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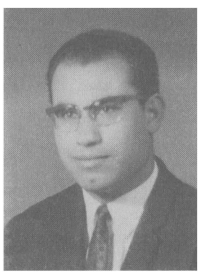
AUTHORS — APRIL 1976

REACTORS

NUCLEAR DESIGN OF THE BLANKET/SHIELD SYSTEM FOR A TOKAMAK EXPERIMENTAL POWER REACTOR

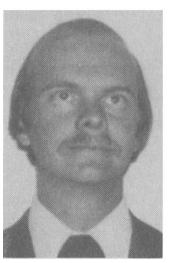
Mohamed A. Abdou

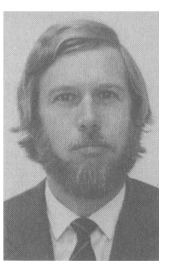


Mohamed A. Abdou (PhD, nuclear engineering, University of Wisconsin, 1973) is currently responsible for controlled thermonuclear reactor (CTR) nucleonic analysis at Argonne National Laboratory (ANL). He is also engaged in the present ANL design effort for a Tokamak Experimental Power Reactor. In his work from 1970 to 1974 with the Wisconsin Fusion Reactor Design Study Project he conducted research on nuclear heating calculational models and CTR blanket and shield design.

DEVELOPMENT OF IMPROVED DATA ANALYSIS METHODS FOR REACTIVITY MEASUREMENTS IN LARGE THERMAL-POWER REACTORS

K. L. Ferguson
C. G. Poncelet
A. J. Impink, Jr.



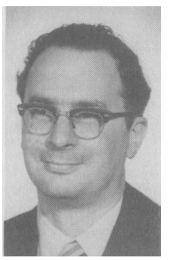


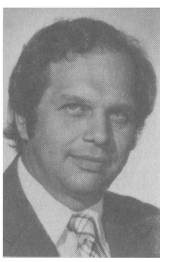
Kenneth L. Ferguson (top) (BS, physics, University of Michigan, 1969; MS, 1970; PhD, 1973, nuclear science and engineering, Carnegie-Mellon University) analyzed data analysis methods for reactivity determinations as his doctoral topic. He is presently employed by the Westinghouse Advanced Reactors Division and is currently involved in plant licensing, including environmental impact, of the Clinch River Breeder Reactor. Claude G. Poncelet (bottom) (PhD, physics, North Carolina State University, 1964) is currently scientific advisor in the Energy Action Office of Westinghouse Electric Corporation, Power Systems Company. Since 1967 he has been a professor of nuclear engineering and chairman of the Department of Nuclear Science and Engineering at Carnegie-Mellon University (CMU), where his research interests include reactor technology and safety, reactor operations and control, and energy systems. He is currently on leave from the University. Albert J. Impink, Jr. (not pictured) (BME, Villanova University; MS and PhD, nuclear engineering, Massachusetts Institute of Technology) is currently associate professor of nuclear engineering at CMU. Prior to joining CMU in 1969, he was involved in power reactor startup work for Westinghouse Electric Corporation, Nuclear Energy Systems. His current research interests include analysis of power reactor test and operational data, and fission and fusion fuel cycles.

