

The Uncharted Territory:
My Path to Excellence

REATHA CLARK KING (SM'60, PHD'63)

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Abridged from the inaugural Department of Chemistry Distinguished Alumna Lecture, delivered 1 June 2018



Images courtesy
Reatha Clark King

Dr. Reatha Clark King was born April 11, 1938 in Pavo, Georgia. She received her early education in a one-room schoolhouse at Mt. Zion Baptist Church. After graduating as valedictorian of Moultrie High School for Negro Youth, she attended Clark College in Atlanta on a scholarship, where she earned a double BS in chemistry and mathematics. A Woodrow Wilson Fellowship brought her to the University of Chicago for her MS in Chemistry, which she obtained in 1960. She remained for her PhD under Ole Kleppa, graduating in 1963 with a thesis titled "Contributions to the Thermochemistry of the Laves Phases." Dr. King then became the first female African American research chemist at the National Bureau of Standards, where she won the Meritorious Publication Award for a paper on fluoride flame calorimetry. In 1968, Dr. King joined York College (CUNY) as a faculty member, eventually becoming Associate Dean for the Division of Natural Science and Mathematics and Associate Dean for Academic Affairs. She earned an MBA from Columbia College during a sabbatical. In 1977, Dr. King became President of Metropolitan State University in Minneapolis. Her eleven-year tenure in this position is

remembered for substantial expansion of the college, as well as increased recruitment of women and minorities. Following a stellar career in research and academia, Dr. King spent the next fourteen years in industry as Vice President of the General Mills Corporation and President/Executive Director of the General Mills Foundation. She has served on the boards of several corporations and nonprofit organizations, including Exxon Mobil, H. B. Fuller, Wells Fargo, Allina Health Systems, and the American Council on Education, and has been a trustee of Clark Atlanta University, Carleton College, and the University of Chicago. She has received many awards, including the Defender of Democracy Award from the Martin Luther King, Jr. National Memorial Project Foundation, National Association of Corporate Directors Director of the Year, Exceptional Black Scientist Award from CIBA-GEIGY, International Citizen Award from the International Leadership Institute, Louis W. Hill, Jr. Fellowship in Philanthropy, and Ebony Magazine's Top 50 Black Executives in Corporate America. She has been inducted into the Delta Sigma Theta sorority for public service and recognized with fourteen honorary doctorate degrees.

Mine was uncharted territory when, as a hardworking and eager student in my country school, I sought better opportunities than our people were experiencing in South Georgia. To overcome the difficulties that black sharecropper families were facing in the 1930s, black youths needed fate, faith, and encouragement by elders, mentors, family, and community. In addition, we needed to be guided by our own visions, dreams, and willingness to work hard.

Back then it was common to hear Blacks say that they wanted to go up north. Those who would return home for visits would tell us about the opportunities for Blacks there. Service in the military was another way our people learned about opportunities for Blacks in other places. My mother's seven brothers served in World War II and later in the Korean War. On their furloughs, they would tell us about their experiences compared to our circumstances in the South.

We Blacks were eager for any news we could get from up north about the efforts by the NAACP to get the laws about racial segregation in public services changed. We received this news from friends and relatives who had travelled north, mainly to New York, New Jersey and Chicago, some of the most frequently mentioned destinations for the Great Migration of Black Americans who left the South.

We also read black newspapers, especially the *Pittsburgh Courier*; also the *Chicago Defender*, the *Kansas City Call*, and the *Atlanta Daily World*. We received back issues, and copies would lie around our house until we had read every page and the coloring had faded. We enjoyed reading about the successes of black people, which encouraged us to develop ourselves and get an education.

In every stage of my life, I have been guided by mentors who told me to have the courage to follow an uncharted path. My community told us to study hard and get an education to get good work out of the hot sun. The older generation wanted us to use our heads, make good grades, and take advantage of opportunities that they had been denied to get better jobs, to send money home, and to share. This indoctrination served me well.

Many people, educated and not, encouraged me to seek excellence from the time I was very young. My grandmother and father, both illiterate, would tell me, "Anything worth doing is worth doing well." They did not know sophisticated words like "excellence," but they did know the difference between sloppy work and doing it well and with distinction. They loved to say, "hard work never killed anybody." They encouraged us to be friendly and respect them, to be honest, sincere, humble, trustworthy, and—for God's sake—"Don't talk about people behind their backs." These values from my country life have remained with me throughout my life.

