



AUTHORS — APRIL 1972

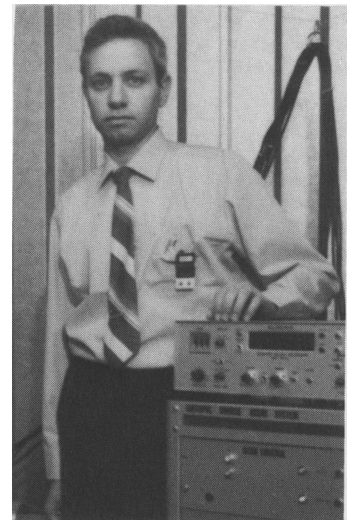
Session on PHYSICS OF NUCLEAR MATERIALS SAFEGUARDS

REACTORS

PREFACE

Tsahi Gozani

Tsahi Gozani (BSc, MSc, IIT, Haifa; DSc, ETH, Zürich, 1962) is a staff physicist with Gulf Radiation Technology at San Diego. He recently became a professor for reactor and applied nuclear physics at the University of Tel-Aviv. His main interests are in applying theoretical as well as experimental nuclear techniques to various fields of science and technology.



PHYSICS OF NUCLEAR MATERIALS SAFEGUARDS TECHNIQUES

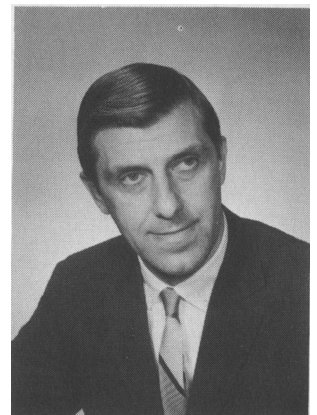
Tsahi Gozani

(See above)

NEAR BARRIER FISSION INDUCED WITH PHOTONS

John R. Huizenga

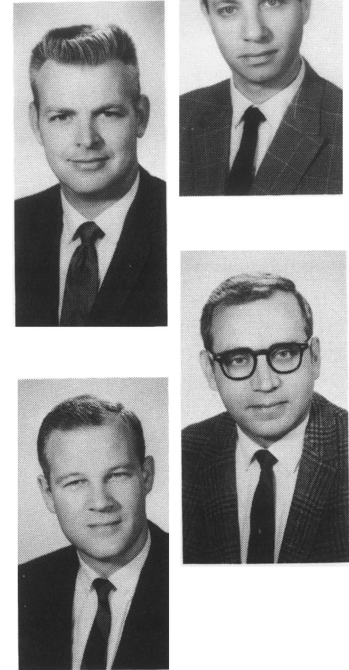
John R. Huizenga (PhD, University of Illinois, 1949) is a professor of chemistry and physics and a member of the staff of the Nuclear Structure Research Laboratory, University of Rochester, New York. His current research interests include nuclear fission, nuclear reactions, nuclear properties, and systematics of the heavy elements.



LOW ENERGY PHOTOFISSION OF HEAVY ELEMENTS—EXPERIMENTAL RESULTS

Richard L. Bramblett (top left) (PhD, Rice University, 1960) is manager of the Nuclear Applications Branch of Gulf Radiation Technology. Activities within the branch include nuclear materials safeguards, activation analysis, and fission physics. The safeguards work involves development of a transportable LINAC assay system, GAMAS. Tsahi Gozani (top right) (PhD, ETH, Zürich, 1962) is a staff physicist at Gulf Radiation Technology and a professor at the University of Tel-Aviv. Areas of activity include reactor kinetic theory, pulsed neutron and reactivity experiments, and nuclear materials safeguards techniques. He was the main proponent in developing and applying photo-induced nuclear reactions and neutron isotopic sources as tools for nondestructive assay of nuclear materials. Robert O. Ginaven (bottom left) (PhD, nuclear physics, Massachusetts Institute of Technology, 1966) spent two years at Oak Ridge National Laboratory on a USAEC post-doctoral fellowship. Since joining Gulf Radiation Technology in 1968 he has been working on the development of techniques and hardware for the nondestructive assay of nuclear materials. David E. Rundquist (bottom right) (PhD, physics, University of Illinois, 1966) was involved in research on charged particle reactions at the University of Michigan. He is presently group leader for the Safeguards Program at Gulf Radiation Technology.

