Nuclear Science and Technology, Islamabad, where he is working in experimental reactor physics and is conducting experimental work of the Reactor School at the Institute. He is an ANS, a BNES, and an IEE member.

NOTE

RADIOISOTOPES



FABRICATION OF A ²³⁸Pu HEAT SOURCE FOR A CARDIAC PACEMAKER 536

D. L. Fleming, C. O. Brewer, D. L. Coffey

Donald L. Fleming (left) (BS, Ohio University) is a development chemist in the Nuclear Division of Mound Laboratory and has been involved with the fabrication and testing of ²³⁸Pu radioisotope heat sources for four years. Charles O. Brewer (center) (BS, Morehead University, Morehead, Kentucky) is a supervisor in the Nuclear Division of Mound Laboratory and has been involved in fabricating radioisotope heat sources for electric generators and special devices for eight years. Dale L. Coffey (right) (BS, physics, Southwest Missouri State, 1957) leads a group concerned with materials and joining methods used in the fabrication of radioisotopic heat sources.

DEPARTMENTS

CONTENTS	478
LETTER	481
CORRIGENDUM	481
PAPERS	482
NOTE	536
BOOK REVIEWS	539
VOLUME 8 INDEXES	543
VOLUME 8 CONTENTS	iii