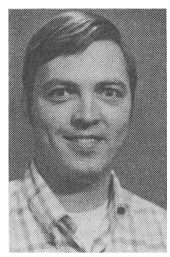
nuclear technology
CONTINUING NUCLEAR APPLICATIONS & TECHNOLOGY

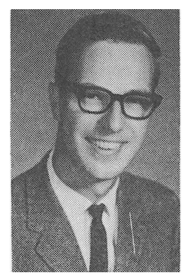
AUTHORS — MAY 1971

REACTORS

MODELING OF THERMIONIC REACTOR SYSTEMS FOR DYNAMICS STUDIES

J. G. Guppy
R. L. Brehm

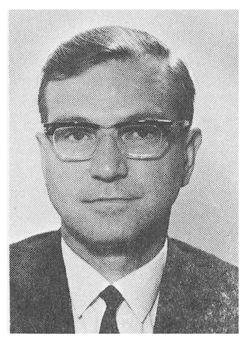




James G. Guppy (left) (PhD, nuclear engineering, University of Arizona, 1970) is currently in the Technical Systems Division of Interatom engaged in studies of a proposed in-core thermionic reactor (ITR). R. L. Brehm (PhD, University of California) is a faculty member of the Nuclear Engineering Department at the University of Arizona where he has been engaged for the past few years in problems of nuclear reactor stability, dynamics, and control. At the present time he is in West Germany associated with Brown, Boveri, and Cie in the thermionic project.

PULSED-NEUTRON AND EXPONENTIAL EXPERIMENTS WITH MIXED-FUEL LATTICES

Pekka Jauho
Risto Tarjanne

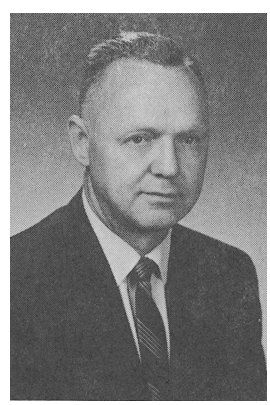


Pekka Jauho (PhD, University of Helsinki, 1951) is professor in technical physics at the Technical University of Helsinki and director general of the State Institute for Technical Research. His previous publications are in statistical and nuclear physics. (Biographical data and picture are not available for Risto Tarjanne.)

CHEMICAL PROCESSING

A VIBRATING BAR TECHNIQUE FOR PREPARING CARBON MICROSPHERES

C. R. Schmitt

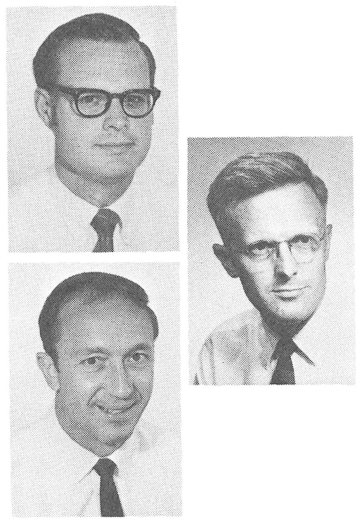


Charles R. Schmitt (BS, chemistry, Queens College, New York, 1942) is a development specialist at Union Carbide Corporation, Nuclear Division, Oak Ridge, Tennessee where he is responsible for the development of special materials. His experience has included uranium and ion exchange technology, materials testing and evaluation, water treatment and corrosion, powder metallurgy, and carbon and graphite technology.