My upbringing began at Mt. Zion Baptist Church, a country

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church along a busy highway near Pavo, Georgia. As is typical in South Georgia, this town was so small that you would describe where it was located by saying the places it was near—the larger towns nearby like Albany, Valdosta, and Moultrie—and, if the listener still could not place it, you would mention that it was on the way to Jacksonville or Tallahassee. A large cemetery where several generations of our family have been buried is nearby. My parents, grandparents, and great-grandparents are buried there, along with my uncles, aunts, and cousins. Because black families lived on land owned by the people we worked for, Mt. Zion Baptist Church was the core of community life for us. It was also my first school.

Following my sister, who was seventeen months my senior, I started first grade at Mt. Zion at age four, while our parents worked. My dad worked in the field, and my mom worked in the homes of white people. I was eager to learn, and Ms. Florence Frazier, who taught all seven grades, let me learn with the other children. I listened, caught on quickly, and mastered the subject matter, and she advanced me to the next grade with my schoolmates. She also let me assist students who needed help, so I earned the reputation for being smart—a reputation that I kept through my college years.

Ms. Frazier was masterful. She was confident, emphatic, and highly respected by everyone in the community. She would ask our community to encourage us. She attended church and mingled with us. She was proud of her students, and she talked about us to others. She told us to work hard, to do our best, and to get an education, because no one could take that away from us.

At the end of each harvest season, black sharecroppers feared that



they would not get their due. They feared that the people they worked for would say that they were owed nothing because they had borrowed their share before the sale of the harvest. Being illiterate, with no way to track what they were owed, black people were at the mercy of an unfair system. Considering the hard work performed by sharecropper families, I would say that there was much more cropping than sharing.

After my parents separated, I went to live, first with my grandmother and later with my mother and sisters, in Moultrie, Georgia. The high school for Blacks throughout the region was Moultrie High School for Negro Youth, and it was staunchly segregated from the white school. My mother was a domestic worker; after school, my older sister and I had jobs working in people's homes. The white ladies we worked for would pick us up after school and bring us back after work. Typically, we worked for two hours each day. We also became

very active in Mother Easter Baptist Church, which was a tremendous support for our family. The church community welcomed us with open arms. During these years of my life, I learned so well that love is a sustaining resource.

After age thirteen, preparing for college and excelling so we could get scholarships were preoccupations for my older sister and me. We both graduated as valedictorians, in 1953 and 1954. Our reputation for being smart and honest workers helped us get maid work, field work, and typing jobs. We picked cotton and gathered tobacco during the summer months. My older sister was the pace setter—she could pick lots of cotton, and I tried to keep up with her. At age twelve, I could pick two hundred pounds per day at three cents a pound, earning six dollars a day. My sister could pick more. We were lucky to be picked up very early in the morning to get to the fields while the dew

was still on the cotton—it would weigh more. We were eager about gathering information about colleges we could later attend, especially those we could apply to for scholarships. Our high school teachers advised us so when the college recruiters visited our high school, we were ready to talk with them.

In September 1954, I left Moultrie on the Trailways bus to attend Clark College, a Methodist-affiliated Historically Black College in Atlanta with an enrollment of 800 students. My mom took me to the bus stop with my footlocker suitcase, kissed me goodbye, and reminded me of the rules: to go to the back of the bus, to take my seat, and not to get out of my place during the 225-mile ride. I had been recruited to attend Clark by Mr. Harold Hamilton, their Dean of Men, who was also their college recruiter. Dean Hamilton visited many black high schools to talk with students about college. He was aware that I would need scholarship support and a job on campus, and he was able to secure both: a scholarship from Clark and a job in their registrar's office, working 12 hours per week at 35 cents per hour. My older sister went to Dillard University in New Orleans to study nursing on a scholarship.

My mother's main source of income was a maid job earning \$18 per week and hand-me-down food and clothes from the families she worked for. To help us all, my sister joined the Army Nurse Corps during her junior year. This meant that she was also enlisting and would have to serve a number of years after graduation from college. But immediately she began to earn a substantial monthly check, which she used for her college expenses, my expenses at Clark, and to help our mother have some much-needed surgery. My younger sister attended Fisk University.

