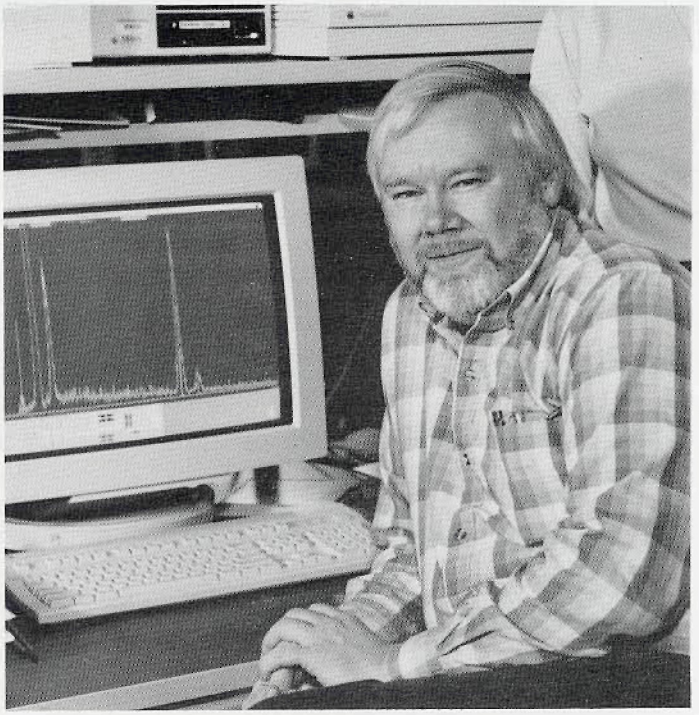
Chuck Fiori

1938 - 1992

In Memoriam



Charles E. "Chuck" Fiori died on Tuesday, September 15, 1992 as a result of circulatory problems caused by a blood clot associated with the broken ankle that he suffered in August. It is painful enough to write a remembrance such as this for a colleague who has had a full life and career, but is is even more difficult to compose these words for one who has departed prematurely and so unexpectedly, who had so many projects to which he was actively contributing, who meant so much to his colleagues, and who we expected would go on forever.

Chuck's scientific career of almost 30 years spanned most of the period of the development and application of electron probe x-ray microanalysis, to which he made many significant contributions. He worked at Scripps Institute, the Smithsonian Institution, the National Bureau of Standards, the National Institutes of Health, and finally returned to what proved to be the completion of his career at the National Bureau of Standards, renamed as the National Institute of Standards and Technology. He was an adjunct professor at Lehigh University, where he taught in the short courses on electron microscopy and x-ray microanalysis for the past 18 years. Throughout his career, Chuck gave unstintingly of his time for the common good, serving first as secretary and later as president of the Microbeam Analysis Society, spanning a period of service of 12 years. He was one of the most popular national scientific tour speakers sponsored by MAS to the local and regional societies. His *joie de vivre* inspired those of us privileged to work with him. It is hard to imagine an MAS conference or a Lehigh short course without Chuck's presence, and his incredible supply of jokes.

Chuck was an extraordinarily gifted person, skilled in both experimental and theoretical work. He had those wonderful mechanical, electrical, and electronic engineering skills, as well as knowledge of the mathematics and physics, that enabled him to operate at every level necessary to carry out complex experiments, from the assembly of the instrument, the electronic signal processing, the computer data manipulation, the mathematical deconvolution of x-ray spectra, and the electron/x-ray physics for,interpretation. Chuck was the master of surplus, and it seemed his past electron probe instruments were never quite retired, but followed him around in his career and could always be found in pieces in various drawers to be called upon for further applications.

From such an outstanding career, in which he published more than 50 journal articles and co-authored three books, it is difficult to select the leading technical items to highlight, but my admittedly biased selection follows. From the earliest emergence of the energy dispersive x-ray spectrometer (EDS), Chuck was always fascinated by the possibilities of EDS for practical analytical applications. The development of quantitative x-ray microanalysis based upon EDS was helped mightily by the development of an accurate x-ray continuum background modeling procedure for which Chuck led the research team (Fiori, Myklebust, Heinrich, and Yakowitz, Analytical Chemistry, 1976, volume 48, page 172). This background modeling procedure, along with a clever peak deconvolution scheme, was incorporated in the x-ray microanalysis program NBS FRAMEC written by Bob Myklebust, providing the necessary demonstration that EDS could achieve the levels of analytical performance necessary for practical applications. FRAMEC was widely adopted by the worldwide microanalytical community.

During his period of work at NIH, Chuck became interested in the possibilities of very large scale data collection and manipulation under computer control to create true compositional images, which are far more powerful than the traditional analog dot maps. Check's enthusiasm in this endeavor inspired his colleagues both at NIH and at NIST, and his perseverance led to the successful development of quantitative compositional mapping, which was recognized in 1987 by a Research and Development 100 Award for Digital Compositional Mapping, given jointly to NIH and NIST.

During his last year at NIH, Chuck's interest turned again to x-ray spectrometry, and he began a project with Carol Swyt to develop a computer-based expect system for advanced spectral interpretation of both energy and wavelength dispersive x-ray spectra. Upon returning to NIST, Chuck accelerated this effort, adding Bob Myklebust's skills to the project. Chuck expended quite incredible efforts on this project, spending many evenings and weekends at home on its development. To me, he never seemed quite so happy as when he had solved a difficult problem with the program, or had introduced another clever idea into the software. (His motto was "A Man Should Not Stint His Hobbies," but his vocation seems to have also been his avocation.) His enthusiasm seemed endless. The result of all this effort, "Desktop Spectrum Analyzer (DTSA)," embodies a great deal of the practical and theoretical knowledge of x-ray spectrometry that Chuck accumulated over his career. No computer could possiily substitute for Chuck (very few machines know one-tenth as many jokes), but when I use DTSA, I find that its strengths and foibles are a remarkable reminder of one of the great people in our field. Chuck, we will surely miss you!

Dale Newbury
NIST
September 17, 1992

In memory of Chuck, the Microbeam Analysis Society has established a scholarship fund to aid students who attend the national MAS conferences. Contributions can be sent to:

Mr. Harvey Freeman
Treasurer, Microbeam Analysis Society
958 Long Pond Road
Brewster, MA 02631-1898

Please designate your gift to the Chuck Fiori Memorial Scholarship Fund.

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