

EDITOR

ROY G. POST Department of Nuclear Engineering University of Arizona, Tucson, Arizona 85721

ANS OFFICERS

JAMES R. LILIENTHAL, President
JOHN W. SIMPSON, Vice President-President Elect
J. ERNEST WILKINS, Jr., Treasurer
OCTAVE J. DU TEMPLE, Executive Secretary

ANS STAFF

NORMAN H. JACOBSON, Publications Manager RUTH FARMAKES, Assistant Staff Editor ELSIE W. COX, Copy Editor SIEGFRIED H. KRAPP, Production Manager KATHRYN L. FROEHLICH, Production Assistant MERRILL ALBERTUS, Production Coordinator

Advertising

RICHARD HARRIS, Advertising Sales Manager ROSEMARY HARVEY, Circulation Manager

EDITORIAL ADVISORY BOARD

SPENCER H. BUSH, ERIC T. CLARKE, VAUGHN E. CULLER, GARY J. DAU, W. KENNETH DAVIS, MILTON C. EDLUND, WALTER H. ESSELMAN, PAUL R. FIELDS, JOHN H. FRYE, JR., STEPHEN J. GAGE, O. H. GREAGER, MARSHALL GROTENHUIS, VINCENT P. GUINN, DAVID B. HALL, DANIEL F. HANG, JOSEPH M. HENDRIE, PAUL KRUGER, STEPHEN LAWROSKI, FORREST J. REMICK, WALTON RODGER, ZOLTON ROSZTOCZY, WILSON TALLEY, EDWIN L. ZEBROSKI

Address all manuscript and editorial communications to the editorial offices, Nuclear Technology, Department of Nuclear Engineering, The University of Arizona, Tucson, Arizona 85721.

Nuclear Technology is published monthly by the American Nuclear Society, Inc., with executive and business offices at 244 East Ogden Avenue, Hinsdale, Illinois 60521, telephone 312/325-1991. Subscription rate is \$30 or \$110/four volumes per year. Single copy price is \$13 (special issue slightly higher). It is printed in Danville, Illinois, and second class postage is paid at Hinsdale, Illinois, and at additional mailing offices. Copyright © 1972 by the American Nuclear Society, Inc.

Statements made by authors of contributions to the various departments or of technical papers and notes do not necessarily reflect the viewpoint of the American Nuclear Society nor should their appearance herein be construed as tacit approval or endorsement by the Society. Abstracts in Nuclear Technology may be freely republished anywhere at any time.

ON THE COVER:

This month's cover is a micrograph of boron carbide fast neutron irradiated at 1350°F to 3.77% ¹⁰B burnup, courtesy of Hanford Engineering Development Laboratory.

CONTENTS - NOVEMBER 1972

TECHNICAL PAPERS

A Review of the Italian Activities for the Thermal Recycling of Plutonium / G. Schileo 3	360
FUELS	
Experimental Investigation of In-Reactor Molten Fuel Performance / C. Lepschy, G. M. Testa, H. Hougaard, K. W. Jones	367
RADIOACTIVE WASTE	
Fluidized Bed Calcination of Radioactive Wastes Using In-Bed Combustion Heating / T. K. Thompson, G. E. Lohse, B. R. Wheeler	396
MATERIALS	
Dimensional Stability of Tantalum Control Rods in LMFBRs / J. F. Bates, A. L. Pitner	406
Fast Reactor Irradiation of Boron Carbide Powder / A. L. Pitner	410
RADIOISOTOPES	
A Mathematical Model for the Measurement of Gas Properties with Alpha-Particle Gauges / R. P. Gardner, K. Verghese, J. I. Cehn	418
NUCLEAR EXPLOSIVES	
Reduction of Tritium from Underground Nuclear Explosives / J. B. Green, Jr., R. M. Lessler	430
Ground Motion Prediction Method for Simultaneously Detonated Multiple Underground Nuclear Explosives / Dean V. Power	437
A Review of the Ground Motion Prediction Problem for Plowshare Underground Engineering Applications / Walter W. Hays	444
INSTRUMENTS	
Measurement of Antiscatter Grid Effectiveness in Thermal-Neutron Radiography of Hydrogenous Materials / John A. Rau, William L. Parker	458
TECHNICAL NOTE	
RADIOISOTOPES	
A Simplified Apparatus for Short-Term Irradiations at 77°K / P. R. Blankenhorn, D. E. Kline 4	462
DEPARTMENTS	
	356 465