As our family supported each other and overcame the many obstacles of our sharecropper life, my mother's health problems, as well as those of my father, aunts, and uncles, helped me realize how lack of healthcare lowered the quality of life and shortened the lives of low-income families. Over the years, I came to see why and how this is a problem for many low-income people of all races. Witnessing the needs of my own relatives while growing up has made me an advocate for good public policies, particularly healthcare, housing services, and education.

At Clark, my original idea had been to major in home economics and return to teach in my local high school. When I discovered that I enjoyed the general chemistry course required for the home economics major, I decided I wanted to be a chemist like George Washington Carver. My mentor and chemistry professor advised that, after I graduated from Clark, I would need to go to graduate school to prepare further to become a research chemist. At this point, I had the luckiest opportunity of all: I learned about the Woodrow Wilson Foundation in Princeton. I applied for their prestigious fellowship and received it. The Woodrow Wilson Fellowship fully paid for my first year of graduate school and provided support for the second year. In addition to relieving my financial worries, the Foundation provided an advisor

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to assist me in preparing my graduate school applications. The University of Chicago was my first choice.

I arrived at the University in September 1958 and went directly by taxi to Beecher Hall, a graduate student dormitory for women on the Quadrangle. The next day, I went to the Chemistry Department and introduced myself to my academic counselor, Professor Clement, assistant professor of chemistry. Professor Clement welcomed me, commended me on performing so well in my past studies, and then presented a list of courses for my first year at the University. He explained that their courses would be more challenging than what I had experienced at Clark, particularly the first course in physical chemistry. He said with a smile, "At Clark, you were a big fish in a small pond. You will find lots of big fish in this pond."

I later met Dr. Parsons and other faculty in the Department of Chemistry, including Dr. Taube, Dr. Nachtrieb, Dr. Gomer, and Dr. Rice. For my thesis, I worked with Professor Ole Kleppa in physical



chemistry, focusing on the specialization of high temperature calorimetry in the Institute for the Study of Metals.

Life in graduate school was a blend of many joys and some worries. At that time higher education in Georgia was segregated, and Blacks could not attend white universities. But the University of Chicago was a campus full of wonderful learning experiences that would shape how I learned from that day forward. I was taught to value innovation, discovery, and collaboration, to be an incurable optimist, to view obstacles as opportunities, to be slow to anger and quick to smile, to believe in teamwork, to engage everyone around the table, and to make excellence my aim. These lessons have served me well in all of my subsequent careers, including research chemist, university faculty, university administrator, university president, philanthropy leader, association leader, and corporate director.

Studying in the Chemistry Department and the Institute for the Study of Metals was inspiring. Memorable features included the seminars, mingling with the great professors, and working long hours with the technicians in the machine shop and in the analytical chemistry lab to test my samples. There were so many places on campus where I could learn from people, including Rockefeller Chapel, where I heard Dr. Martin Luther King speak in 1959, and International House, where I had dinner on Sundays and mingled with people of other cultures. Yet I had spells of loneliness and feelings of tension caused by racial and gender issues. There were no other black people in Chemistry, and very few women.

In the fall of 1962, I had two interviews. I wondered whether my gender or race would be barriers. In my first interview, the gender issue



surfaced immediately. The company recruiter wanted to know whether I planned to get married, and if so, whether I would have children. By that time, I was already married. Actually, I did worry that being a woman would limit my opportunities, whether or not the issue was mentioned in interviews. However, my next opportunity was exceptional. The notice came through an inquiry by letter from the National Bureau of Standards (NBS) in Washington, DC. This was a great coincidence because my new husband, N. Judge King II, was applying to Howard University in DC to study for his doctorate in chemistry. I applied for the position and was hired as a research chemist in the Heat Division.

I reported for my new position at the National Bureau of Standards in 1963. It was a particularly exciting time for scientists, when our entire country was inspired by President Kennedy to beat the Russians in sending a man to the moon. My main assignment was a project funded by the space program through an agency then called ARPA, the Advanced Research Projects Agency, in the Defense Department. I was assigned to measure the heat of formation of oxygen difluoride using flow calorimetry.

Over the course of the project, I also studied various halogens and interhalogen materials, including fluorine, hydrogen fluoride, and chlorine trifluoride, producing several publications. My prior training with Professor Kleppa and the technicians at the University of Chicago served me well. I had come to the NBS with good skills and insights in work with metals and hints of what would be heat resistant and likely to withstand corrosion.