*R. L. Bramblett
T. Gozani
R. O. Ginaven
D. E. Rundquist*



THEORY OF DELAYED-NEUTRON PHYSICS

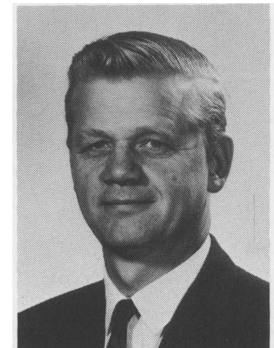
L. Tomlinson (PhD, chemistry, University of Liverpool, England, 1957) is a member of the Chemistry Division at Harwell. He is interested in various aspects of fission products of short half-life, particularly their delayed-neutron and gamma emission. Photograph of the author is not available.

L. Tomlinson

PHYSICS OF DELAYED NEUTRONS—RECENT EXPERIMENTAL RESULTS

G. Robert Keepin's (PhD, physics, Northwestern University, 1949) many contributions to nuclear physics, fission characteristics, and reactor kinetics are well known. He is presently group leader of the Nuclear Safeguards Research and Development Program at Los Alamos, which is developing and applying nuclear techniques for nondestructive assay of fissionable materials.

G. Robert Keepin



APPLICATION OF NEUTRON TECHNIQUES IN THE NONDESTRUCTIVE ASSAY OF FISSIONABLE MATERIALS

Dieter Stegemann (PhD, nuclear engineering, University of Karlsruhe) is professor and head of the Nuclear Engineering Institute, Technical University of Hannover, Germany. His current research interests include nuclear material safeguards techniques, noise analysis in power reactors, and in-core instrumentation.

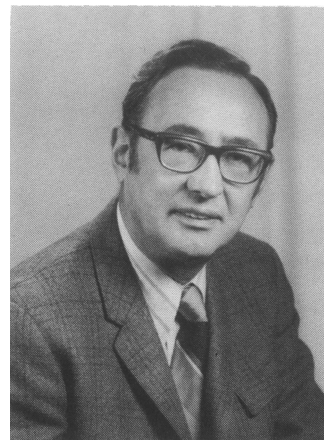
D. Stegemann



A MODEL FOR THE HIGH TEMPERATURE SWELLING OF CLAD OXIDE FUEL

Arthur A. Bauer

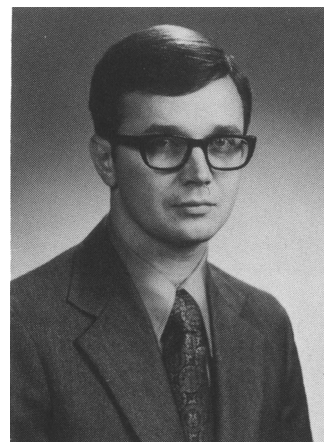
Arthur A. Bauer (MS, metallurgical engineering, Columbia University, 1952) has been active in reactor materials research and development since joining Battelle in 1952. His interests range from structural and component materials problems to the various aspects of fuel, cladding, and fuel element technology.



SOME EFFECTS OF WATER SPRINKLERS ON ARRAY CRITICALITY SAFETY ANALYSES

G. R. Handley

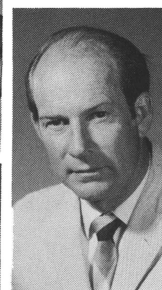
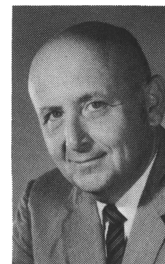
G. R. Handley (BS, nuclear engineering, University of Tennessee) has been associated with criticality safety at the Oak Ridge Y-12 Plant since 1967. His work is devoted to developing methods of criticality safety analyses and providing guidance for the plant facilities processing and shipping of fissile materials.



