A. C. Albrecht Remembrances

A special issue of the Journal of Physical Chemistry dedicated to the memory of Andreas C. Albrecht would certainly feel incomplete without a more personal description of the character, values, and legacy of this remarkable man. Collected below are some selected anecdotes, remembrances, and comments from former graduate students, postdoctoral associates, and colleagues that reveal the profound impact that encounters ranging from graduate student mentorship to single meetings had on these individuals. As these comments reveal, Andy Albrecht's teaching was clearly not limited to the realm of science. His humanity, as well as his rigorous intellect, set him apart and provide an example for many.

"My first encounter with Andy Albrecht was through his papers − papers that were beautiful in the elegance and clarity of their message and the creativity and rigor of their subject. My first personal meeting with Andy came when I invited him to Wisconsin to present a seminar. That visit made it clear why those papers were so beautiful − the mind that created them was beautiful. But that visit also made it clear that the person behind the mind was beautiful. ...Andy became my role model for how to act as a scientist, professor, and person. When I was asked to choose a name for my faculty chair at Wisconsin, Andy's name was the only possible choice... As the Andreas Albrecht Professor of Chemistry at Wisconsin, I take great joy in recognizing the many intangible ways by which Andy inspired so many of us through his research and through the way that he lived his life..." (John Wright, University of Wisconsin)

Mentor and Teacher

Many students, postdoctoral associates, and scientific visitors were first attracted to Andy Albrecht because of his outstanding scientific talents. When working on a project with Andy, the discussion in his office would typically start so far back in a problem that it might appear almost trivial to start at that level. Quickly though Andy could rocket past your grasp of the problem, while watching to gauge that you could follow. He would stop at a point when he was sure you had enough leads to continue working again. Mostly, he guessed correctly, but occasionally you might get twenty to thirty steps outside his office before realizing that a little more clarification was needed. (A "soft methyl group" could be incredibly clear while in his office until you stepped outside the door.) Andy was always willing to help and never made you feel embarrassed for having to return.

"...Andy had an easy and down-to-earth way of explaining a complicated subject so that its core became immediately apparent. He had tremendous intuition about so many scientific problems, and an unrelenting curiosity about even the most basic scientific concepts. Many times, whether in the classroom, at a group meeting, or in his office, it seemed to me that Andy would learn even more about a scientific problem as he was trying to explain it. His fascination for science was contagious and after my first semester I knew that I wanted to continue in physical chemistry..." (Joe Melinger, Ph.D. 1989)

One would consider oneself lucky to have the opportunity to take a course with Andy. The chance to observe his unique approach to a subject was never more evident than when he was teaching it to someone. He was known to say "if you cannot explain it, then you do not understand it", and he practiced what he preached. He could stop mid-lecture and all would be engaged in helping to clarify a point that he had not fully thought about before. It seemed that for Andy each teaching assignment offered him an opportunity to learn something new.

"...As a teacher, Andy's dedication and patience were tireless. I recall one semester when he taught a physical chemistry class for non-majors. For one of the exams, he decided to have each student give a presentation on a topic of their choosing to him in his office. This method of teaching comes as no surprise to any of the graduate students who had him as a professor in Quantum Mechanics or Spectroscopy. However, unlike a graduate class that typically has less than 15 students, this was an undergraduate class with over 50 students. These presentations went on for weeks, but it never appeared to faze Andy. He said that this was the only method to truly test what one understands about a subject and could not be achieved through a written exam..." (Jason Kirkwood, Ph.D. 1999)

After many years, Andy was finally asked to teach the large freshman general chemistry course at Cornell. In the balcony of the large lecture hall, many graduate students could be found among the freshmen, all of whom had come to hear these lectures. This was particularly true when the subject was thermodynamics. How much the undergraduates appreciated those lectures is difficult to judge, but the graduate students certainly did! Nevertheless, Andy had an excellent sense of humor about himself. When asked how the freshman chemistry course went that first semester, he responded by asking if we wanted the results of the course evaluations that were written on paper or those which were written on the bathroom walls.

Albrecht group members quickly learned to bring all their results to Andy, including those from what appeared to be failed experiments. Andy was a master at determining why something did not work and finding the hidden science. One such example was the development of thermal lensing spectroscopy. It arose from a "broken" experiment. While many might have been discouraged to see a tremendous amount of work and effort apparently wasted, Andy showed no sign of being disappointed, but was immediately curious as to why the original experiment did not work. He found the science in the failure, and thereby a new spectroscopy was born.