Over the years, I have enjoyed a variety of professional careers.



My education in chemistry was an important factor for each endeavor. Naturally my intense studies at the University of Chicago contributed to my success at the NBS. In other positions, key learnings from other careers were critically important—for example, community outreach skills learned as a university president were helpful for success in my work in philanthropy.

In visits to schools, which I have done regularly during Black History Month in February, students sometimes ask, "Why did you leave chemistry?" I respond, "I never left chemistry, and it never left me." In the ways that I think about and analyze situations, I am a scientist at heart. I have used a scientific approach as a research chemist, college faculty member, university president, philanthropy leader, association leader, and corporate director. And in each case I have searched for and found the path to excellence regardless of the endeavor. I credit the University of Chicago for the kind of education that enabled me to become a problem solver and leader.

International travel has also been an important source of learning. My exposures to other cultures began for me at the University of Chicago. My years mingling with international students helped prepare me for international trips for various kinds of work, including corporate and nonprofit board work, international lecture tours, and humanitarian associations. I have traveled to 33 different countries. This global awareness has been helpful in all of my professional and community work.

I am forever grateful for the willingness of others to offer their insights on the abilities they saw in me and to extend themselves to help me develop. The University of Chicago was a fortuitous and unique opportunity for me. It equipped me with a fine education and numerous skills for lifelong learning.

Scorching Intellect

Alex Navrotsky (SB'63, SM'64, PhD'67) is still fired up about calorimetry at 75

By Irene Hsiao



Image courtesy UC Davis College of Letters and Science

Alexandra Navrotsky (SB'63, SM'64, PhD'67) is the Director of the Nanomaterials in Environment, Agriculture, and Technology Organized Research Unit (NEAT-ORU), Distinguished Professor of Chemistry, Edward Roessler Chair in Mathematical and Physical Sciences, and Interdisciplinary Professor of Ceramic, Earth, and Environmental Materials Chemistry at the University of California, Davis. Her many accolades include the Urey Medal from the European Association of Geochemistry, the Roebing Medal from the Mineralogical Society of America, the Harry H. Hess Medal from the American Geophysical Union, and the Benjamin Franklin Medal in Earth Science. She is a member of the National Academy of Sciences and the American Philosophical Society and an Alfred P. Sloan Fellow. She has served as vice-president and president of the Mineralogical Society of America.

And, at 75, she is showing no signs of slowing down. "I've got a group of twenty to twenty-five," she says. "It's difficult to know the exact number—eight graduate students, eight postdocs, several undergraduates, two guys on sabbatical from Israel. It is quite lively."

Fascinated by science from early on, Navrotsky acquired her education at a breakneck pace, earning enough AP credits at the Bronx High School of Science to finish her BS at the University of Chicago in just three years. "I knew I wanted to be a chemist before I came to Chicago," she says. "Chemistry was midway between being observational and being theoretical—I like the balance of lab work and the good fundamental base that chemistry presents." As the first student invited to complete both undergraduate and graduate degrees in the Department, she leapt at the chance to stay at Chicago through her PhD. "I was the experiment," she says. "I guess I turned out ok."

As a graduate student, Navrotsky worked with Ole Kleppa developing calorimetry. "I still work very much in that area," she says. "We started focusing on geochemical problems in my last years of graduate school. We did some of the pioneering work looking at the thermodynamics of materials made at high pressure with [Robert C.] Newton in Geophysical Sciences." In addition, Navrotsky works on solid-state ceramic materials, materials for energy applications, porous materials, and metal-organic frameworks. The questions she asks apply broadly: "What structures are available to those materials, and why do they form these structures, in terms of chemical bonding? For that, thermodynamics is an excellent tool."

After graduating from Chicago, Navrotsky held postdoctoral fellowships in Germany at the Technical University Clausthal and at Penn State, before landing a job at Arizona State University in 1969, where a burgeoning solid-state science program emerged as Arizona State completed its transition from teacher's college to university. Her sixteen years on the faculty allowed her to develop her own program, build her own calorimeters, and collaborate with geologists and solid-state chemists. In 1985, the Geological and Geophysical Sciences Department at Princeton recruited her. "When I was seeking a faculty position in '69, Princeton was like Chicago—they wouldn't hire women—and unlike Chicago they weren't even coed!" After twelve years at Princeton, including three years as department chair, "I saw what it was possible to do there and what was not: I explored all that phase space," she says. In 1997, a plum offer from UC Davis drew her to the West Coast.

