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## Guide to the Robert Vose Langmuir Papers, 1941-1990

Archives

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Pasadena, California

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### Descriptive Summary

**Title:** Robert Vose Langmuir Papers,

**Date (inclusive):** 1941-1990

**Creator:** Langmuir, Robert Vose (1912-1993)

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## Biography

Langmuir, Robert Vose (1912-1993) PHYSICIST, ELECTRICAL ENGINEER

Caltech Professor of Electrical Engineering, 1952-1980; Caltech Assistant Professor of Physics, 1950-1952; Caltech Senior Research Fellow, 1948-1950; Caltech alumnus (Ph.D., 1943).

Born December 20, 1912, in White Plains, New York, Langmuir received his A.B. from Harvard College in 1935. From 1939 to 1942, he worked for Consolidated Engineering Corporation of Pasadena on the development of the first commercial mass spectrometer. In 1942, he took a position with General Electric Company in Schenectady, New York, where he helped to develop CW magnetrons for jamming enemy radar during World War II. After the war, he invented another mass spectrometer, the omegatron, for which he was awarded the patent. With Pollock and Elder, he designed and constructed the first synchrotron to operate in the U.S., the 70 MeV. With this team, he was the co-discoverer in 1947 of synchrotron radiation and wrote the pioneering paper which provided experimental verification (*Physical Review* 74 (1948)). In 1948, Langmuir returned to Caltech to participate in the building of the 1.5 BeV synchrotron (1948-1960). At Caltech, he taught courses in electricity and magnetism, and in electronics, while conducting research in various topics in applied physics and engineering.

## Scope and Content

The Robert Vose Langmuir papers document only a small portion of Langmuir's work. Notably absent is material on the Caltech synchrotron. Files include technical reports from the General Electric period, with an account of the discovery of synchrotron radiation by Pollock; patent documents beginning in 1945; course notes and problem sets from Caltech; and a selection of research and writing projects from the 1940s through 1990.

**SECTION I: WAR WORK/GENERAL ELECTRIC COMPANY**

	<b>General Electric Company</b>
Box Box 1,	<b>Technical reports 1941-1948</b>
Folder 1.1	
Folder 1.2	<b>Delay lines 1943</b>
	<b>Magnetron work</b>
Folder 1.3	<b>1944-1946</b>
Folder 1.4	<b>Photos, negatives, technical drawings</b>

**SECTION II: PATENT MATERIALS**

Box Box 1,	<b>Patent materials 1945-1976</b>
Folder 1.5	
Folder 1.6	<b>Patent dispute, mass spectrometer 1950-1957</b>

**SECTION III: CALTECH MATERIAL**

Box Box 1,  
Folder 1.7

**Lindvall, Fred 1958-1965**

**Course notes**

Folder 1.8  
Folder 1.9

**Electromagnetic Waves and Fields 1960-1961**  
**Electrical engineering, misc.**

**SECTION IV: BIOGRAPHICAL**

Box Box 1,	<b>Pollock, Herbert, on discovery of synchrotron radiation 1981-1982</b>
Folder 1.10	
Folder 1.11	<b>Biographical, misc. [includes photo]</b>

**SECTION V: RESEARCH AND WRITINGS**

	<b>Research and writings</b>
Box Box 2,	<b>1940s-1950s</b>
Folder 2.1	
Folder 2.2	<b>1960s</b>
Folder 2.3	<b>Pipe-line research 1967-1968</b>
Folder 2.4	<b>1970s</b>
Folder 2.5	<b>1980s-1990s</b>
Folder 2.6	<b>Reports/consulting 1962-1980</b>