REACTOR SITING

EFFECT OF FALLOUT ON MEASUREMENT OF IODINE-131 AROUND NUCLEAR REACTORS

C. J. Paperiello
J. M. Matuszek



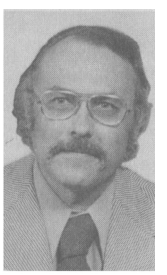


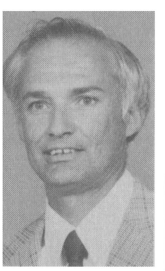
Carl J. Paperiello (top) (BA, physics, LaSalle College, 1964; PhD, nuclear physics, University of Notre Dame, 1970), a research scientist in charge of the Counting Group at the Radiological Sciences Laboratory, is responsible for the radioactivity measurements performed on all routine and research samples at the Laboratory. His research interests include the use of low-background internal gas-proportional counters for measurements of radiogases, analysis of ^{129}I, and the application of β-γ coincidence counting to ultra-low-level radiochemical measurements for ^{133}Xe and ^{131}I. John M. Matuszek (BS, chemistry, Worcester Polytechnic Institute, 1957; PhD, nuclear chemistry, Clark University, 1962) is director of the radiological Sciences Laboratory. Present research programs include the investigation of ^{129}I releases from nuclear fuel reprocessing plants, characterization of liquid and gaseous effluents from nuclear facilities, and the development of ultra-low-level radioanalytical methods.

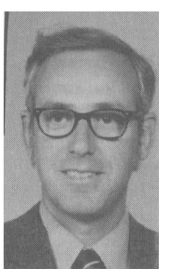
FUEL CYCLES

LIVERMORE PLUTONIUM ARRAY PROGRAM: EXPERIMENTS AND CALCULATIONS

O. C. Kolar
H. F. Finn
N. L. Pruvost





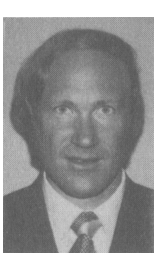


Oscar C. Kolar, Harold F. Finn, and Norman L. Pruvost are physicists at Lawrence Livermore Laboratory (LLL). Kolar (top) (PhD, physics, University of California at Berkeley, 1955) has been employed at LLL since 1955. He was in charge of the Livermore Plutonium Array Program for its duration (1965 to 1969). Since then he has been concerned with issues relevant to the observance of a nuclear test ban treaty and is currently studying energy technologies. Finn (center) (BS, physics, University of Chicago, 1957) spent 12 years in reactor experimentation. He now works on a wide range of projects including minicomputer-based data acquisition, generalized image processing, x-ray film response analysis, and criticality safety. Pruvost (bottom) (BS, engineering physics, University of Illinois, 1960) was responsible for the computational aspects of the Livermore Plutonium Array Program. Since 1970 he has been active in seismic evasion issues relevant to a nuclear test ban treaty. He is currently developing methodologies pertinent to international energy problems.

FUELS

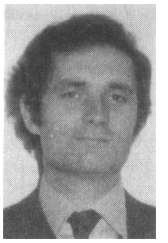
EFFECTS DUE TO FISSION GAS DURING UNPROTECTED OVERPOWER TRANSIENTS IN A LIQUID-METAL FAST BREEDER REACTOR

H. G. Bogensberger
C. Ronchi



Hans G. Bogensberger (right) (PhD, nuclear physics, University of Vienna, 1970) is a member of the Institute of Applied Reactor Physics and System Analysis at the Nuclear Research Center in Karlsruhe, West Germany. He was engaged in the SEFOR project and he worked with the calculation and interpretation of the SEFOR experiments.

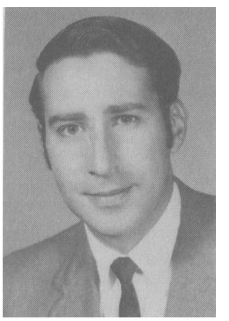
Since 1973, he has been working on the safety of the liquid-metal fast breeder reactor (LMFBR), particularly on equations-of-state for irradiated reactor fuel and the analysis of reactor accidents. Claudio Ronchi (PhD, physics, State University, Milan, Italy, 1966) is a staff physicist at EURATOM, the European Joint Research Center. His main interest is irradiation performance analysis of oxide and advanced LMFBR fuels. Since 1968, he has been responsible for the Electron Microscopy Section at the European Institute for Transuranium Elements, Karlsruhe, West Germany.