At Davis, the work that absorbs her most these days still retains a connection to her PhD thesis, in which Navrotsky measured and then modeled the thermodynamics of disorder in spinels to predict structural states as a function of material composition and temperature. "I've been working on the same theme in more and more complex systems ever since," she says. "Looking at different complicated structures with details that can change with temperature, pressure, time, and preparation conditions, why does one structure form and not another? Or, if several structures form, why do they form? How do they transform into each other, and why, on the scale of chemical bonding? That's what holds all my projects together. A lot of the techniques—our thermodynamic techniques and other structural and computational techniques—let us do things that would have been impossible five years ago."

Building on her interest in zeolites, Navrotsky is currently investigating the structure and stability of metal-organic frameworks using calorimetry, with collaborators at Brigham Young University and Virginia Tech examining the same structures using complementary techniques. Another project explores how crystalline structures become disordered on an atomic level through various stresses, including grinding, radiation, and extreme temperatures. "After you've damaged the material, you get a rich energy landscape of possible structures that transform into each other on a slow path back to the ordered state

Chemistry is midway between being observational and being theoretical — I like the balance

upon heating," she explains. "If you want to make a material and preserve it in a given structure, you need to look at the synthetic pathway almost like the organic chemists do: how can you make it go by this pathway, stop at this intermediate state, not go to something else? The applications go all the way from nuclear energy to thermal barrier coatings for airplane engines and space vehicles."

When asked if gender ever played a role in her career, she staunchly denies it. "It was irrelevant!" she declares. "There was no discussion of women's issues. In a paradoxical way, one had more freedom fifty years ago because nobody had any expectations. On the whole the faculty were supportive and kind to me, and intellectually I was certainly part of everything. All of us in the research institutes were outsiders, in the sense that what we were doing was on the borderline of chemistry, physics, and materials science." Besides, she adds, "If you're brought up in New York, you don't expect everybody to be nice to you all the time."

However, she admits, "There was the tacit assumption—which was true—that none of the major universities were hiring women at that point. It wasn't a challenge; it was a fact. And one knew that." Nevertheless, no part of that bias seems to have remotely discouraged her. She considers her first job at Arizona State a wonderful opportunity, perhaps more exciting than what some of her male colleagues got at more prestigious universities.

"Narrow-minded people and honest-to-goodness bastards come in all shapes and forms, and you deal with them," she says. "I guess my attitude was—and is—'Run with me, or get the hell out of my way!' If you take the lead, people will seldom challenge you. You make the opportunities. There will always be people who tell you all the reasons you can't do something, and all the reasons it won't work, and all the reasons you won't get a grant, and you won't get a faculty job, but somebody's going to get it, so why not me? You have to decide what you want to do and go for it and take the bumps as they come. Don't let the naysayers drag you down!"

A Letter from

Susan Meschel

Presented at Spring Alumni Reception 2018

Susan V. Meschel (MS'59, PhD'61) was one of six Hungarian political refugee students accepted by the University of Chicago in 1957. Her dissertation, "Absorption and Enhancement Effects in X-ray Fluorescence Analysis," was completed under the supervision of Norman Nachtrieb. Following graduation, she was a postdoctoral fellow in the laboratory of Ole Kleppa and later taught in the College. A postdoctoral position in the laboratory of Lothar Meyer was aborted due to his untimely death. After a twenty-three-year hiatus from research, during which she taught at the University of Chicago Laboratory Schools and in the Department of Chemistry at Roosevelt University, raised two children, and cared for her ailing parents, Meschel rejoined the Kleppa lab, conducting research in high-temperature thermodynamics of alloys. Upon Kleppa's retirement, his last calorimeter was relocated to Philip Nash's lab at Illinois Institute of Technology, and Meschel joined the Nash group. Formally retired from the University of Chicago, she continues her research at IIT. Her current scientific interests include shape memory alloys and thermoelectric materials.

