

## AUTHORS — APRIL 1982

### OVERVIEW

#### A CRITICAL REVIEW OF FUSION SYSTEMS FOR RADIOLYTIC CONVERSION OF INORGANICS TO GASEOUS FUELS

**Mark A. Prelas** (top) (PhD, nuclear engineering, University of Illinois, 1979) is an assistant professor of nuclear engineering at the University of Missouri-Columbia (UMC). He joined the UMC faculty after completing his PhD on a direct energy conversion technique (nuclear-pumped lasers). His research interests are in the areas of direct energy conversion, gaseous electronics, and plasma engineering. **Jacob B. Romero** (center) (BS, chemical engineering, University of New Mexico, 1954; PhD, University of Washington, 1959) worked in research for 11 years at the Boeing Company in the areas of advanced propulsion, cryogenics, and high power lasers. From 1966 to 1969, he was associate professor of chemical and nuclear engineering at the University of Idaho. He joined The Evergreen State College in 1972 where he is now professor of applied sciences. His current research interests are in applications of solar energy and in conceptual studies of fusion systems. **Earl F. Pearson** (bottom) (PhD, Vanderbilt University) was a postdoctoral research associate at the University of Southern California and a research chemist for Shell Development Company before joining the Chemistry Department at Western Kentucky University in 1970 where he is an associate professor. He spent a sabbatical as a visiting research professor at the State University of New York (Binghamton) studying population of excited states by laser radiation. His research explores electronic spectroscopy and the conversion of light energy into stored chemical energy.

*Mark A. Prelas  
Jacob B. Romero  
Earl F. Pearson*



#### A CRITICAL ASSESSMENT OF THE EFFECTS OF PULSED IRRADIATION ON THE MICROSTRUCTURE, SWELLING, AND CREEP OF MATERIALS

**N. M. Ghoniem** (right) [BS, nuclear engineering, University of Alexandria, Egypt, 1971; M. Eng., engineering physics, McMaster University, 1974; MS and PhD, nuclear engineering, University of Wisconsin (UW), 1977] has been an assistant professor at the University of California at Los Angeles since 1977. He has worked for one summer (1974) in the Reactor Physics Branch of Whiteshell Nuclear Reactor Establishment, Manitoba, Canada. He also spent part of the 1981 summer working with

*N. M. Ghoniem  
G. L. Kulcinski*



the Radiation Effects Group at the Oak Ridge National Laboratory. His research interests are in the areas of radiation damage and effects in solids, pulsed irradiation, theoretical modelings of materials behavior in fission and fusion reactor, fusion technology, and computational methods. **G. L. Kulcinski** (BS, chemical engineering, 1961, and PhD, nuclear engineering, 1965, UW) is currently a professor in the Nuclear Engineering Department and the director of the Fusion Engineering Program at the UW-Madison. He has also conducted and directed research on the effects of radiation on metals while serving as a senior research scientist at the Battelle-Pacific Northwest Laboratories from 1965 to 1971 and worked on the Nuclear Rocket Program at Los Alamos National Laboratory in 1963. From 1965 to 1971, he was a lecturer at the Center for Graduate Study in Richland, Washington. His current research interests lie with the assessment of the technological problems associated with the production of power from both controlled thermonuclear and fission reactors and with the specific problems of metals exposed to the intense radiation environment associated with fission and fusion reactors.



## PLASMA ENGINEERING

### PLASMA HEATING WITH MULTI-MeV NEUTRAL ATOM BEAMS

**Larry R. Grisham** (top right) (PhD, physics, Oxford University) has been a physicist at the Princeton Plasma Physics Laboratory (PPPL) since 1974. He has worked mainly in the application and development of neutral beam heating for magnetically confined plasmas. **Douglass E. Post** (top left) (PhD, physics, Stanford University) has been a physicist at the PPPL since 1975. He has worked primarily in the computational modeling of tokamaks and the application of atomic processes to fusion research. **David R. Mikkelsen** (bottom right) (PhD, physics, University of Washington) has been a physicist at the PPPL since 1977. He has developed computational models of neutral beam injection and fast ion orbits in tokamaks. **Harold P. Eubank** (bottom left) (PhD, physics, Brown University) was an assistant professor at Brown University from 1954 to 1959. Since 1959 he has worked at the PPPL on plasma confinement, heating with plasma guns and particle beams, and plasma diagnostics with particle beams.

