nuclear technology/Fusion®

SPECIAL SECTION AUTHORS — NOVEMBER 1983

RADIOACTIVATION OF FUSION STRUCTURES

LOW ACTIVATION FUSION RATIONALE

George R. Hopkins
E. T. Cheng

George R. Hopkins (top) (PhD, physics, Iowa State University, 1954) is a senior staff engineer at GA Technologies Inc. (GA). His research interests over the past 14 years have been centered about fusion power technology and development, in which he has pioneered in the development of a low activation fusion reactor concept. Materials research and development, reactor design studies, plasma engineering, atomic physics, safety, blanket design, and limiter development are also areas to which he has contributed. **E. T. Cheng** (PhD, nuclear engineering, University of Wisconsin, 1976) has been a member of the Development and Technology Group in the Fusion Division of GA since 1978. He has been involved with various fusion blanket and reactor design studies including fusion breeder and chemical production applications. His interests are primarily in the areas of neutronics, radioactivity, and blanket engineering.

RADIOACTIVATION CHARACTERISTICS FOR DEUTERIUM-TRITIUM FUSION REACTORS

E. T. Cheng

E. T. Cheng (PhD, nuclear engineering, University of Wisconsin, 1976) has been a member of the Development and Technology Group in the Fusion Division of GA Technologies Inc. since 1978. He has been involved with various fusion blanket and reactor design studies including fusion breeder and chemical production applications. His interests are primarily in the areas of neutronics, radioactivity, and blanket engineering.

PROSPECTS FOR LOW-ACTIVITY ALUMINUM STRUCTURES

James R. Powell
J. A. Fillo

James R. Powell (right) [BS, chemical engineering, 1953; ScD, chemical (nuclear) engineering, 1958], who has been at Brookhaven National Laboratory since 1956, is currently head of the Reactor Systems Office with responsibility for defining programmatic objectives, monitoring work, and contributing to the effort. He is involved in the design of both compact, high-performance nuclear reactors and advanced energy conversion systems for space power and other applications. He is a direct participant in core design, as well as mechanical, chemical, structural, and systems engineering and safety studies. He is responsible for studies of accelerator applications to nuclear energy, including breeding of fissile fuel, as well as studies of

high-temperature synthetic fuel processes. Also involved with R&D on EM launchers and other hypervelocity applications. Photograph and biography for **J. A. Fillo** were not available at publication time.

AN ANALYSIS OF ACTIVATION AND THE IMPACT OF TRITIUM BREEDING MEDIA AND STRUCTURAL MATERIALS FOR A COMMERCIAL TOKAMAK FUSION REACTOR DESIGN

Jungchung Jung

Jungchung Jung (PhD, nuclear engineering, Kyoto University, Japan, 1974) is with the Fusion Power Program at Argonne National Laboratory. His current activities include nuclear analyses for the ongoing blanket comparison and selection study, fusion materials recycle/waste management study, and lithium blanket neutronics/shielding experiment project. He is also responsible for general neutronics method/code development and nuclear data evaluation.

RADIOACTIVATION CHARACTERISTICS FOR THE TOKAMAK FUSION TEST REACTOR

Long-poe Ku
Joseph G. Kolibal

Long-poe Ku (top) (BS, nuclear engineering, National Tsin-hau University, Taiwan, 1970; MS, 1973, and PhD, 1976, nuclear engineering, Columbia University) is a staff member at Princeton Plasma Physics Laboratory (PPPL). He has been with the tokamak fusion test reactor (TFTR) and TFM design team since 1978 where he is responsible for nuclear radiation analysis and shielding design. His current interests include neutron physics, transport theory, fusion neutronics, and fusion reactor system analysis. **Joseph G. Kolibal** (BS, chemical engineering, Carnegie-Mellon University, 1974; MS, nuclear engineering, Imperial College, University of London, 1977) is a staff member at PPPL engaged in nuclear radiation analysis and transport. He is responsible for assessment of the radiological and shielding environment for the TFTR and the TFM. His current interests include the development and application of computational techniques for transport phenomena.

CONTRIBUTION OF ACTIVATION PRODUCTS TO FUSION ACCIDENT RISK: PART II. EFFECTS OF ALTERNATIVE MATERIALS AND DESIGNS

John R. Holdren
Steve Fetter

John P. Holdren [SB, 1965, and SM, 1966, aeronautics and astronautics, Massachusetts Institute of Technology (MIT); PhD, aeronautics and astronautics/plasma physics, Stanford University, 1970] is professor of energy and resources at the University of California, Berkeley (UC, Berkeley), and faculty consultant in the Magnetic Fusion Energy Division of Lawrence Livermore National Laboratory. His research interests include fusion reactor design to minimize radiological hazards, comparative assessment of the environmental and sociopolitical impacts of energy systems, and problems and prospects of nuclear arms control. **Steve Fetter** (SB, physics, MIT, 1981; MS, energy and resources, UC, Berkeley, 1983) is a doctoral candidate in the Energy and Resources Group at UC, Berkeley. His research interests include radiological assessment of nuclear energy sources, nuclear weapons effects, and the interaction of science and public policy.