I am writing this letter to all of you, colleagues and former students at the University of Chicago. I decided to write my greetings, because I cannot be present at this wonderful event. I am presenting a paper at an International Conference in Mexico. I would like to share my grad school experience in the antediluvian years of 1957 to 1962, very different than what the new generation observes.

I was a brand new Hungarian immigrant in the USA when I was first exposed to the University of Chicago. I am eternally grateful to Rabbi Eisenstein at the Anshe Emet synagogue in Chicago, who asked one of the young boys in his congregation, himself a recent immigrant, to take me to visit the University. We arrived on a day in late Spring of 1957, and the campus was ablaze with flowering shrubs. I loved the atmosphere and the medieval style buildings. In Court Theatre, a student group was rehearsing Oscar Wilde's *Salome*. For the first time, the English language was not an obstacle course but something poetic and beautiful. I decided that if English could sound like that, it was worth learning. My companion introduced me to the Foreign Student Advisor, Mrs. Vera Laska, who suggested that I apply for a scholarship. It helped that she understood Hungarian, because I did not know any English.

In the fall of 1957, I quit my job at the Toni Company. My job there was to analyze what fraction of the hair's protein was destroyed by their home permanent lotion. It was a pleasant job, but I did not want to test hair samples for the rest of my life and longed to go back to school. This time I had a serious chance. The Anshe Emet synagogue donated my first quarter tuition, which was at the time \$240! I had no official documents to prove what I studied at the Technical University in Budapest because I was a political refugee who escaped the com-

munist repression in that year. The University accepted six Hungarian refugee students—four in the Physical Sciences Division on probation. If we were able to earn a B average we could stay and be given a scholarship. In an initial interview, Professors N. C. Yang and T. F. Young asked me some questions related to mathematics, and I could answer, which made a bit of an impression. I want to stress that I was the only female student accepted.

During my first quarter, two of my courses were taught by Nobel Prize winners. Harold Urey was the most memorable professor, a kind, absent-minded, charming person, who taught physical chemistry. To my delight, I managed to get a perfect score on his final. I am still guarding that paper as a precious memento. Henry Taube was a fascinating lecturer of inorganic chemistry and usually talked about his new research in class. My greatest difficulties were with organic chemistry, where we were asked to memorize twenty reactions each week with all the conditions in this highly discouraging book by Wagner and Zook. Does anyone recall that horrible book? The Department offered me a research assistantship, which meant that I could even help my parents with their living expenses. My project was related to hanging mercury drop polarography, a technique which is completely obsolete now.

The senior students played pranks on the newcomers. One day a group of us walked toward Lake Michigan on 57th Street, and a student from the inorganic chemistry group passed around some chocolates. No one but the new students took some. These turned out to be chocolate covered grasshoppers. They were surprisingly crunchy!

During Autumn Quarter it was the custom among the male graduate students to send a new girl for a bottle of acid. This time they picked me. I had no idea that in order to reach the acid store room one had to pass through the men's room in the basement of Kent Chem-



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istry Lab. Luckily, my newfound Canadian friend tipped me off as a good older brother. I hope some of you remember Don Irish. He was an older student, already married and had children. I sang at the top of my voice when I entered the men's room to give the guys a chance to cover up. My classmates were deprived of the traditional girlish squeals, and I also earned a bit of respect.

At Christmas the students organized a party with abundant drinks. Someone offered me a 300 ml beaker with a pale yellow liquid. I thought it was juice and drank it all. Guess what—it was whiskey. I promptly got drunk, as I never had that much alcohol in my life. I went to sleep on the floor of Don Irish's lab.

My first year at the University was critical for me. I demonstrated to the Department that I was worthy of their trust. This was the proof that I could study and become a professional person. This was very rewarding for me, but this would not have been possible without the help of Dean of Students James Parsons and Norman Nachtrieb, who later supervised my PhD dissertation.

At the annual Christmas parties, which took place in the library in the Jones Lab, Nick Ashford's band played jazz for the dance. He was a PhD student of Professor Clyde Hutchison, a very lively and charming guy. Professor Hutchison paid every year for the tuning of the piano, but he would not enter the Jones Library when jazz music was being performed. I guess this was his protest for using the piano for anything other than classical music.