IN SITU INCORPORATION OF NUCLEAR WASTE IN DEEP MOLTEN SILICATE ROCK

*Jerry J. Cohen
Arthur E. Lewis
Robert L. Braun*

Jerry J. Cohen (top) (MPH, University of Michigan, 1955) is a scientist of the K Division Plowshare Group at Lawrence Livermore Laboratory at the University of California working in environmental evaluations of Plowshare applications and nuclear waste management. Arthur E. Lewis (center) (PhD, geology, California Institute of Technology, 1958) is group leader, K Division Plowshare II Group at Lawrence Livermore Laboratory. He has done research in chemical mining, nuclear waste disposal, oil shale recovery, and geothermal power. Robert L. Braun (bottom) (PhD, physical chemistry, University of Washington, 1966) is a chemist for Plowshare II. His research has been in chemical mining, mineralogy of radioactive debris from an underground nuclear explosion, and strain analysis by x-ray diffraction topography.



THE ATOMIC ENERGY RESEARCH ESTABLISHMENT MINIATURE NUCLEAR BATTERY

M. J. Poole (MA, PhD, Cambridge University, England) is head of the Applied Physics Group, Atomic Energy Research Establishment in which A. W. Penn (BSc, PhD, Bristol University, England, M Inst P) is a principal scientific officer and J. Myatt (BA, PhD, Birmingham University, England, M Inst P) is a senior scientific officer, and M. H. Brown (MI, mechanical engineering) is an engineer in the Engineering Services Division. Photographs of the authors are not available.

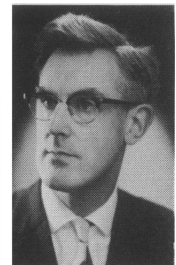
*A. W. Penn
M. H. Brown
J. Myatt
M. J. Poole*

ANALYSIS

COPPER ASSAY OF BIOMATERIALS WITH NEUTRON ACTIVATION

N. Spronk's (top) (PhD, State University, Utrecht) scientific interests comprise development of studies of trace element function with nuclear methods. R. J. van Hoek (BS, School for Analytical Chemistry, Amsterdam), a staff member of the laboratory of the AKZO (-Ketjen) in Amsterdam, joined the biological laboratory for development of the nuclear studies in biological sciences, specializing in nuclear trace studies in animals.

*N. Spronk
R. J. van Hoek*



MATERIALS

PRECISION AND SOURCE OF VARIATION OF OXYGEN- TO-METAL DETERMINATIONS FOR (U, Pu)O₂

Jack Lackey (top left) (PhD, ceramic engineering, North Carolina State University) has been at Oak Ridge National Laboratory in the Metals and Ceramics Division since 1969. He is involved in fabrication, characterization, and postirradiation evaluation and modeling of (U, Pu)O₂ fast reactor fuels. More recently he has been engaged in developing processes and equipment for coating HTGR fuel particles. Ronnie Bradley (top right) (MS, ceramic engineering, North Carolina State University), a development engineer in the Metals and Ceramics Division at Oak Ridge National Laboratory, is engaged in the development of fabrication techniques for LMFBR, GCBR, and HTGR fuels. William Pechin (bottom left) (MS, nuclear engineering, Iowa State University) is a development engineer in the Metals and Ceramics Division at Oak Ridge National Laboratory. His major activities are development of fabrication and characterization techniques for LMFBR, GCBR, and HTGR fuels. Thomas Hebble (bottom right) (MS, statistics, Florida State University) is a consultant in the Statistics Department at Oak Ridge National Laboratory. Consulting activities include design and analysis of experiments in the physical sciences.

*W. J. Lackey
R. A. Bradley
W. H. Pechin
T. L. Hebble*

