



## AUTHORS — MAY 1978

### CRITICAL REVIEW

#### A CONDENSED REVIEW OF THE TECHNOLOGY OF POST-ACCIDENT HEAT REMOVAL FOR THE LIQUID-METAL FAST BREEDER REACTOR

*M. S. Kazimi  
J. C. Chen*

**Mujid S. Kazimi** (top) (PhD, nuclear engineering, Massachusetts Institute of Technology, 1973) is an assistant professor of nuclear engineering at MIT. His interests are mainly in nuclear reactor engineering and safety analysis. **John C. Chen** (PhD, chemical engineering, University of Michigan, 1961) is a professor of mechanical engineering and mechanics at Lehigh University. His research interests are mainly in multiphase heat transfer.

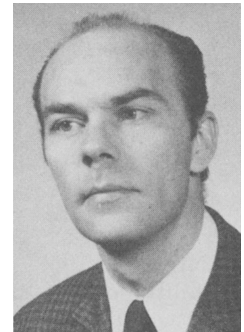


### REACTORS

#### REACTIVITY BEHAVIOR OF A REACTOR CORE LOADED WITH GADOLINIUM-POISONED FUEL ASSEMBLIES

*K. P. Termaat*

**Karel P. Termaat** (BS, electrical engineering, University of Delft, 1963) has worked on the design of the Dodewaard Nuclear Power Plant since 1963, initially in the area of radiation shielding and later in the area of reactor physics. His special interests are in experimental work related to the possible increase of reactor power. His current work includes nuclear engineering work for the Dodewaard plant, with special interest in the development of computer codes for practical operation of the plant, e.g., for core performance evaluations and core reload procedures.



### FUEL CYCLES

#### PERFORMANCE OF THORIUM FUEL CYCLES IN THE PEBBLE-BED REACTOR

*Eberhard Teuchert  
Hans Joachim Rütten  
Heinz Werner*

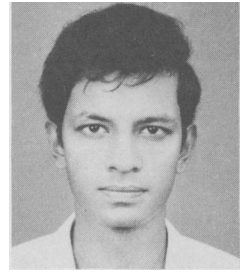
**E. Teuchert** (center) (PhD, theoretical physics, University of Cologne) has been employed by Kernforschungsanlage Jülich since 1964. His current interests are computer code system development and analysis of high-temperature reactors (HTRs) and HTR fuel cycles, preferably of the pebble-bed reactor. **H. J. Rütten** (right) (PhD, engineering science, Technische Hochschule Aachen, 1976) joined Kernforschungsanlage Jülich in 1972. He is working on HTR core design and fuel cycle, especially for the OTTO reactor. His current interests are burnup physics and the design of HTRs in a high converting fuel cycle. **H. Werner** (left) (PhD, engineering science, Technische Hochschule Aachen, 1975) joined Kernforschungsanlage Jülich in 1971. His current interests are in core design, burnup physics, and the fuel cycle of the HTR (OTTO, pebble-bed reactor) within the project PNP.



## THE EFFECT OF FINITE PLANT LIFE ON THE DOUBLING TIME OF A BREEDER REACTOR POPULATION

*Suresh M. Lee*

**Suresh M. Lee** (M.Sc., physics, Calcutta University, 1965) is a scientist in the Department of Atomic Energy, India, who has been working in the field of fast reactor physics for the past ten years. He is currently involved in designing and commissioning the Fast Breeder Test Reactor at Kalpakkam.

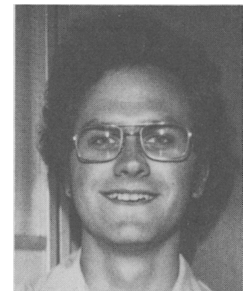


## CHEMICAL PROCESSING

## FEASIBILITY OF CHEMICAL GETTER BEDS IN SCAVENGING TRITIUM FROM INERT GASES

*Jon L. Maienschein*

**Jon L. Maienschein** (BSE, chemical engineering, Princeton University, 1974) is a graduate student working for a PhD in the Chemical Engineering Department at the University of California at Berkeley. His interests include tritium handling and processing in nuclear fusion power plants and cool liquefaction using molten salts.