I noticed the considerable difference in the atmosphere of the Jones–Kent Lab and the James Franck Institute. The JFI was more welcoming and provided more opportunities for informal interactions between faculty and students. I fondly remember one of my closest friends then, Reatha Clark (now Dr. King). We had a true intercultural relationship. She taught me how to make the corn row hairstyle, and I taught her how to make matzo balls with chicken soup. Another good friend in the PhD program, Eugenie Asimakopulos, married a fellow student. Unfortunately she passed away quite young. The rock of strength in our group was Danny Nitecki, an immigrant from Lithuania. I understand her artwork is being shown at this alumni event. She was taking care of her mother and her baby while working on her dissertation. She and her mother were avid weavers and produced many artistic pieces.

Reatha and I both succeeded in working in the James Franck Institute with Professor Ole Kleppa. When Ole offered me a postdoc position, I did not reply until I researched his background. When I found out that he fought the Nazis during World War II in the Norwegian underground and later in the British Army, I decided that he was the person I wanted to work with. I learned a lot of thermodynamics with him, and we developed a lifelong professional and personal friendship. I am formally retired, but I still continue solid-state chemistry research at IIT (Illinois Institute of Technology) using the equipment Ole Kleppa designed. This is the work I am presenting this week in Mexico.

I am grateful to the University for giving me a chance to prove myself. At the University I no longer felt like a refugee, but a person with a home.

Good luck to all of you,
Susan Meschel (PhD'61)

FACULTY TRANSITIONS



Welcome to Assistant Professor **Sarah B. King**, who joined the Department of Chemistry in Autumn 2018



Congratulations to **Bozhi Tian**, who was promoted to Associate Professor in Summer 2018



Congratulations to **Richard F. Jordan**, Paul Snowden Russell Distinguished Service Professor, who retired in February.

ALUMNI NEWS

Miriam Freedman (SM'03, PhD'08) was promoted to Associate Professor of Chemistry at Penn State University.

Sandra C. Greer (MS'68, PhD'69) has published a new book, *Elements of Ethics for Physical Scientists* (MIT, 2017).

Jong-In Hahm (PhD'00) was promoted to Professor of Chemistry at Georgetown University in 2017.

Dan Killelea (postdoc 2007–11) was promoted to Associate Professor of Chemistry at Loyola University Chicago.

Robert A. Moss (PhD'64), Research Professor and Louis P. Hammett Professor Emeritus in Chemistry and Chemical Biology at Rutgers University, passed away in December 2017. A leader in the chemistry of reactive intermediates, Dr. Moss was awarded the 2010 ACS Arthur C. Cope Senior Scholar Award.

Steve Murov (PhD'67) received the 2018 Helen M. Free Award for Public Outreach from the ACS for bringing science to kids as Dr. Al Chemist.

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Degrees Awarded Autumn 2017–Summer 2018

BA

Kelsey Brown	Michael Waarts	Yanan Long	Judith Kamm
Abigail Chang	Dara Weiss	Tessa Lynch-Colameta	Kevin Nihill
Nathaniel Chavez	Alec Wild	Alison McMillan	John Otto
Tabish Dayani	Caitlin Wong	Christopher McInychuk	Ved Prakash
Jacqueline Deirmenjian	Hannah Zinky	Fauzia Mujid	Michael Rombola
Christine Hessler		Julia Murphy	Anthony Schlinggen
Kirk Lancaster	MS	Jia-Ahn Pan	Mark Westwood
Lavina Li	Mohammed Awais	Joshua Portner	Ruoyu Xu
Dario Valdes	Elizabeth Bain	Aleksander Prominski	Haibin Zheng
William Xia	Alex Bates	Alexander Rago	
Elizabeth Zeichner	Atreyi Bhattacharya	Brooke Schuster	Student Honors
Angela Zhang	Michelle Brann	Scott Smart	
	Wooje Cho	Harrison Snodgrass	Closs Teaching Award
	Yeongsu Cho	Joseph Solomon	Victoria Cochran
	Charles Cole	Yang Song	Timothy Cronin
	Maya Cutkosky	Arvin Sookezian	Samuel Greene
	Nhat Trong Do	Shi-Ning Sun	Pavel Elkin
	Justin Donnelly	Laura Tociu	
	Jonathan Fetherolf	Marissa Tranquilli	Cross Prize
	Britt Fossum	Emmanuel Valenton	Aleksander Prominski
	McKenna Goetz	Isaac Nathaniel Wappes	
	Christian Gomez	Jiaze Xie	Gilbert Memorial Prize
	Christian Goodnow	Han Yang	Chengpeng Wang
	Andrew Grorud	Hannah Yi	
	Jeffrey Gustafson	Heng Yi	Knock Prize
	Jerald Hertzog	Fangjie Yin	Rohan Shah (Chemistry)
	Jacob Higgins	Junyi Zou	Tian Yi Zhou (Chemistry)
	Lingbowei Hu		Agustin Oneto (Biological Chemistry)
	Kate Jesse	PhD	Caroline Kim (Biological Chemistry)
	Margaret Kelty	Rebecca Black	Pradnya Narkhede
	Kaitlin Kentala	Timothy Cronin	(Biological Chemistry)
	Debsouri Kundu	Thomas Dannenhoffer-Lafage	
	Malte Lange	Saurja Dasgupta	Nachtrieb Memorial Award
	Chenghan Li	Cheryl Dembe	Danylo Lavrentovich
	Renhe Li	Zhe Dong	Shi-Ning Sun
	Zhefu Li	Pavel Elkin	
	Vladislav Lisnyak	Joseph Jeffery Gair	Norton Prize
	Chang Liu	Yifan Gu	Yan Xu
	Chang Liu	Christopher Hansen	
	Lawson Lloyd	Yuanwen Jiang	