"...Andy loved science for science's sake and he passed this on to his students. He brought to life the joy of discovery and the joy of trying to understand that discovery in intuitive physical terms. I experienced Andy's enthusiasm from day one in his research group and I still carry his enthusiasm with me today. Andy never had a

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personal agenda for his science, which left him free to "follow" the direction that the interests of his students took the research. One would never feel like you were working for Andy, but with Andy..." (Darin Ulness, Ph.D. 1996)

"Even though he had graduated from the Simpson group a few years before, Andy's beautiful thesis on photoselection studies served admirably both in an instructional and in an inspirational role. Andy's unique mentoring skills therefore were evident at an early stage of his career. Several years later, I called Andy to ask some questions... the warmth and richness of that conversation led to others, and ultimately to a sabbatical leave in his laboratory... I still marvel at the encouragement, understanding, and patience Andy showed during that year. A further testimony to Andy's mentoring abilities is that much of that extremely valuable year must be attributed to his graduate students, because Andy was away most of the time on his own sabbatical! One easily suspects that the style of warmth and generosity in scientific collaboration displayed by some of the students was a reflection of Andy's mentorship..." (Pat Callis, University of Montana)

It became evident as you matured as a scientist in Andy's group, that he could have solved many problems more quickly and easily on his own and in the process gained more recognition. His reward as a mentor was to see you arrive at the solution. Once he gave you a problem to work on, it was your problem and he would patiently wait for you to invite him back in for help. If you wanted to continue working in that particular area after leaving his research group, Andy was very careful not to compete−and he would forever acknowledge you and your work.

"I interacted with Professor Albrecht one time in my life while a graduate student 20+ years ago at Princeton. As I recall, the scientific topic of his seminar was multiphoton ionization in liquids (probably benzene). However, the memorable interaction involved a story concerning his days as a graduate student. Evidently, it was a Friday and one of his advisor's peers in the field was scheduled to give a seminar the following week. Eager to impress this person by showing him how much further along they were on a project, Professor Albrecht's advisor urged him to work diligently over the weekend. Instead, Professor Albrecht went skiing. He simply did not view science as a competition against other people. (If only we were all as gifted and could have the luxury of wholeheartedly embracing such a philosophy.) Profoundly, that single interaction has given me a valuable career perspective over the past two decades." (Brent Koplitz, Tulane University)

Humanitarian Concerns

Andy's intellectual and scientific insights made it a delight to be around him, but this was only a small part of the reason we so valued our time with him. Andy was a humanitarian in the broadest meaning of the word; a modest human being who disregarded material wealth and personal recognition, he was dedicated to the intellectual, social, and political welfare of humanity as a whole and especially concerned for the welfare of the individual.

We were all workers to Andy and he was proud if we considered him a worker, too. Political discussions in the lab were never discouraged and for many years the lab remained decorated with activist posters from the late sixties and early seventies.

When Cornell was undergoing upheavals in the late sixties over issues related to race relations on campus and the Vietnam war, Andy was at the forefront of the protest activity on campus. He was among a very small group of faculty who supported student strikes even though there was concern that such support could jeopardize his tenure. That was of secondary concern to Andy. There were important principles to support and they took precedence over his own career.

"I met Andy in the summer of 1966 at a Gordon conference on theoretical chemistry. The Vietnam war was heating and the bombing of North Vietnam had begun. Martin Karplus and I decided to write an anti war petition. We wanted to circulate it and send it off. Andy heard of our work and offered to help write the petition and circulate it. Of course we gladly accepted. The three of us were subject to a lot of harassment as well as support. Hence began our friendship. I spent a lot of time with Andy that week. I had never heard of him before, but he obviously was someone whom I wished to know. I do not remember talking science with him at all. The theoretical chemistry Gordon conference was kicked out, perhaps due to the ruckus we raised." (Bob Harris, UC Berkeley)