## MATERIALS

## THE APPLICATION OF SIMULATION EXPERIMENTS TO FUSION MATERIALS DEVELOPMENT

*F. V. Nolfi, Jr.  
Che-Yu Li*

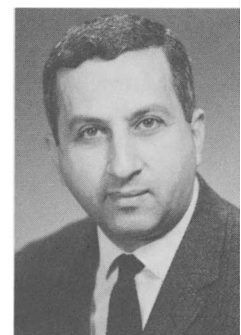
**Frank V. Nolfi, Jr.** (top) (PhD, materials science, Carnegie-Mellon University, 1968) has been a research scientist in the Materials Science Division of Argonne National Laboratory (ANL) since 1968. His interests include phase transformations and diffusion, the thermodynamics of stressed solids, radiation-induced phenomena in materials, and elastic interactions between defects in solids. Currently, he is associated with the Basic Energy Sciences Program and is principal investigator of a program on the effects of radiation on fusion reactor materials. **Che-Yu Li** (PhD, Cornell University, 1960) is currently a professor of materials science and engineering at Cornell. From 1968 to 1970 he did research on nuclear materials at ANL. He has been involved in the same type of research since that time, emphasizing mechanical properties and irradiation effects.



## CRACK PROPAGATION IN COLD-WORKED AUSTENITIC STAINLESS STEEL AT ELEVATED TEMPERATURES

*P. Shahinian*

**Paul Shahinian** (PhD, metallurgical engineering, University of Maryland, 1959) is head of the Performance of Thermostructural Materials Section, Engineering Materials Division, of the Naval Research Laboratory. He has worked extensively on metallurgical, mechanical, irradiation, and environmental effects on the high-temperature behavior of metals. His current interests include the applicability of fracture mechanics concepts to metals at elevated temperature and the performance of gas turbine alloys.



## CALCULATED ATOM DISPLACEMENT AND GAS PRODUCTION RATES OF MATERIALS USING A FUSION REACTOR FIRST WALL NEUTRON SPECTRUM

*T. A. Gabriel  
B. L. Bishop  
F. W. Wiffen*

**Tony A. Gabriel** (left) (PhD, physics, University of Tennessee, 1969) is a member of the Neutron Physics Division of Oak Ridge National Laboratory (ORNL). His interests are in neutron transport and neutron interactions with matter related to electronuclear fuel production, nuclear instrument design, and fusion reactor engineering. A large part of his recent effort has been devoted to neutronic and blanket analysis of magnetically confined fusion reactors, in support of blanket design for a reactor conceptual design team, and to the ORNL fusion reactor irradiation effects program. **Barbara L. Bishop** (center) (BS, statistics, University of Tennessee, 1955) is in the Union Carbide Corporation Nuclear Division's Computer Science Division, assigned to the Neutron Physics Division. A major part of her current effort is in calculations involved with radiation dosimetry. She is also assisting on the irradiation effects calculations in support of the ORNL magnetic fusion reactor programs. **F. W. (Bill) Wiffen** (right) (PhD, materials science, Northwestern University, 1967) is in the Metals and Ceramics Division of ORNL and is a member of the Radiation Effects and Microstructural Analysis Group. His current interest is in the evaluation of irradiation effects in metals and alloys that are candidates for service as structural materials in fusion reactors, the relationship between these results generated in fission reactors and the proposed fusion reactor service conditions, and the development and qualification of alloys more resistant to degradation of engineering properties in fusion reactors.



## HOT LABORATORIES

## EXPERIMENTAL VERIFICATION OF TRITIUM CONTROL BY GLOVE-BOX CONTAINMENT

*Layton J. Wittenberg*

**Layton J. Wittenberg** (PhD, inorganic chemistry, University of Wisconsin, 1953) is a senior research specialist at Monsanto Research Corporation, Mound Facility. He is engaged in material studies related to nuclear and non-nuclear energy systems. He has participated in several fusion reactor design studies regarding tritium fueling, breeding, and containment concepts.