*Larry R. Grisham  
Douglass E. Post  
David R. Mikkelsen  
Harold P. Eubank*



## ICF CHAMBER ENGINEERING

### TIME-DEPENDENT NEUTRONICS ANALYSIS FOR THE HIBALL HEAVY ION BEAM FUSION REACTOR

**Mohamed E. Sawan** (right) (BS, nuclear engineering, University of Alexandria, Egypt, 1967; MS, 1971, and PhD, 1973, nuclear engineering, University of Wisconsin) is associate scientist in the Fusion Engineering Program at the University of Wisconsin. He worked as assistant and associate professor in the Department of Nuclear Engineering at the University of Alexandria for seven years. Current interests are centered on design and

*Mohamed E. Sawan  
Gregory A. Moses  
Gerald L. Kulcinski*



neutronics of both magnetic confinement and inertial confinement fusion (ICF) reactors. **Gregory A. Moses** (top) (PhD, nuclear engineering, The University of Michigan, 1976) is an associate professor of nuclear engineering at the University of Wisconsin (UW). His research interests include ICF reactor technology, radiation hydrodynamics, and transport theory. He worked for two summers at Lawrence Livermore National Laboratory and in recent years has been a visiting staff member with the target design group at the Los Alamos National Laboratory (LANL). **Gerald L. Kulcinski** (bottom) (BS, chemical engineering, 1961, and PhD, nuclear engineering, 1965, UW) is currently professor in the Nuclear Engineering Department and the Director of the Fusion Engineering Program at the UW-Madison. He has also conducted and directed research on the effects of radiation on metals while serving as a senior research scientist at the Battelle-Pacific Northwest Laboratories from 1965 to 1971 and worked on the Nuclear Rocket Program at LANL in 1963. From 1965 to 1971, he was a lecturer at the Center for Graduate Study in Richland, Washington. His current research interests lie with the assessment of the technological problems associated with the production of power from both controlled thermonuclear and fission reactors and with the specific problems of metals exposed to the intense radiation environment associated with fission and fusion reactors.

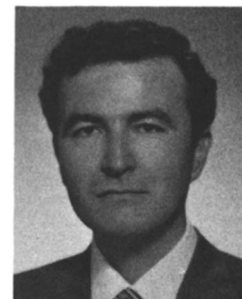


## BLANKET ENGINEERING

### INVESTIGATION OF LANTHANIDES AS NEUTRON MULTIPLIERS FOR HYBRID AND FUSION REACTOR BLANKETS

*Sümer Şahin*

**Sümer Şahin** (MS, mechanical engineering, 1967, and PhD, nuclear engineering, 1970, University of Stuttgart, Federal Republic of Germany; Dozent, physics, Karadeniz Technical University, 1973) is presently an associate professor at Ecole Polytechnique Federale de Lausanne, Switzerland, where he is working to establish an effective multigroup neutron physics analysis system on the CDC-7326 computer. He is mainly involved in research on fusion-fission (hybrid) reactors.



## SAFETY/ENVIRONMENTAL ASPECTS

### MODELING OF LITHIUM FIRES

*M. S. Tillack  
M. S. Kazimi*

**M. S. Tillack** (top) [SM, nuclear engineering, Massachusetts Institute of Technology (MIT)] is a doctoral candidate in the Nuclear Engineering Department at MIT. His current research interest and thesis topic is the structural effects of major plasma disruptions. **M. S. Kazimi** (PhD, nuclear engineering, MIT) is associate professor of nuclear engineering at MIT. His research interests include thermal phenomena in fission reactor safety, advanced two-phase flow model development for reactor transient analysis, and fusion reactor safety.

