

NUCLEAR APPLICATIONS & TECHNOLOGY



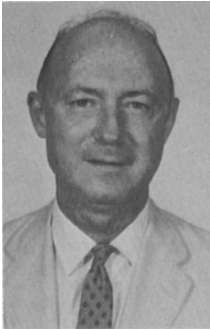
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AUGUST 1970

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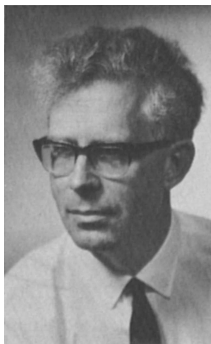


INTRODUCTION

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H. Pearlman

H. Pearlman is manager of LMFBR Technology, Atomics International. With the exception of one year spent on leave at Argonne National Laboratory, he has been in the AI reactor program since 1946. His past responsibilities include directing chemistry, materials, and research reactor systems activities, and component development for the SRE, HNPF, and SNAP reactor systems. Pearlman is a member of several technical societies, and general manager of the American Nuclear Society, June 1970, meeting in Los Angeles.

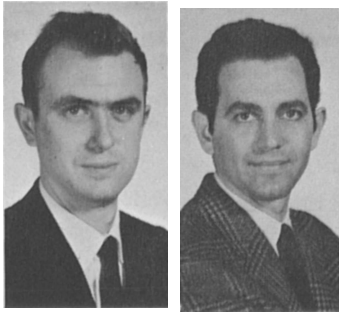


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Brian R. T. Frost

Brian R. T. Frost (BS and PhD, metallurgy, University of Birmingham, England) conducted extensive research on nuclear fuels, liquid metals, and thermonuclear materials at Harwell and for the past few years was also the project leader for fast reactor work there. In June 1969, he was appointed associate director of the Metallurgy Division, Argonne National Laboratory.



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C. C. Dollins, H. Ocken

Charles C. Dollins (left) (PhD, metallurgy, University of Illinois, 1968) and Howard Ocken (PhD Eng., metallurgy, Yale University, 1966) are senior engineers at Westinghouse Bettis Atomic Power Laboratory. Dollins is currently studying mechanisms of interactions between irradiation produced defects and dislocations during creep. Ocken is continuing work in the area of fuel swelling.



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H. R. Warner, F. A. Nichols

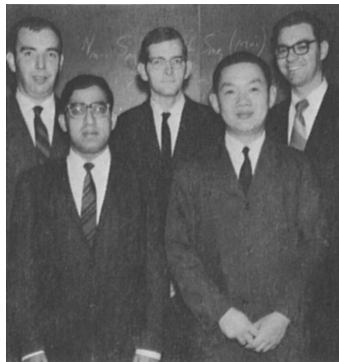
H. R. Warner (left) (PhD, California Institute of Technology, 1967) has worked at Bettis Atomic Power Laboratory since 1959, first in fuel fabrication development, then as project engineer for irradiation test element design and analysis connected with the PWR Core 2 Seed 2 program. Since 1967 he has been engaged in the development of design and analysis methods in the area of bulk oxide fuel behavior. F. A. Nichols (PhD, California Institute of Technology, 1964) has been with the Bettis Atomic Power Laboratory since 1958 and has worked in the areas of corrosion, brittle fracture, fuel swelling and gas release, and the creep and fracture of metals during irradiation. The author of numerous papers in various scientific journals, Nichols is presently manager, Reactor Materials Analysis.



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R. L. Ritzman, A. J. Markworth, W. Oldfield, W. Chubb

Walston Chubb (left) (MS, University of Missouri) is directing research on the mechanisms of swelling and gas release from refractory nuclear fuels. Robert Ritzman (left center) (PhD, Rensselaer Polytechnic Institute) is currently working in the areas of nuclear reactor safety and fission product behavior in fuels. Bill Oldfield (right center) (PhD, Stanford University) is interested in the processes of solidification, and is currently using computer simulation techniques to describe crystal growth. Alan Markworth (right) (PhD, Ohio State University) is developing mathematical models to describe the atomistic behavior of gases and gas bubbles in solids.



SOME CONSIDERATIONS OF THE BEHAVIOR OF FISSION GAS BUBBLES IN MIXED-OXIDE FUELS 188

Che-Yu Li, S. R. Pati, R. B. Poeppel, R. O. Scattergood, R. W. Weeks

The authors are staff members in the Metallurgy Division at Argonne National Laboratory. Che-Yu Li (second from right) (PhD, Cornell University, 1960) was associate professor at Cornell before joining Argonne in 1969. His current interests include fuel element behavior and nuclear metallurgy. S. R. Pati (second from left) (PhD, Massachusetts Institute of Technology, 1967) is particularly interested in the role played by structural defects in fuel swelling and gas release. R. B. Poeppel (right) (PhD, Cornell University, 1969) is currently doing the bubble size distribution calculation. R. O. Scattergood (left) (PhD, Massachusetts Institute of Technology, 1968) is presently interested in the interaction of dislocations with obstacles. R. W. Weeks (center) (PhD, University of Illinois, 1968) is directly involved in the fuel element modeling effort at Argonne and is interested in micro-mechanics.



**A COMPUTER PROGRAM TO PREDICT THE PERFORMANCE OF 195
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M. J. F. Notley

M. J. F. Notley has been at the Chalk River laboratories of Atomic Energy of Canada Limited since 1960, during which time he has been primarily concerned with testing and evaluating aspects of fuel element performance in support of the CANDU reactor program.

