

Harry J. Svec
June 24, 1918–
November 28, 2006

Harry John Svec was born in Cleveland, Ohio. His father was a tool maker, and his mother was a tailor, offering explanation of his lifelong skill and interest in working with his hands. Svec graduated from John Carroll University in Cleveland magna cum laude in premedicine in 1941. He began graduate work that year at Iowa State College under Ellis Fulmer and Leland Underkofler. His postgraduate studies were interrupted by World War II and work on the Manhattan Project under the direction of Frank Spedding. The work in Ames involved the large-scale production of uranium metal for subsequent isotopic alteration or conversion to plutonium. All the uranium metal used in the Manhattan Project, ~1 million kilograms, was prepared in Ames.

During this period Dr. Svec met Edna Bruno to whom he was married in October 1943 in her hometown of Williamsport, PA. Dr. Svec and his wife raised nine children—5 sons, 4 daughters.

Professor Svec spent a subsequent stint at the Ames Laboratory/Institute for Atomic Research. He completed his Ph.D. in 1950 at Iowa State College under Spedding and Frederick Duke, during which time he built the first mass spectrometers at ISC. His thesis project involved isotopic studies of adsorption of H₂ and D₂ on uranium. This was long before commercial instruments, or even commercial components, and no one at ISC had done mass spectrometry. Svec was always grateful to A. O. C. Nier for his advice and help in his thesis project. In these early days, Svec often drove from Ames to Minneapolis and the University of Minnesota to visit Nier's laboratory, a five hour trip in the days before Interstate Highway 35 was built.

He was appointed to the Iowa State faculty and rose steadily through academic ranks. In his dual role as a member of the faculty and an Ames Laboratory researcher, he balanced teaching, publishing, and research, gaining an international reputation for the use of mass spectrometry to settle questions in physical, inorganic, and analytical chemistry. He was named a Distinguished Professor in 1978 and Professor Emeritus on retirement in 1983.

Professor Svec was a very enthusiastic teacher, especially about laboratory instruction. He thought the laboratories often got short shrift and made it his personal cause to look out for them, particularly the physical chemistry laboratory for undergraduates. His commitment to experimental skills led him to require all the p-chem lab students to submit a very small glass object

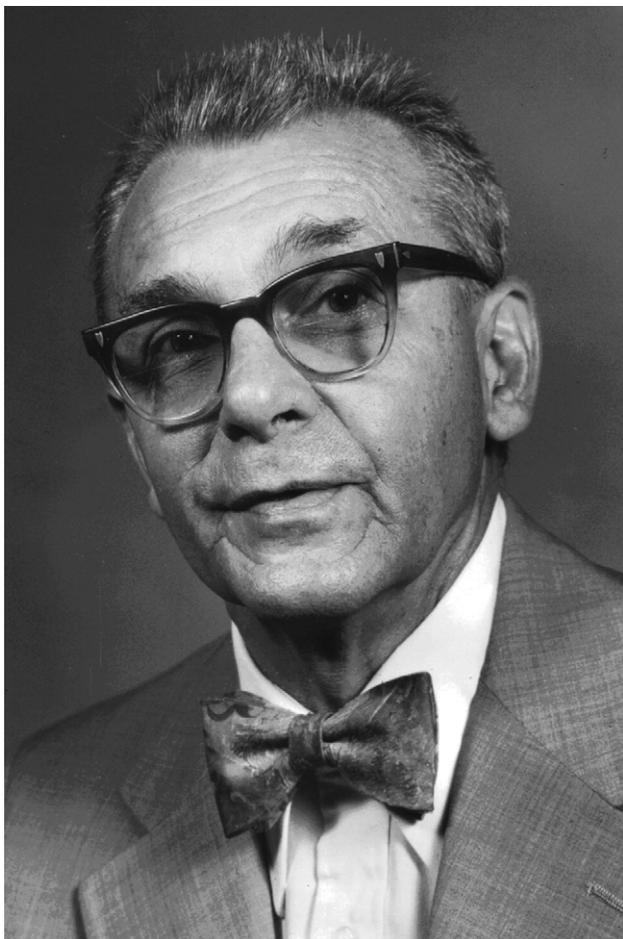


Harry Svec in the 1960s.

that required some glass blowing. He would keep the better of these on a shelf in his office for a long time. Near the end of his career, a somewhat apprehensive chair asked him if he would mind filling in and teaching a large lecture class to freshmen. Svec accepted so fast the chair was left wondering what to say next. In this class, Svec thought the students would benefit from multiple choice questions in which more than one answer could be correct, and in which all correct possibilities had to be selected to get credit for the question. The students were less than enthusiastic about this experiment.

