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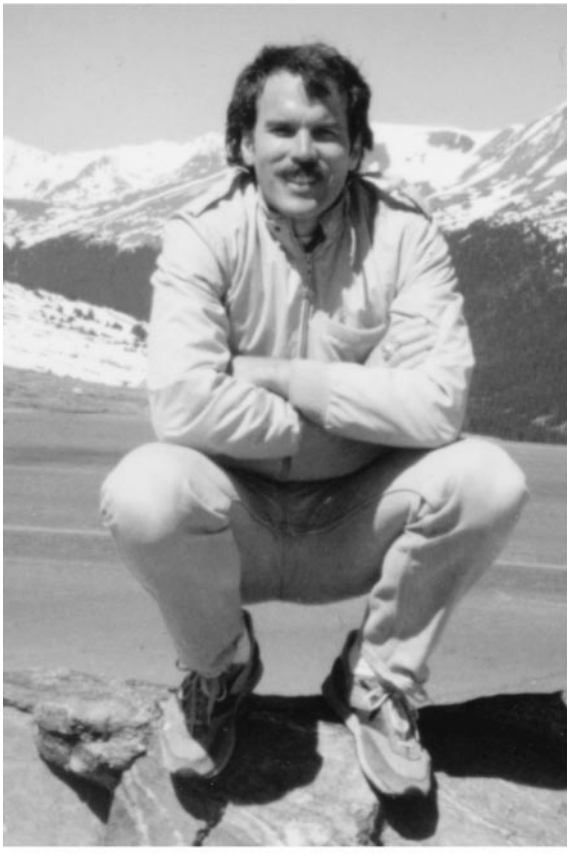
Robert R. Squires: Biographical Sketch



Professor Robert R. Squires

Robert Reed Squires was born on January 11, 1953 in Oakland, California, as the third of the four children of Marion and Fred Squires. Bob lived most of his childhood and young adulthood in Los Angeles where he also received his AA at the El Camino College in 1973. He graduated with BA in 1975 at California State University, Chico, in northern California. He then moved east, and received his MSc in 1977 and PhD in 1980 at Yale University. He titled his thesis "Application of an Automated Calorimetry System in the Study of Steric Effects." On the first page, he describes his advisor, Professor K.B. Wiberg, with these words: "He possesses that true quality of wisdom which extends far beyond the boundaries of chemistry, and I shall always look upon my association with him here at Yale as one of the most important and satisfying ones of my life."

Bob chose "Wiberg West" (see Bob's Pipeline figure) for his post doctoral education, i.e., he spent 2 years with Chuck DePuy and Veronica Bierbaum at the University of Colorado, Boulder, studying reactions of gaseous negative ions in a flowing afterglow apparatus. This short time was enough to convince Bob to dedicate his scientific career to gas-phase ion chemistry. He never regretted that decision.

In 1981, Bob accepted an Assistant Professor position at Purdue University, where he built two unique flowing afterglow instruments, including the first flowing afterglow-triple quadrupole apparatus, that was later converted into the first SIFT-triple quadrupole apparatus (selected ion flow tube-triple quadrupole). He was promoted to an Associate Professor in 1986 and Professor in 1990. Bob met Hilkka Kenttämaa in January 1983, and married her in August, 1984. Their son Kai was born in April 1986, and daughter Leah in September 1987.

The ultimate goal of Bob's research was to gain in-depth understanding on the properties of reactive organic and organometallic intermediates. He studied these species by using the flowing afterglow technique, and complemented his experimental work with very high level molecular orbital calculations. This research led him to develop new instrumentation, such as combining electrospray ionization with the

