

# Alan Rothman

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## Professional Experience

- **1992-Present.** Special term appointee (STA) with Chemical Sciences and Engineering Division in studies related to the transportation of hazardous materials and the processing of nuclear waste materials.
- **1968-1991.** Lead experimenter and section manager for the Argonne National Laboratory Reactor Analysis and Safety Division's investigations of hypothetical nuclear core disruptive accidents using the Transient Reactor Test Facility (TREAT) in Idaho. Additional assignments involved such activities as:
  - probabilistic risk assessments for commercial nuclear reactors
  - analysis of the overpressure from hydrogen combustion in the Three Mile Island (TMI) accident and possible mitigation procedures related to it
  - involvement in investigation of inventory accountability related to insider threat in the Department of Energy's (DOE's) production and product facilities
  - assessment of the effects of chemical weapons used by terrorists
- **1965-1968.** Associate Scientist with Chrysler's Aerospace Division in New Orleans, Louisiana, in work related to development of optical technology for NASA's aerospace applications, and consideration of remote detection of clear air turbulence.
- **1964-1965.** Advisory Engineer, Westinghouse Electric Corp., Bettis Atomic Power Laboratory, in work related to reactivity effects resulting from irradiation of nuclear fuel, measurements of neutron spectra, and neutron self-shielding of thorium using foil activation techniques.
- **1962-1964.** Advisory Engineer, Westinghouse Electric Corp., Astronuclear Laboratory. Shared responsibility for establishing the critical facility for the Westinghouse designed reactor to power the Nuclear Engine for Rocket Vehicle Applications (NERVA) program.
- **1961-1962.** Manager of Flight Safety, Westinghouse Electric Corp., Astronuclear Laboratory, for the NERVA program. Staffed and managed the Flight Safety Section for the project, 12 scientists and engineers and five technicians, after award of the NERVA contract. Responsible for Westinghouse subcontracts, as well as analytical and experimental studies related to safety of launching, abort, and reentry of the upper nuclear stage from a Saturn lower stage.

- **1960-1961.** Senior Scientist, Westinghouse Electric Corp., Astronuclear Laboratory. Conducted studies on the safety aspects for NASA missions involving the launching and reentry of upper nuclear stages from a Saturn launch vehicle. Co-authored the flight safety section of the Westinghouse proposal for the NERVA program.
- **1957-1960.** Associate Chemist with the Reactor Engineering Division of Argonne National Laboratory. Conducted experimental reactor physics measurements with the critical facility for a thoria-deuteria moderated reactor. Such measurements included pile oscillator methods to measure thermal and epithermal neutron absorption for determining the resonance absorption integral of thorium metal.
- **1954-1957.** Research Chemist, Pittsburgh Plate Glass Research Laboratory in work primarily related to the development of a process for chemically polishing glass, and the kinetics of the reaction of hydrogen fluoride, and hydrogen bifluoride with glass. Led a project for design of the process for recovery of the spent fluoride from the chemical polishing process.
- **1953-1954.** Senior Scientist, Westinghouse Electric Corp., Bettis Atomic Power Laboratory, in work related to the corrosion of reactor fuels and cladding for the U.S. Navy's Nautilus submarine reactor.

## **Education**

- Ph.D., Physical Chemistry, Carnegie Institute of Technology, 1954.
- M.S., Chemistry, Carnegie Institute of Technology, 1952.
- B.S, Chemistry, University of Pittsburgh, 1949.

## **Career Activities & Highlights**

- Graduate studies, doctoral thesis and early work at Westinghouse related to electrochemical and phase equilibria aspects of metallic corrosion
- Work at Pittsburgh Plate Glass and later work at Argonne in chemical processing related to byproduct recovery and waste product conversion
- Additional experience related to nuclear reactor physics and nuclear engineering as well as optical technology for NASA aerospace programs
- Frequent reviewer of manuscripts for publication in Nuclear Technology
- Reviewed a National Science Foundation document pertaining to assessing effects of chemical weapons
- Chaired the former Argonne Criticality Hazards Review Committee
- Current interests in chemical process technology include use of the HSC Chemistry application for analysis of chemical phase equilibria

## **Publications & Patents**

- Publications: More than 100
- Patents: 1