FUELS

APPLICATION OF FUEL-ELEMENT MODELING CODES TO EBR-II DRIVER FUEL

C. M. Walter
P. G. Shewmon
J. P. Bacca

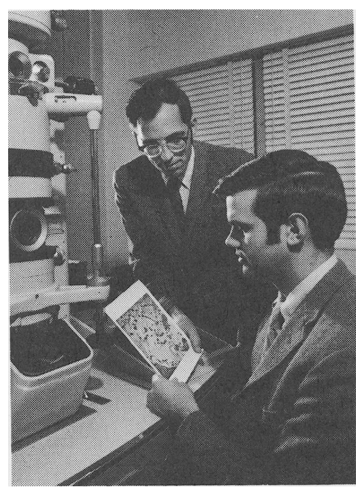


The authors are staff members at Argonne National Laboratory and have been engaged in the evaluation of fuels performance in the EBR-II reactor. C. M. Walter (top left) (PhD, Northwestern University, 1968) is presently manager of the Fuels and Materials Section in the EBR-II Project. P. G. Shewmon (right) (PhD, Carnegie Institute of Technology, 1955) is division director of the Materials Science Division. J. P. Bacca (bottom left) (MS, University of Idaho, 1963) is currently assistant technical manager of the Fuels and Examination Facility in the EBR-II Project.

MATERIALS

INFLUENCE OF IRRADIATION TEMPERATURE ON THE CREEP-RUPTURE PROPERTIES OF HASTELLOY-N

H. E. McCoy
R. E. Gehlbach

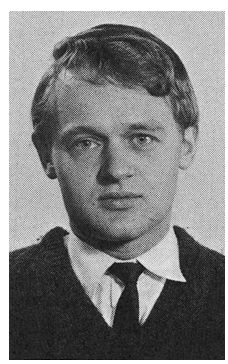


H. E. McCoy (left) (PhD, University of Tennessee) has worked in the field of irradiation damage to structural metals. He is presently group leader of the Mechanical Properties Group and coordinator of the materials work in support of molten-salt reactors. R. E. Gehlbach (BS, University of Kentucky) has worked principally on the characterization of the microstructures of engineering alloys and the relation of this structure to their mechanical properties.

RADIOISOTOPES

TECHNIQUES IN MONTE CARLO ANALYSIS APPLIED TO THE NUCLEAR DENSITY GAUGE

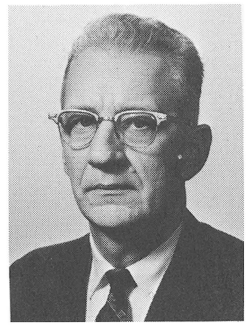
P. C. Curtayne

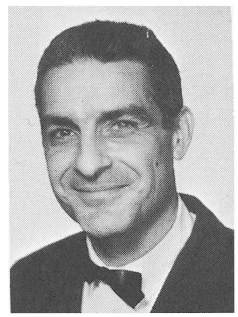


Peter C. Curtayne (MSc, University of Stellenbosch, 1967) is a research officer at the National Institute for Road Research of the South African Council for Scientific and Industrial Research. Currently, he is involved in projects concerning the rehabilitation of roads.

CALIFORNIUM-252 NEUTRON SOURCES FOR INDUSTRIAL APPLICATIONS

A. R. Boulogne
J. P. Faraci

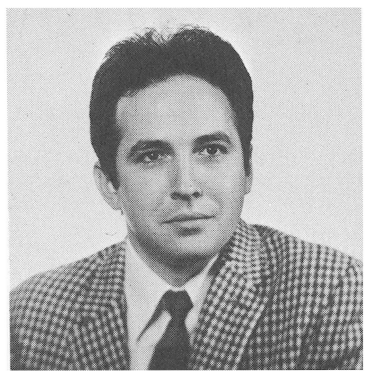




A. R. Boulogne (top) (BS, chemistry, Fordham University, 1947) joined Du Pont at the Burnside Laboratory in New Jersey in 1947. Five years later he transferred to the Savannah River Laboratory, where he supervised a variety of analytical and health physics groups. He is currently a member of SRL's Nuclear Materials Division. His primary interest is the development of ^{252}Cf neutron sources for feasibility studies in research, machine, and industry. He is a member of the American Nuclear Society, the American Chemical Society, and the Health Physics Society. J. P. Faraci (BCE, Manhattan College, 1950; MS, applied mechanics, Virginia Polytechnic Institute, 1951) joined the Du Pont Engineering Department in 1951. He transferred to Savannah River Laboratory in 1959 where he has done equipment and process development work. He is currently a member of SRL's Nuclear Materials Division. His primary interest is the development of ^{252}Cf neutron sources for feasibility studies in research, medicine, and industry. He is a member of ASME.