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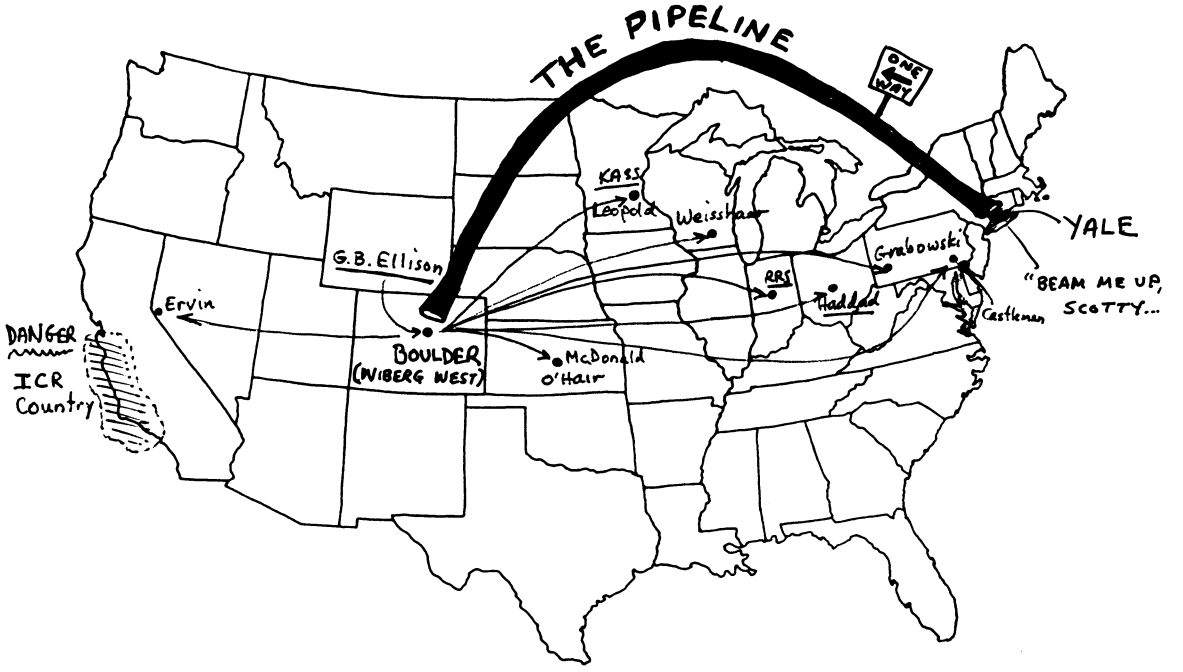

flowing afterglow apparatus, and building the SIFT-triple quadrupole instrument. He examined the thermochemical properties of numerous species, for example, gas-phase acidities for organic molecules coordinated with common Lewis acid catalysts, and electron affinities of radicals, carbenes, and biradicals. A major thrust in his lab was the determination of thermochemical data from CID threshold measurements. He used this approach to study solvation energies, metal-ligand bond strengths, and heats of formation of carbenes and biradicals, among many other things. He developed new strategies for the synthesis of gas-phase ions. These included collision-induced decarboxylation to generate highly basic carbanions, and reaction of F2 with trimethylsilylated benzenes to form benzyne negative ions and negative ions of aromatic triradicals. He designed elegant experiments to determine ion structures. For example, he derivatized the three isomeric benzyne anions to nitrobenzoate ions, and then verified their structures by the Cooks' kinetic method. During his short life, Bob created an impressive amount of knowledge on a variety of reactive molecules and ions. His work on benzynes and other organic biradicals is viewed as a landmark in the field.

Bob was honored by various awards, including the Reuben Bond Scholarship, CSU, at Chico in 1974, the Wolfgang Prize at Yale University in 1980, an Alfred P. Sloan Foundation Fellowship in 1987, the American Chemical Society Nobel Laureate Signature Award for Graduate Education in Chemistry (co-awarded with S.T. Graul) in 1991, a National Science Founation Two-Year Creativity Grant in 1996, the Arthur E. Kelley Undergraduate Teaching Award in 1997, and the American Society for Mass Spectrometry Biemann Medal in 1998, at Purdue. Bob published 110 publications in the best scientific journals. He graduated 15 PhD students (in addition to the three who are still working toward their degrees) and two MSc students. Four of his former students, Sue Graul, Paul Wenthold, J.C. Poutsma, and Jun Hu, are now pursuing their own academic careers.

During his extremely scientifically productive years in Indiana, Bob's initial keen desire to eventually return to California slowly vanished, and he learned to appreciate the advantages that Indiana had

to offer, including privacy, closeness to nature, peace, and an easy life. Perhaps more importantly, Bob developed a sincere fondness of the Purdue Chemistry Department and it's scientific community, especially the gas-phase ion community. As Bob put it himself in his Biemann Medal address 3 months before his death, "the gas-phase ion community is a wonderful place for a chemist to work and play, regardless of the kind of hat he or she chooses to wear. Our own particular neighborhood at Purdue University has been an especially stimulating environment, and when I count my blessings, as I often do these days, my dear friends and colleagues at Purdue are at the top of my list. We miss you Ben (Freiser) . . . "

In recognition of Bob's contributions to the field of chemistry, family and friends have established the Robert Reed Squires Fund in order to recognize outstanding research achievements by graduate students in fundamental research in chemistry. Contributions can be made to the Robert Reed Squires Memorial Fund, Department of Chemistry, 1393 Brown Laboratories, West Lafayette, Indiana 47907-1393.