

CHEMICAL HERITAGE FOUNDATION

**JOHN R. FERRARO**

Transcript of Interview  
Conducted by

Michael A. Grayson

at

Ferraro's home  
Elmhurst, Illinois

on

9 May 2011

(With Subsequent Corrections and Additions)

## ACKNOWLEDGMENT

This oral history is one in a series initiated by the Chemical Heritage Foundation on behalf of the American Society for Mass Spectrometry. The series documents the personal perspectives of individuals related to the advancement of mass spectrometric instrumentation, and records the human dimensions of the growth of mass spectrometry in academic, industrial, and governmental laboratories during the twentieth century.

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## JOHN R. FERRARO

1918 Born in Chicago, Illinois, on 27 January

### Education

1941 B.S., Chemistry, Illinois Institute of Technology  
1948 M.S., Chemistry, Northwestern University  
1954 Ph.D., Physical Chemistry, Illinois Institute of Technology

### Professional Experience

United States Army  
1941-1942 Analytical Chemist, Kankakee Arsenal

Argonne National Laboratory, Lemont, Illinois  
1948-1980 Senior Scientist  
1986-2005 Consultant

Loyola University, Chicago, Illinois  
1980-1985 Searle Professor Chemistry

### Honors

1973 Outstanding Achievements in Spectroscopy Award, New York Section of Society of Applied Spectroscopy  
1973 Distinguished Scientist Award, Argonne Universities Association  
1973-1974 Appointee, Hasler Award in Spectroscopy  
1974 Honorary Member, Society of Applied Spectroscopy  
1975 Meggers Award, Society of Applied Spectroscopy  
1975 Achievement in Spectroscopy Award, Chicago Section of Society of Applied Spectroscopy  
1986 Distinguished Service Award, Society of Applied Spectroscopy  
1990 Honorary Member, Coblenz Society  
1991 Emeritus Fellow, Italian Chemical Society  
1996 50 Years of Infrared Spectroscopy Symposium Honoring John R. Ferraro, Eastern Analytical Symposium  
1996 Editor Appreciation Award, *Journal of Applied Spectroscopy*  
2004 Fellow of the Society of Applied Spectroscopy

## ABSTRACT

**John R. Ferraro** was born and grew up in Chicago, Illinois, one of two children of Sicilian immigrants. His father was a tool and die maker, his mother a seamstress in a coat factory. His parents had little education themselves but valued it highly for their children. Ferraro attended Richard T. Crane Technical High School, where Francis Coulson fostered his interest in chemistry. Though the Great Depression continued, Ferraro found a job at General Motors, where he worked for three years before entering Illinois Institute of Technology, majoring in chemistry, working with Norman Kharasch.

After graduation Ferraro entered the U.S. Army and was sent to Grand Rapids, Michigan, for training in meteorology. He met his future wife there. He spent the remaining three and a half years of World War II in the Burma-China-India theater and another six months awaiting a ship home.

Finally back home, Ferraro received a master's degree from Northwestern University, working under Charles Hurd and leaving organic chemistry behind for good. Next he accepted a junior scientist position at Argonne National Laboratory, working in solvent extraction. He became interested in infrared spectroscopy, then far-infrared (FIR). Ferraro wrote what others have considered to be the seminal work on far-infrared spectroscopy and bought the first dedicated FIR instruments from Beckman Instruments and PerkinElmer. He taught at Loyola University in Chicago for five years, leaving there as professor emeritus. He spent a year at the Lunar Planetary Laboratory at the University of Arizona, learning Fourier transform (FTIR) spectroscopy. Ferraro then moved back to Argonne, where he spent a total of fifty-seven years.

Ferraro discusses his students; his theory about innovation; his travels and interactions with colleagues around the world; his publications; his interest in history and his genealogy; and his continuing affiliation with three museums. He talks about instrumentation and the nexus between technique and equipment; what he sees as the enormous improvements in instruments; the serendipity of Fourier transform and what it has made possible; and miniaturization.

Ferraro summarizes his own contributions to the field, particularly Raman, infrared, and far-infrared spectroscopy. Pointing out that his predictions of 1967 have come true, he theorizes about the future, discussing an expansion of ultraviolet Raman; terahertz spectroscopy; improved fiber optics; and greater importance of Raman to medicine. At the end of the interview, Ferraro talks in greater detail about his book *Vibrational Spectroscopy at High External Pressures: The Diamond Anvil Cell* and an article, "Recent Trends and Developments in Inorganic Far Infrared Spectroscopy," in *Analytical Chemistry*, as well as his publishing history and the number of awards he received for his work in the field of spectroscopy.

## INTERVIEWER

**Michael A. Grayson** retired from the Mass Spectrometry Research Resource at Washington University in St Louis in 2006. He received his B.S. degree in physics from St. Louis University in 1963 and his M.S. in physics from the University of Missouri at Rolla in 1965. He is the author of over forty-five papers in the scientific literature dealing with mass spectrometry. Before joining the Research Resource, he was a staff scientist at McDonnell Douglas Research Laboratory. While completing his undergraduate and graduate education, he worked at Monsanto Company in St. Louis, where he learned the art and science of mass spectrometry under O. P. Tanner. Grayson is a member of the American Society for Mass Spectrometry (ASMS), and currently is the Archivist for that Society. He has served many different positions within ASMS. He has served on the Board of Trustees of CHF and is currently a member of CHF's Heritage Council. He continues to pursue his interest in the history of mass spectrometry by recording oral histories, assisting in the collection of papers, researching the early history of the field, and preparing posters recounting historic developments in the field.

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U.S. Army Years	9
<p>After graduation entered U.S. Army. Washed DuPont's chemicals for bombs. Grand Rapids, Michigan. Training as meteorologist. Met future wife. U.S. Army Air Forces Intelligence. Burma-China-India (BCI) front. Three and one-half years of work in BCI. Six months in Calcutta, India, waiting to be sent home; betting on horse races.</p>	
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<p>Early retirement. Searle professorship of chemistry at Loyola University in Chicago. Alkaline metal solids. Fourier transform infrared (FTIR) spectroscopy. Academic politics. Professor Emeritus. University of Arizona's Lunar Planetary Laboratory. Gerard Kuiper. FTIR.</p>	
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