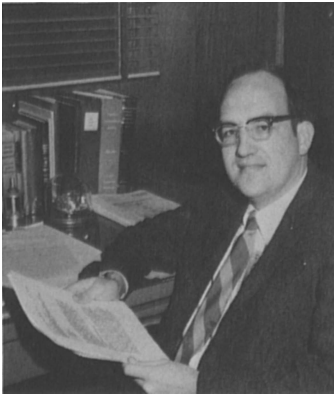


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R. Godesar, M. Guyette, N. Hoppe

Rolf Godesar (center) mechanical engineer in reactor technology (Technical University of Aachen, Germany), Michel Guyette (left) electrical and mechanical engineer (University of Louvain, Belgium), and Norbert Hoppe (right) electrical engineer (Polytechnical Faculty of Mons, Belgium) are all three members of Belgonucleaire and involved in fuel design for power reactors.

REACTOR SITING



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Richard A. Wolfe

Richard A. Wolfe (MS, University of Cincinnati, 1966) is engineering support manager at Monsanto Research Corporation's Mound Laboratory and presently a PhD Candidate in nuclear engineering at the University of Cincinnati. He is currently in charge of the engineering support function of the Personnel Safety and Environmental Control Section, which includes the Nuclear Criticality Safety Program.

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M. De Coster, D. Langela

Marcel De Coster (left), physicist (University of Brussels) and Dieter Langela are members of the reactor physics group of the Centre d'Etude de l'Energie Nucléaire, MOL, Belgium. They are engaged in research on neutron dosimetry and on the applications of the solid-state track detectors in reactor physics experiments.



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T. B. Burley, M. D. Freshley

T. B. Burley (left) and M. D. Freshley are members of the Fuels and Materials Department at Battelle Northwest Laboratory. Burley, development engineer, has been involved in the design and evaluation of instrumented fuel experiments in PRTR for the past four years. Freshley (BS, University of Portland, 1951) is technical program leader for PUP Fuels Evaluations and has been involved in plutonium recycle fuel development since the inception of the program at Hanford in 1958.

ECONOMICS



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L. W. Lang

Linton W. Lang, (MS, chemical engineering, University of Idaho, 1954) is a consulting engineer with Douglas United Nuclear. His current interest in the thorium fuel cycle is predicated by 15 years of experience in fuel cycle economics.

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C. E. Sessions, J. H. DeVan

J. H. DeVan (left) is leader of the Materials Compatibility Group and C. E. Sessions is a metallurgist in the Metals and Ceramics Division of the Oak Ridge National Laboratory. Both authors hold the MS degree from the University of Tennessee. DeVan has been involved in corrosion studies for over ten years. Sessions has worked in the areas of alkali-metal corrosion and irradiation damage of reactor materials.

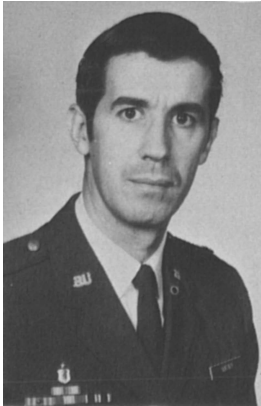


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Lee A. James

Lee A. James (BSME, MSME, University of Washington, Seattle, Washington) is a senior research engineer at Battelle Northwest Laboratory. His previous experience includes eight years as a stress analyst and structural designer at the Boeing Company. James joined Battelle's Pacific Northwest Laboratory three years ago and is presently engaged in research into the fatigue and fracture characteristics of reactor structural materials as well as applications of fracture mechanics techniques to the behavior of structural components.

TECHNIQUES

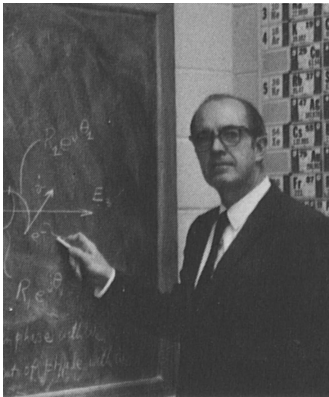


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V. C. Furtado, T. J. Kneip, M. Eisenbud

Major V. C. Furtado (Master Bioradiology, University of California, 1963), currently assigned to the USAF Radiological Health Laboratory, Wright-Patterson AFB, Ohio, is a PhD candidate at New York University. T. J. Kneip (not pictured) (PhD, University of Illinois, 1954) is assistant director of the laboratory for environmental studies, NYU Medical Center Institute for Environmental Medicine. Prior to joining the Institute, he was with Mallinckrodt Chemical Works (1954 to 1967). Merrill Eisenbud (not pictured) (DSc, Fairleigh Dickinson, 1960) is professor of environmental medicine and director of the laboratory for environmental studies, NYU Medical Center Institute for Environmental Medicine. He recently (1968-1970) served as administrator of the Environmental Protection Administration of New York City.

EDUCATION



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Robert L. Carter

Robert L. Carter (PhD, Duke University 1949), director of the 1967 Argonne National Laboratory Practice School, is professor of electrical and nuclear engineering, University of Missouri at Columbia. Prior to 1962, he was project engineer and materials specialist for the Sodium-Graphite Reactor (SGR) program at Atomics International.