MATERIALS

HIGH STRAIN CRACK GROWTH IN ZIRCALOY-2 WELDS

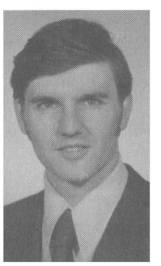
H. D. Solomon

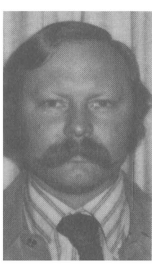


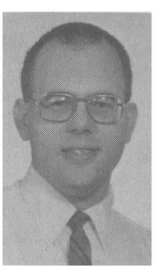
H. D. Solomon (PhD, metallurgy and materials science, University of Pennsylvania, 1968) has been with the General Electric Research and Development Center since 1968. His principal research interests have been in the areas of fatigue, fracture, crack propagation, and most recently, the physical metallurgy and stress corrosion of stainless steels. He has pursued research studies on low-carbon steels, superalloys, stainless steels, and Zircaloy-2.

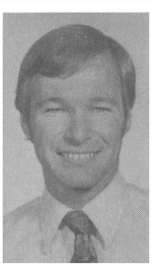
STAINLESS-STEEL WEIGHT LOSS IN NITROGEN-CONTAMINATED LIQUID LITHIUM

R. J. Schlager
R. A. Patterson
D. L. Olson
W. L. Bradley





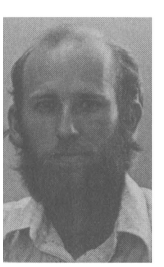


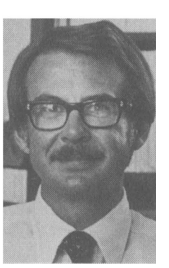


R. J. Schlager (top left) (MS, metallurgical engineering, Colorado School of Mines, 1975) was a research assistant at the Colorado School of Mines and is now a metallurgical engineer at Kaiser Aluminum Corporation, Mead, Washington. He is interested in process metallurgical engineering. R. A. Patterson (top right) (MS, metallurgical engineering, 1974) was a research assistant at the Colorado School of Mines and is now a research metallurgist at Rockwell International, Rocky Flats Division, Golden, Colorado. He is active in joining research and development. D. L. Olson (bottom left) (PhD, materials science, Cornell University, 1970) is an associate professor of metallurgical engineering at the Colorado School of Mines. He has active corrosion and joining research programs in progress. W. L. Bradley (bottom right) (PhD, materials science, University of Texas, 1970) is an associate professor of metallurgical engineering at the Colorado School of Mines. He has active research programs in both corrosion and mechanical behavior of materials.

CALCULATED COMPOSITION CHANGES OF SOME REFRACTORY METALS IN A FUSION REACTOR ENVIRONMENT

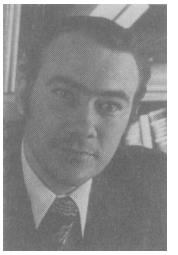
D. S. Kopecki
K. M. Ralls
E. Linn Draper, Jr.





D. S. Kopecki (left) (MS, 1974) is a doctoral student in materials science at The University of Texas at Austin. His doctoral research will be in the field of multifilamentary superconductors. Kenneth M. Ralls (right) (ScD, Massachusetts Institute of Technology, 1964) is an associate professor of mechanical engineering at The University of Texas at Austin. His major research interest is in

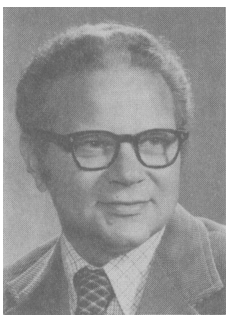
superconducting materials. E. Linn Draper, Jr. (right) (PhD, Cornell University, 1970) is the director of the Nuclear Reactor Laboratory and associate professor of mechanical engineering at The University of Texas at Austin. His areas of research include nuclear fusion engineering and the economics of the nuclear fuel cycle.



