

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.



UO₂ MELT-THROUGH BARRIER

An accidental melt-through of a reactor containment structure might possibly be averted by an underlying layer of unenriched UO₂, which, because of its greater density, would serve as a thermal barrier between the floating molten fuel and the containment structure.

Samuel M. Zivi, Manager of TRW's Applied Thermodynamics Department, has been with the company since 1958. His specialties are thermodynamics, heat transfer, and fluid mechanics, and his BSME and MSME degrees are from Iowa State (1946) and Washington (St. Louis, 1948), respectively.



¹²⁴Sb-Be THERMAL-NEUTRON SOURCE

A research irradiation facility using a ¹²⁴Sb-Be source delivers a continuous thermal-neutron flux of 6×10^8 (n/cm² sec) over a 20 cm³ volume with a uniformity of $\pm 4\%$.

W. E. Downs, with the Research Division of Commercial Products, AECL since 1964, is interested in gamma dosimetry with acrylic plastics and isotope neutron sources. Previously, he was with the Department of National Health and Welfare, responsible for radioisotope licensing and health physics activities.



OZONE FROM CHEMONUCLEAR REACTORS

Ozone production from oxygen in a chemonuclear reactor appears to be economically interesting, based on results from gamma radiation and fission fragment experiments.

John T. Sears (right) (PhD, Princeton, 1965), an assistant chemical engineer, and James W. Sutherland (PhD, University of London, 1956), a chemist, are in the Radiation Division at Brookhaven National Laboratory. Both have been interested in radiation chemistry and applied radiation processes for several years.



ION EXCHANGE SEPARATION OF CESIUM

According to our reviewers, the titanium phosphate ion exchanger described in this paper works very well.

Camille Beaudet (left) is Head of SERAI Laboratories in Brussels. Previously involved in the synthesis of new drugs, he is presently interested in the synthesis of pure aromatic and cycloaliphatic hydrocarbons, high-temperature fuel cells, and radioisotope applications. His PhD (organic chemistry, 1939) is from the University of Liege. Jean Cremer participated in the development of the original ion exchangers. His primary interests are electron and optical microscopy, and his chemical education was from the School of Chemistry of Liège, Belgium (1957).



INJECTION-CAST Al-Pu FUEL RODS

Al-10 wt% Pu alloy fuel rods, 0.600 ± 0.001 -in. diam with < 0.10 -in. bow over their 38-in. lengths, were injection cast in Pyrex molds and encapsulated in Zircaloy-2 tubes.

Gary E. Miller (MS, Metallurgical Engineering, University of Washington) is a Senior Research Engineer in the Plutonium Fuels Engineering Section, Materials Department at Battelle-Northwest. He was Project Engineer for this Al-Pu fuel-element fabrication while at Nuclear Materials and Equipment Corporation.



PROBABILITY MODEL FOR REENTRY

The probability of injury to the populace from an unplanned reentry of a satellite carrying radioactive material, examined as functions of latitude and orbital inclination angle, is shown to be greatest for inclinations of 30 to 60°.

C. R. Easton (left) and G. H. Anno (right) are Senior Scientists at the Advance Propulsion Department, Missile and Space Division, Douglas Aircraft Company. R. W. Langley is Chief of the Nuclear Technology and Subsystems Branch which is involved with nuclear propulsion, shielding, and weapons effects.



MONOENERGETIC γ -RAY SHIELDING STUDIES

Measurements of the penetration of monoenergetic 10-MeV gamma rays into a thick aluminum slab agreed with predictions within experimental uncertainty. The gamma rays were produced by in-flight annihilation of positrons in a linear accelerator.

J. A. Lonergan (left), a research physicist with Gulf General Atomic's Accelerator Physics Department, is primarily concerned with radiation transport. D. F. Herring is an Assistant Chairman of that department and is concerned with the development of new programs. Both have the PhD degree.



ENERGY-LOSS NEUTRON EXPERIMENTS

Reactor neutron scattering experiments using a beam chopper, Be filter, and time-of-flight energy-loss techniques can significantly increase data acquisition compared with "cold" neutron energy-gain systems.

W. L. Whittemore (PhD, Harvard, 1947) is Physicist-in-Charge of the TRIGA Reactors Facility at Gulf General Atomic. While his earlier work was devoted to high-energy particle physics research, for the past ten years it has been directed at exploiting neutron inelastic scattering techniques.



ALPHA-AUTORADIOGRAPHY RESOLUTION

The resolution of alpha-autoradiographic examination of plutonium distribution in fuel is increased by use of a thin heavy-metal absorber between the fuel sample and film.

Alan Jeffs, a member of the Fuel Materials Branch at Chalk River, is involved in programs devoted to economic plutonium recycling in thermal power reactors.