AUTHORS AND PAPERS

The highly condensed summaries of papers and technical notes (below) are intended to assist the busy reader in determining the order in which to read the technical material. Biographical comments are for human interest.

ON-LINE COMPUTER AT SAVANNAH RIVER

Operating safety and efficiency of a large production reactor at the Savannah River Plant have been improved by the use of an on-line computer which scans over 3000 instrument sensors in a $4\frac{1}{2}$-min cycle and presents certain selected information to the reactor operator. Computer results are used with existing written procedures for control of reactor operations.

K. L. Gimmy (shown in foreground) has worked at Savannah River in reactor operations and instrumentation studies and is Supervisor of the Process Computer Group. F. R. Field, Jr. is Supervisor of the Reactor Hydraulics and Heat Transfer Group, which is responsible for analyses of reactor operation. Their skills were combined to provide justification for an on-line computer, selection of suitable reactor inputs, and formulation of programming to yield process benefits.

MOLTEN-SALT BREEDER REACTORS

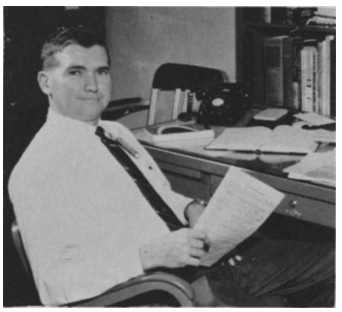
This work analyzes three molten-salt breeder-reactor concepts. The first two were graphite-moderated thermal breeders; in the first of these the fissile and fertile materials were kept separated by graphite tubes in the core; in the second, the fissile and fertile materials were included in a single salt stream. In the third concept, an intermediate-energy breeder, the core was an unmoderated salt containing both fissile and fertile materials.

Howard F. Bauman (shown on left) has been active in fluid-fueled reactor development at Oak Ridge since 1957. He participated in the operation of the Homogeneous Reactor Experiment-2 until it was shut down in 1961. Since then, most of his work has been in reactor analysis and evaluation in the Molten-Salt Reactor Program. His BS is in Chemical Engineering from Purdue (1948) and he holds an MS from Illinois Institute of Technology (1951). Paul R. Kasten has been a staff member of Oak Ridge National Laboratory since 1950, working in the fields of reactor physics, reactor analysis, and reactor evaluation. At present, he is Deputy Director of the Molten-Salt Reactor Program at ORNL. His PhD is from the University of Minnesota (1950).

PNEUMATIC RABBIT FACILITY

One of the challenging aspects of reactor operations is designing novel experimental equipment for increasing research utilization of irradiation facilities. The thermal-column pneumatic rabbit facility reported here has become one of the more popular experimental innovations made at Industrial Reactor Laboratories (IRL).

The authors are all members of the staff of Columbia University's IRL, Plainsboro, New Jersey. Shown l to r are: T. C. Weeks, Manager; A. B. de Saint Maurice, Engineer; and R. T. Canfield, Supervisor, Reactor Operations.



DISSOLUTION OF METALS

A method for dissolving noble metals and metals resistant to hydrochloric acid uses either half-wave or full-wave alternating-current electrolysis. This work covers the investigation of the effects of several variables on the rate of solution for cadmium, copper, gold, indium, iridium, palladium, platinum, rhodium, tantalum, and tungsten.

W. D. Box, a member of the Isotopes Development Department of the Isotopes Development Center at Oak Ridge National Laboratory, has published in Nuclear Applications *previously. Biographical notes on him may be found in the April 1965 issue.*

FABRICATION OF TUNGSTEN TUBING

High quality seamless tubing of unalloyed tungsten and of tungsten-25% rhenium can be fabricated by extrusion and drawing. Both primary and secondary extrusions rely on the filled-billet technique, which was employed to produce tubing described in this article.

The authors (shown l to r) are on the staff of Nuclear Metals Division of Textron, Inc. Saul Isserow is Manager, Nuclear Materials and Refractory Metals, and supervised the program after its inception. Robert G. Jenkins developed the procedures for drawing. James G. Hunt first developed the extrusion procedures. Gerald I. Friedman assumed responsibility for extrusion later in the program.

COMPATIBILITY OF U-Pu-Fz WITH CLADDINGS

This study of the compatibility of six different cladding materials with various mixtures of uranium-plutonium with mixed fission products concludes that such compatibility may be predictable, on a relative basis, by comparison of the binary phase diagrams of the major elements in the fuel and in the cladding.

C. M. Walter (shown on right) and J. A. Lahti have been primarily concerned with work on compatibility of both molten and solid metallic fuels as well as ceramic materials during the past five years at Argonne National Laboratory. Their present interests include the effect of a reactor environment on compatibility and other solid-state processes in fuels and the application of basic parameters to compatibility problems in complex engineering systems.

HIGH-TEMPERATURE IONIZATION CHAMBER

At 1000°C, a high-temperature ionization chamber described in this article can detect 10^{-7} g of molten plutonium which has penetrated the walls of its container by diffusion through the grain boundaries to the walls of a tantalum outer container.

Richard J. Watts is a staff member of the Los Alamos Scientific Laboratory. He worked on instrumentation for CP-1 and for the Trinity shot at Alamogordo, and has been active in the field of nuclear instrumentation ever since. His present interests are primarily in application of reactor-noise-analysis techniques to fast reactors and in the problem of containment of liquid plutonium. He received his BS in Physics from the University of Denver (1943) and his MS, also in Physics, from Ohio State University (1948).

ACTIVATION OF GOLD SPHERES AND FOILS

This paper describes work at Argonne in which gold spheres and foils were activated in a nonisotropic neutron flux in the thermal column of the JUGGERNAUT reactor, using cadmium-lined boxes for sample holders. The angular flux distribution was measured by scanning the spatial distribution of the activation over the 1-cm-diam spheres. A qualitative method was developed to determine the flux distribution from the results of self-shielding measurements with the foils.

F. H. Helm joined Argonne National Laboratory in 1960. He has been active in the field of neutron detectors and neutron flux measurements by activation methods. More recently, he was engaged in experimental work on the fast critical facility ZPR-6. He obtained his PhD in Physical Chemistry in 1959 from the University of Würzburg, Germany. Before coming to ANL, he worked at the Kernforschungszentrum Karlsruhe, Germany, for about a year.

TWO-DIMENSIONAL ACTIVATION ANALYSIS

This study of impurities in aluminum foil used neutron activation and scanning techniques to develop a mathematical model including the necessary correction factors for the measurement of the distribution ratios of impurities in the foil. Although the results are semiquantitative, there is indication that the copper and gallium impurities in commercial-grade aluminum foil are unevenly distributed.

Richard E. Wainerdi (shown at top) is head of the Activation Analysis Research Laboratory of Texas A&M University as well as Associate Dean of Engineering, Associate Director of the Engineering Experiment Station, and Professor of Chemical Engineering. His PhD is in Nuclear Engineering from Pennsylvania State University (1958). M. P. Menon, an Assistant Research Chemist at the Activation Analysis Research Laboratory, and Assistant Professor of Chemistry, formerly served as Head of the Department of Chemistry in one of the affiliated colleges of the University of Rangoon (Burma) and as a Research Associate at the MIT Laboratory for Nuclear Science. A.P. Rainosek (bottom photo) is a graduate student in the Graduate Institute of Statistics of Texas A&M University.