"As a bewildered foreign graduate student adjusting to the political foment of the sixties in the USA as well as that in my home, Guyana, Andy Albrecht reached out and invited me to join his lab. He seemed to understand all too well the challenges of being no longer welcome in one's own proclaimed socialist home country as well as those presented in America at a time of anti Vietnam, anti Cuba and other socially challenging sentiments. What he offered me was the intensity of being in the lab and applying his use of organic glass media to the study of Chlorophyll, which as he stated was too complex a molecule on which to learn basic spectroscopic principles. Nevertheless, he allowed me to pursue it...I shall never forget his excitement as he pored over the results of the many experiments I had done...My years at Cornell in Andy's lab were among the most important in my ultimate development as a scientist and human being." (Frank L. Douglas, Ph.D. 1973)

"Prof. Andreas Albrecht visited Cuba at least a couple of times and was also a host for Cuban scientists several times. His solidarity with a scientific community so near to him although too far because of the well-known and too long lasting political circumstances was outstanding. We all will remember forever his ability to help with brilliant scientific ideas and to understand our particular limitations and successes. We are confident that his example of nonprejudices, natural friendship and ethics will be followed. Long life for the example and memory of Andreas Albrecht! (Luis A. Montero, Universidad de La Habana)

"It was in the late 1960s that I first noticed the name of Andreas C. Albrecht in his paper entitled "On the Theory of Raman Intensities" published in 1961, which later became very important as a theoretical basis for analyzing observed resonance Raman spectra. I was greatly impressed by Andy's scientific foresight to publish this

paper in the period when the laser action was just being discovered... For the 9th ICORS, held in Tokyo (1984), Andy was asked to help organize a discussion on "Time Evolution Formalism for Resonant Secondary Emission." He gladly accepted this task, and the resulting discussion section attracted an attentive audience. Andy strongly wanted to invite V. Hizhnyakov from the Estonian Academy of Sciences. In 1984, Estonia was still a part of the USSR, so it was not easy to let Hizhnyakov come to Tokyo. With Andy's sturdy support, we went through a lot of bureaucracy and finally succeeded in realizing Hizhnyakov's talk. (Mitsuo Tasumi, University of Tokyo)

Continuing Inspiration

All of our lives are richer in countless ways from having worked with Andy. He was always there for us both professionally and personally while we were in his group and long after we had moved on. The world is not only a little better because of his intellectual accomplishments but also from what he accomplished as a mentor, educator, colleague, and friend. The influence of his generous spirit continues through many generations of students and colleagues.

"When I arrived at Cornell as a new graduate student in the Fall of 1960, one of my first things was to try to meet Prof. Albrecht, with whom I hoped to study. I went to his office and knocked. The light was on, but he was not there. So I went to the Department Office and asked a secretary if she had seen Prof. Albrecht. 'Oh, yes, he was just here picking up his mail. If you just go down that hall you will see him.' So I said, 'I have never seen him. What does he look like?' She paused a moment and replied, 'Well, he has the dreamiest eyes'. He was a beautiful man, inwardly and outwardly. Part of the inner man has become quite consciously a small part of myself" (Martin McClain, Ph.D. 1966)

"I first met Andy in a rather typical 'ACA-moment'. He was reading an editorial in the New York Times *in his Baker lab area, where all his students had their desks. I found Andy with his dog, Pepper, curled up at his feet and deep in concentration. I was a fresh postdoc (1976) in the Physics Department and had recently come to the realization that I did not really understand molecules, much less their interaction with photons. It was suggested that I contact Andy; and so I found him sitting there, calmly accessible. When I asked if he was busy and if he had time to talk, he just smiled and said 'I guess you caught me' and put down his paper and we had a discussion about Raman scattering and its application to biomolecules. That discussion had a major impact on my life and it led me to ask Andy for a postdoc position in his group. I went on in Andy's group... to work on many interesting problems involving light-matter interaction... Even now, when I reflect on problems of science or humanity, I often think of Andy and how he would react to the same situation, if he were in my place. "* (Paul C. Champion, Northeastern University)

"...I never worked with Andy, but from early in my career he was one of my heroes. In awe, I read his magisterial papers on resonance Raman intensities, and then got to know him through seminars and conferences. He was remarkably sympatico, always interested in what I had to say, and eager to explain to me (with great patience) what interested him. He gave warm attention to whomever and whatever was in his view. His easy smile and the twinkle in his eye live on in my memory..." (Tom Spiro, Princeton University)

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