

Editorial

Alan G. Marshall Biosketch

Alan G. Marshall was born in Bluffton, Ohio, on 26 May 1944. He grew up on asparagus and dairy farms in Northwest Ohio until age seven, when his family moved to San Diego, CA, where he remained through high school. He entered Northwestern University in 1961 as a member of their first six-year medical program class, and completed two years of undergraduate work followed by one year of medical school. He then left medicine for Chemistry and completed his B.A. with Honors in Chemistry the next year (1965). The day after graduation, he married his wife of 38 years, Marilyn Josephine Gard. His Ph.D. research in Physical Chemistry at Stanford U. with John D. Baldeschwieler was divided equally between NMR of quadrupolar nuclei and theory of ion cyclotron resonance lineshapes was completed in 1969, when he moved to U. British Columbia. Because he had not done postdoctoral research, Alan was hired as Instructor II, advancing to Assistant Professor in 1971 and Associate Professor in 1976. Alan's initial research at UBC ranged from some of the early work on lanthanide NMR shift reagents to experimental and theoretical perturbed angular correlations of gamma rays (an experiment similar to fluorescence depolarization, except that both photons originate from the molecule). Melvin B. Comisarow followed Alan to U.B.C. in 1971, and during the next two years, designed and built a state-of-the-art field-scanning ICR instrument. In mid-1973, Marshall and Comisarow began collaborating on the development of Fourier transform ICR MS, leading to the first successful FT-ICR mass spectrum in December, 1973, followed by a series of nine joint publications through 1979. While in Canada, Alan also worked his way up to ace hitter on the 1978 Canadian Men's National Volleyball championship team.

In 1980, Marshall moved to The Ohio State University as Professor of Analytical Chemistry and Biochemistry and Director of a new campus-wide Chemical Instrumentation Center for NMR and mass spectrometry. He focused initially on NMR, and achieved the first NMR-based secondary structure of eukaryotic ribosomal RNA in work that continued through the late 1980's. In 1983, Alan acquired his first commercial FT-ICR instrument (3 Tesla) from Nicolet, and began a series of developments in instrumentation, theory (ion trapping, excitation, and detection), and applications that continues to the present day. In particular, his

stored waveform inverse Fourier transform (SWIFT) technique offers the highest possible resolution for ion ejection or excitation, and has been widely applied in both Penning (ICR) and Paul (quadrupole) ion traps.

In 1993, Marshall moved to Florida State University, where he is Kasha Professor of Chemistry and Director of the Ion Cyclotron Resonance Program, supported by the USA. National Science Foundation as a national user facility at the National High Magnetic Field Laboratory. The Facility's first instrument, based on a 220-mm diameter 9.4 T magnet, set new world records for mass resolving power, mass resolution, and mass accuracy for unseparated mixtures ranging from enzymatically digested proteins to petroleum crude oil. An FT-ICR spectrometer based on a recently installed 14.5 T magnet is projected for completion in mid-2004.

Alan has published more than 370 peer-reviewed articles (cited more than 10 000 times through 2003), plus three issued USA patents and several books. He has presented more than 1000 talks and posters at conferences, universities, government labs, and industry, including 34 named lectureships. More than 500 FT-ICR mass spectrometers, representing an investment of ~\$300 M in 2004, have been installed worldwide.

Marshall is a Fellow of both the American Physical Society and the American Association for the Advancement of Science, and an Honorary Member of the Society for Applied Spectroscopy. Some of his other recognitions include three national awards from the American Chemical Society and awards from the Spectroscopy Society of Pittsburgh, the American Society for Mass Spectrometry, and the International Society for Mass Spectrometry. He has served on the editorial boards of seven journals.

Alan Marshall's group members include 8 M.S. and 42 Ph.D. holders (plus 10 current graduate students) and 40 postdoctoral research associates (plus 6 current postdocs), and another 30 odd undergraduate researchers. The NHMFL FT-ICR Facility currently includes four permanent Scholar-Scientists (Christopher Hendrickson, Mark Emmett, Ryan Rodgers, and Greg Blakney), a technician (John Quinn), and a machinist (Daniel McIntosh). Twenty of Alan's former Ph.D.'s and postdocs have gone on to university positions.