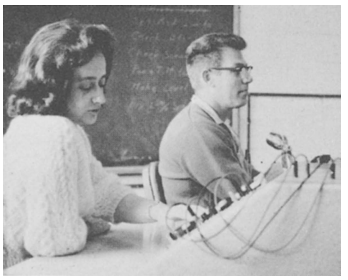
AUTHORS AND PAPERS

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.



NEUTRON BEAMS FROM SPLIT CORES

Simple alteration of fuel location in a light-water-moderated reactor can increase the ratios of thermal neutrons to fast neutrons and to gamma rays significantly.

Kenneth W. Downes (MS, Carnegie Tech., 1950) has been active in critical experiments since joining Brookhaven's Experimental Reactor Physics Group in 1951. Anita Court (PhD, Chemistry, Michigan State, 1956), a member of the same group, has worked primarily on critical experiments on reactor mockups.

CIRCUMFERENTIAL CLAD RINGING

Dishing the end of a fuel pellet to accommodate growth in length during irradiation may be one of the causes of the formation of ridges in the cladding unless the proper shape for the end is chosen.

Henri Fenech (left) is Associate Professor of Nuclear Engineering at Massachusetts Institute of Technology. With MS and ScD degrees from MIT, he has over ten years of industrial experience in the power production field. Henri Guéron, an engineer from the Commissariat à l'Énergie Atomique, has been writing his doctoral thesis under Professor Fenech.

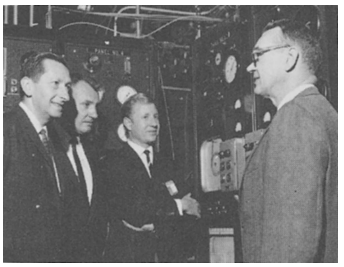
PLUTONIUM-238 PRODUCTION IN EPITHERMAL REACTORS

The availability of uranium fuels enriched in ^{236}U and ^{237}Np makes it possible to contemplate fuel cycles for the production of ^{238}Pu that operate with equilibrium concentrations of the important nuclides in the production chain. Fuel cycles involving ^{236}U recycle and ^{236}U and ^{237}Np recycle are reported in this work, and ^{238}Pu production costs are estimated for two well-developed reactor types.

The authors, all members of the Nuclear Engineering Department at Brookhaven National Laboratory, have been interested in transuranium nuclide production in epithermal neutron spectra for several years. J. Chernick (shown alone) is Associate Head of the Physics Division. L. G. Epel (shown on right in group picture) is in the Evaluation and Technical Assistance Group of the Department. B. Manowitz (center of group picture) is Head of the Radiation Division. W. E. Winsche is Chairman of the Nuclear Engineering Department.

INCONEL-625® CORROSION IN SUPERHEATED STEAM

Inconel Alloy 625® fuel cladding material displays good corrosion resistance up to at least 1500°F metal temperature, in heat-transfer tests conducted in an out-of-pile superheat test facility simulating the environment of a boiling-water reactor system. A compositionally changed layer developed at the metal-oxide interface that appeared to reach a maximum depth at the higher temperatures.

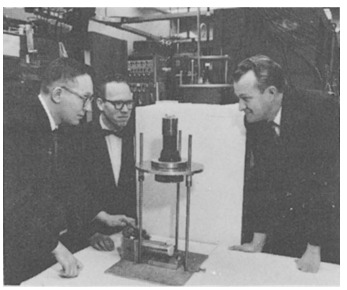


W. L. Pearl, G. G. Gaul, S. Leistikow, and E. G. Brush (l to r) are shown discussing the corrosion facility in which the INCONEL-*625 corrosion studies were made. Pearl, Brush, and Gaul of the General Electric Co., Atomic Power Equipment Department, have collaborated on several corrosion papers some of which have appeared in* Nuclear Applications. *Dr. Leistikow of the Kernforschungszentrum Karlsruhe, Institüt für Material- und Festkorperforschung at Karlsruhe, Germany, was on a technical work assignment at General Electric from January 1965 to April 1966 as part of the German government and industry Nuclear Superheat Performance and Evaluation Program.*

NEUTRON ATTENUATION IN LITHIUM HYDRIDE

Attenuation of fission-spectrum neutrons and gamma-ray buildup factors in lithium hydride are presented.

Francis Kam (left), a physicist responsible for hazards in the ORNL Operations Division, has worked extensively on analytical methods in reactor shielding since graduating from the University of Michigan. Francis Clark, a physicist with ORNL's Radiation Shielding Information Center and a graduate of New York University and Union College, is experienced in analytical shielding.



CESIUM-137 DETERMINATION BY COINCIDENCE COUNTING

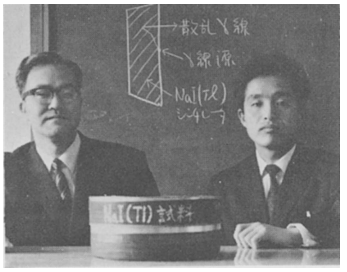
An instrumental method for directly measuring ^{137}Cs in aged fission-product mixtures involves placing the fission-product mixture in a liquid scintillation beta counter, which is also viewed by a NaI(Tl) crystal, and recording the gamma-ray spectrum not in coincidence with the beta particles.

The authors are staff members of the Environmental and Radiological Sciences Department of the Pacific Northwest Laboratory. W. A. Haller (MS, Nuclear Chemistry, Notre Dame, 1963), is a Research Scientist in the Radiological Chemistry Unit headed by R. W. Perkins (MS, Organic Chemistry, Utah State, 1952). J. M. Nielsen (PhD, Physical Chemistry, Southern California, 1951) is Manager of Radiological Sciences Section.

BETA-EXCITATION IN X-RAY FLUORESCENCE

Sensitivity of the isotopic x-ray fluorescence technique of elemental analysis is increased by electrically accelerating the β particles from the source to cause x-ray fluorescence in the sample directly.

Troy C. Martin (center) and Kenneth R. Blake (right), Research Scientists at Texas Nuclear Corp., have several years' experience in analysis by x-ray fluorescence and fast-neutron and charged-particle activation. I. L. Morgan, active in nuclear physics and related research, is President of the company.



NaI(Tl) SCINTILLATOR PHOTOFRACTIONS

The energy spectrum of photons backscattered from the front face of a NaI(Tl) scintillator was measured to provide an estimate of the fraction of incident photons absorbed and the Compton electron distribution in this material.

Tomonori Hyodo (left), Professor of Nuclear Engineering at Kyoto University, Japan, since 1957, received a Doctor of Engineering degree from Kyoto in 1961 and spent the following year at MIT and ORNL. Takashi Nakamura received his Master's degree in Nuclear Engineering from Kyoto in 1964. He has been a research assistant there since that time.