Professor Svec was a member of numerous societies and a Fellow of The Chemical Society (London). He was a charter member of the ASTM E-14 Committee on Mass Spectrometry, which evolved into the present American Society for Mass Spectrometry. He served ASMS from 1973 through 1978 as Vice President for Programs, President, and Past President. With J. Franzen and A. Quayle, he was one of the founding editors of the *International Journal of Mass Spectrometry and Ion Physics*, presently the *International Journal of Mass Spectrometry*. He was a diligent and helpful editor who was willing to take calculated risks

Published online March 21, 2007



Harry Svec in the early 1980s.

in publishing novel results of potential value, sometimes over the heads of less imaginative reviewers.

He, along with V. A. Fassel, R. S. Houk, and A. L. Gray, was one of the pioneers in the development of the inductively coupled plasma as an atomization and ionization technique for the application of mass spectrometry for trace element analysis. There are presently over 5000 ICP-MS instruments worldwide in many scientific areas. Svec's advice in construction of the mass spectrometer, in those days when atmospheric pressure sampling was not common, his patience, and his valuable suggestions in dealing with many burned-out sampling apertures, were keys to the development of ICP-MS. This work was part of a long tradition in the implementation of mass spectrometry for elemental analysis of solids, including the use of spark-source mass spectrometry. He also was an early contributor to laser mass spectrometry with R.J. Conze-mius in 1978. With G. D. Flesch in 1969 he built a mass spectrometer for detection of the neutral species formed in fragmentation and another for the simultaneous display of both positive and negative ions.

Professor Svec also contributed to the understanding of the thermochemistry and mass-spectrometry induced fragmentation of silicon, boron, metal carbonyls, various organometallics, and simple organic substances. He, along with G. A. Junk, published some of the early work in the mass spectrometry of amino acids (1963) and dipeptides (1963 and 1964), using for the first time a "heated crucible" introduced directly in the ion source to avoid derivatization or modification of the materials. These latter papers received over 3000 reprint requests.

Svec and his coworkers made important contributions to isotopic abundance methodology and results. One of the present authors was gratified to attend a talk in 2004 on lithium isotopic measurements by ICP-MS. The standard reference material used to validate these measurements had been prepared and analyzed years ago by Svec and is still called "L-Svec" in his honor.

In 1984, he received the American Chemical Society's Zimmerman Award for Environmental Science for his work in developing the resin extraction and GC-MS methods for removing organic pollutants in water. This project was a large scale collaborative effort involving several research groups, including G. V. Calder, G. A. Junk, and J. S. Fritz. This type of multi-investigator project is common, indeed almost required today, but was considered suspicious by some in those days. Much of the present extraction-based methodology for measuring trace organic compounds draws from concepts and observations developed during this project and other similar ones elsewhere.

His June 1983 retirement marked 42 years of association with Iowa State. Svec was greatly interested in the history of science and of mass spectrometry and devoted significant class time to interesting stories on this topic. After retiring, he finished writing a history of the Chemistry Department at ISU that documented events, developments, and people through the World War II years. It was published by the Chemistry Department last year.

Svec's friends remember that, when he wore a tie, it was always a bow tie. He had them in all colors and styles. This tradition continued even unto his funeral, when his sons all wore bow ties in his honor.

Memorials may be directed to the ISU Chemistry Department Building Fund or the Ames Historical Society.

R. S. Houk

*Ames Laboratory U. S. Department of Energy,
Department of Chemistry, Iowa State University,
Ames, Iowa, USA*

M. A. Grayson and Michael L. Gross

*Department of Chemistry, Washington University,
St. Louis, Missouri, USA*