A USEFUL RECURRENCE FORMULA FOR THE EQUATIONS OF RADIOACTIVE DECAY

John N. Hamawi

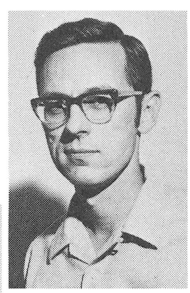


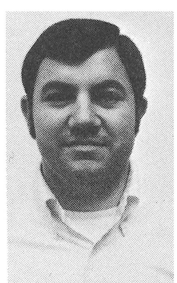
John N. Hamawi (BSc, physics, math, Haile Selassie I University, Addis Ababa, Ethiopia, 1962; PhD, nuclear engineering, Massachusetts Institute of Technology, 1959) worked for one year in the Radiation Protection Group, Nuclear Division, of Stone & Webster Engineering Corporation. As of December 1, 1970 he has been employed as a nuclear engineer in the Safety Analysis Section of Yankee Atomic Electric Company, Westboro, Massachusetts.

SHIELDING

CALORIMETRIC DETERMINATION OF RELATIVE GAMMA HEATING IN MATERIALS OF VARIOUS THICKNESSES AND ATOMIC NUMBERS

Harry J. Reilly
Lawrence E. Peters



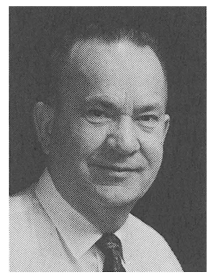


Harry J. Reilly (right) is chief of the Reactor Experiments Branch at NASA's Plum Brook Reactor Facility. Larry Peters is involved in reactor analysis and experiment design for the Nuclear Analysis Section. Both men have MS degrees from the University of Toledo.

INSTRUMENTS

RECIPROCAL MULTIPLICATION METER

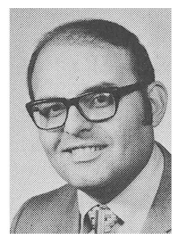
W. R. Sheets



W. R. Sheets is a senior engineer at the Nuclear Safety Facility of the Dow Chemical Company, Rocky Flats Division.

ALPHA-PARTICLE DENSITOMETER WITH VARIABLE RESPONSE

Werner Brandt
Michael D. D'Agostino
Anthony J. Favale

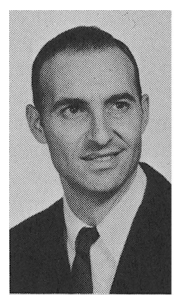


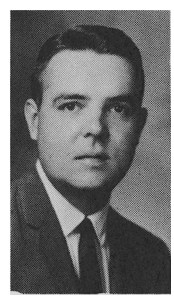
Werner Brandt (top left) is professor of physics and director of the Radiation and Solid State Laboratory at New York University and is a consultant to the Research Department of the Grumman Aerospace Corporation. Michael D. D'Agostino (right), head of the Nuclear and Radiation Effects Group, and Anthony J. Favale (bottom left), head of the Nuclear and High Energy Physics Group, are both with the Nuclear and Radiation Physics Research Section of Grumman's Research Department.

RADIATION

EXPOSURE ANGULAR DISTRIBUTIONS IN AIR ABOVE DISK ISOTROPIC COBALT-60 SOURCES

R. M. Rubin
R. E. Faw



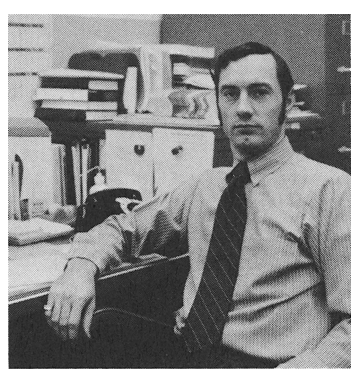


R. M. Rubin (left) (PhD, nuclear engineering, Kansas State University, 1970) is an assistant professor of nuclear engineering at Mississippi State University. His current research interests are in radiation shielding and neutron activation analysis. R. E. Faw is a professor of nuclear engineering at Kansas State University. He is also director of the Kansas State University Nuclear Engineering Shielding Facility.