ISOTOPES SEPARATION

TWO-UP, ONE-DOWN IDEAL CASCADES FOR ISOTOPE SEPARATION

Donald R. Olander

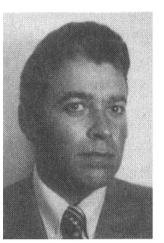


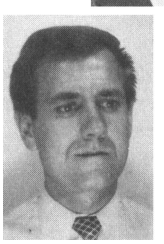
Donald R. Olander (AB, chemistry, Columbia University, 1953; BS, chemical engineering, Columbia University, 1954; ScD, chemical engineering, Massachusetts Institute of Technology, 1958) is a professor of nuclear engineering at the University of California, Berkeley, and principal investigator in the Materials and Molecular Research Division of the Lawrence Berkeley Laboratory. His research and professional interests are in the fields of reactor fuel element materials and chemistry, radiation chemistry in gas-cooled reactors, chemical kinetics of gas-solid reactions, and uranium enrichment by the gas centrifuge.

INSTRUMENTS

IN-PILE GAMMA-RAY SPECTROMETRY TO FOLLOW OSIRIS IRRADIATIONS

G. Farny
M. Destot
D. Texier
J. L. Faugere
M. Mouchnino



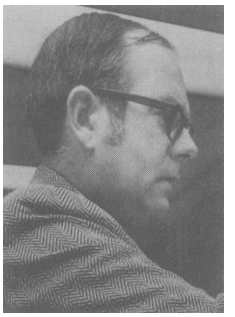




Gerard Farny (top left) (engineer, National Institute of Applied Sciences, Lyon, 1964) has been actively engaged in the fuel test program, with special interest in NTD (neutron-radiography, gamma-scanning, and reactor physics). Michel Destot (top right) (Doctor of Nuclear Science, engineer, Grenoble University, 1972) is at present in charge of in-pile gamma-scanning studies and development in Saclay. Daniel Texier (center) (electrical and hydraulic engineer, Toulouse University, 1952) has been involved with the study and the construction of the EL-3 reactor in Saclay. He is presently responsible for mechanical and hydraulic designs in the Saclay reactor department. Jean-Luc Faugere (bottom left) (electrical engineer, University of Grenoble, 1966) is in charge of fuel testing in the OSIRIS reactor in Saclay. He has been engaged in the fast program. The fuel is uranium-plutonium oxide tested in rig or loop with sodium as coolant. Michel Mouchnino (bottom right) (civil engineer, mines and metallurgy) is in charge of spectrometric studies on fast breeder reactor fuel elements and works in the hot laboratory facility in the Plutonium Department at the Commissariat à l'Energie Atomique.

RADIATION

WELDING PLASTICS BY THE NEUTRON CAPTURE PROCESS

J. N. Anno

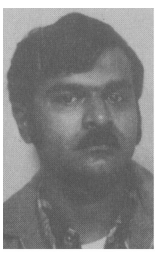


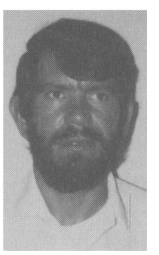
J. N. Anno (BS, physics, 1955; MS, physics, 1961; PhD, physics, 1965) is currently professor of nuclear engineering at the University of Cincinnati and director of the Laboratory of Basic Applied Nuclear Research. He received his academic training at Ohio State University and has worked for over 20 years in the general area of industrial applications of atomic energy. He is also interested in fusion and fluid mechanics.

TECHNIQUES

ACOUSTIC EMISSION ANALYSIS OF STRESS CORROSION CRACKING IN TYPE 304 STAINLESS STEELS

Jaishanker Shrinivasan Brihmadesam
N. J. McCormick





Jaishanker Shrinivasan Brihmadesam (top) (MS, nuclear engineering, University of Washington, 1974) is presently a materials development engineer for C-E Power Systems, Combustion Engineering, Inc. Before this, he was an assistant engineer for Zetec, Inc., working on steam generator testing. N. J. McCormick (PhD, nuclear engineering at the University of Michigan, 1965) is a professor of nuclear engineering at the University of Washington. He recently spent a year's leave-of-absence with the Palo Alto office of Science Applications Inc. working on reactor safety studies. He is presently a consultant to SAI and to the Hanford Engineering Development Laboratory, where he has been engaged in the development of methods for identification of failed assemblies in fast reactors.