

BIOGRAPHY of Wilson Ho

My early childhood was spent in Changhwa, a city near the middle of Taiwan, where I received my primary school education. Both my parents were middle school teachers. I remembered that I had a great deal of freedom roaming the countryside around our home and developed a keen interest in planting sweet potatoes, Chinese cucumbers, and papaya trees as well as raising chickens. It was also a period when I developed my mathematics foundation. My parents believed that there were more opportunities abroad for their four children. In 1965, when I reached the age of 12, my family moved to Rokko, a suburb of Kobe, Japan, and we lived in a house that my uncle provided us. I was immediately immersed in a new culture and actively played baseball and learned to swim. Two years later, my family immigrated to San Francisco, California, to join my grandmother and two aunts. I attended A.P. Giannini Junior High School, followed by Lowell High School. I was naturally attracted to science and mathematics, mainly because I enjoyed the subjects and was good at them. In 1971, I attended the California Institute of Technology and gravitated toward Chemistry and received B.S. in 1975. Since I published 7 papers under the guidance of Professor Henry Weinberg and had taken sufficient number of courses, it was decided that I should also be given a M.S. degree. However, it was not all study at Caltech. I was able to find time to participate in intercollegiate sports: track, cross-country, and swimming; no previous experience or talents were required to join the teams. I was even given the Most Improved Swimmer trophy, obviously relative to my starting point. I also remembered with fond memory the experiences of carrying out research each summer with different professors: Aron Kuppermann, G. Wilse Robinson, William Goddard, III, and Henry Weinberg. Surface science was a rapidly emerging field at that time and jumping on this opportunity, I went to the University of Pennsylvania to carry out Ph.D. work under the guidance of Professors Ward Plummer and Robert Schrieffer and experienced snow for the first time. During this period, I learned to appreciate instrumentation design and fabrication and became fully ingrained with the belief that advancement in science follows from the development of new techniques. My entire career has been guided by this belief and assurance that something good will come from having an experimental capability that no one else has. For my thesis work, I constructed a spectrometer that allowed, for the first time, energy and angle resolved measurements of electrons scattered from a solid surface in ultrahigh vacuum. This novel instrumentation made it possible to detect previously unobserved vibrational modes and revealed a new electron scattering mechanism. In 1979, I received my Ph.D. degree in Physics, and joined AT&T Bell Laboratories as a Member of Technical Staff. Being single in the New Jersey suburb and away from academic institution for the first time, the longing for campus life soon grabbed me by full force. Attracted by the natural beauty of Ithaca in New York, I became an Assistant Professor of Physics at Cornell University in 1980. I was promoted to Associate Professor of Physics in 1985 and Professor in 1991. My group and I continued to develop new instrumentation involving parallel electron detectors and femtosecond lasers, aimed to follow changes in chemistry by monitoring molecules in real time. Since the mid-1990's our efforts have shifted to the building of scanning tunneling microscopes to see and probe individual atoms and molecules on solid surfaces. We can even measure the vibration of a single hydrogen atom attached to the surface. The natural beauty in Ithaca did not come without a price; my wife did not like anything that fell from the sky, such as rain and snow, of which Ithaca had plenty. In 2000, we returned to sunny California and joined the young and dynamic Irvine campus of the University of California and became fully integrated into the cultural diversity of the student body and the city. My group and I continue to be amazed by the capabilities of the instruments we have designed and built, the ability to image and become intimate with individual atoms and molecules, and the excitement of accidental discoveries and unexpected results in this new field of nanoscience.