ANALYSIS

AN EQUILIBRATION METHOD FOR MEASURING LOW-OXYGEN ACTIVITIES IN LIQUID SODIUM

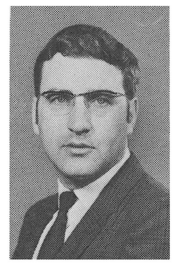
D. L. Smith

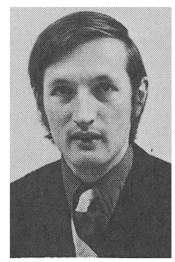


Dale L. Smith (PhD, Iowa State University, 1966) is an associate nuclear engineer in the Materials Science Division at Argonne National Laboratory. His work has centered around the effects of nonmetallic impurities in sodium on solid metal/liquid metal interactions related to LMFBR applications.

MEASUREMENT OF NEUTRON FLUENCE BY NEPTUNIUM-237 AND URANIUM-238 FISSION DOSIMETERS

K. M. Barry
J. A. Corbett



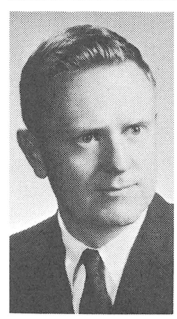


Kevin M. Barry (left) (BSc, University of Manchester, England, 1960) is a senior engineer in the Radiation Analysis Group, Westinghouse PWR Systems Division. He is responsible for calculations of the radiation embrittlement of reactor components and is currently leading a group preparing a tentative procedure, "Dosimetry Standards for Pressure Vessel Surveillance," for ASTM Committee E-10 (Sub V) on Neutron Dosimetry. J. A. Corbett (BSc, Liverpool University, 1957) is manager of the Analytical Laboratories at Westinghouse's Advanced Reactors Division at Waltz Mill, Pennsylvania. His current interests are trace analysis and radioactivity in water.

TECHNIQUES

DETERMINATION OF PYROCARBON THERMAL CONDUCTIVITY BY THE BURST-REACTOR TECHNIQUE

Peter G. Salgado
Fred P. Schilling
Gerald T. Brock
Kermit L. Holman

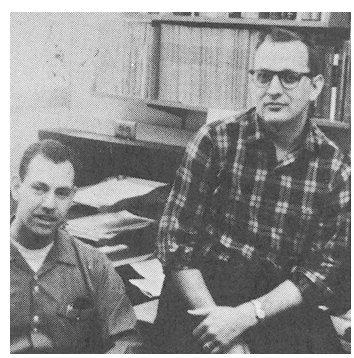


Peter G. Salgado (top right) (PhD, chemical engineering, University of West Virginia, 1958) is a staff member at Los Alamos Scientific Laboratory. He studied the behavior of carbide fuels and the corrosion of graphite moderator materials at elevated temperatures during the Ultra-High Temperature Reactor Experiment. He is currently working in the areas of explosives development and detonation phenomena. Fred P. Schilling (bottom right) (PhD, chemical engineering, University of Montana, 1959) is a staff member at the Los Alamos Scientific Laboratory. He worked on heat transfer analysis, application of an on-line computer system for control, and fuel behavior during the Ultra-High Temperature Reactor Experiment. He is currently with the systems group in the computer division at LASL. Gerald T. Brock (top left) (MS, chemical engineering, New Mexico State University, 1968) is a process design engineer in the Nuclear Energy Division of the General Electric Company. He is currently working on nuclear fuel reprocessing. Kermit L. Holman (bottom left) (PhD, chemical engineering, Iowa State University, 1964) is associate professor of chemical engineering at New Mexico State University. He has worked on electrochemical mass transport, energy transport in plastics with thermal degradation, and process systems simulation and control.

EDUCATION

AN EXPOSITORY DERIVATION OF NEUTRON TRANSPORT EQUATIONS

A. A. Harms
S. I. Schreiner



S. I. Schreiner (left) (MS, nuclear engineering, Berkeley) is a doctoral student at the University of Washington. A. A. Harms (PhD, nuclear engineering, University of Washington) is assistant professor of engineering physics and physics at McMaster University in Canada.