BS

Adeoluwa Ayoola	Eric Cormack	Timothy Csernica	Kenneth Debacker	Justin Donnelly	Natalie Gray	Johanna Holo	Bennet Karel	Caroline Kim	Danylo Lavrentovich	Michelle Ling	Claire Liu	Eleanor Mayes	Africa McLeod	Noah McMillion	Jonathan Michelsen	Andrew Molina	Kavan Mulloy	Pradnya Narkhede	Yehao Qiu	Shi-Ning Sun	Kassia Symstad	Matthew Talaga	Evan Trotsuk
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Shiu Department Service Award

Timothy Cronin
Polina Navotnaya
Manas Sajjan
Vishwas Srivastava
Hunter Baksa Vibbert
Yan Xu

Sugarman Teaching Award

Carlo Berti
Christian Goodnow
Simon Ewing
Joshua Zuchniarz

Yang Cao-Lan-Xian Best Thesis Award

Preston Scrape (Physical)
Zhe Dong (Organic/Inorganic)

Turkevich Award

Michael Nguyen

PSD Teaching Prize

Charles Cole

Booth Teaching Prize

Hannah Yi

Bloch Fellowship

Tian Qiu

Chenicek Fellowship

Wooje Cho
Youjin Lee

Goodman Fellowship

McKenna Goetz
Erik Reinhart
Aleksander Prominski

Kharasch Fellowship

Pengfei Hu

Knock Fellowship

Airi Kawamura
Alison Johnson

Lee Fellowship

Guangxu Lan

Light Fellowship

Clara del Junco

Nitecki Fellowship

Bodhi Vani

Olsbansky Fellowship

Gihoon Lee

Sellei-Beretvas Fellowship

Alison McMillan

Swift Fellowship

Curtis Peterson

Van Dyke Tiers Fellowship

Jianchun Wang
Lin Deng

Windt Fellowship

Kathleen Berger
Jiasu Xu

Dear friends,

Welcome to the Winter 2019 Chemists Club, our first issue devoted entirely to achievements of alumni of the Department of Chemistry! Featured in this issue are several outstanding alumnae of the 1960s. Our cover story is a condensed version of the lecture that was presented by Reatha Clark King (SM'60, PhD'63), the inaugural recipient of our Distinguished Alumna Award, at our Spring Reception last June. Her essay describes her unique and awe-inspiring journey from a single-room schoolhouse in rural Georgia during the Jim Crow era to a PhD at the University of Chicago and an extraordinary career in research, academia, and industry. We also present a letter by her contemporary and friend, Susan Meschel (SM'59, PhD'61), which offers a piquant glimpse of the Department during that time by an immigrant, refugee, and self-described "outsider" who has given many years of her career to the laboratory of Ole Kleppa and continues to conduct research on his equipment at the Illinois Institute of Technology. Another alumna of the Kleppa lab featured is Alexandra Navrotsky (SB'63, SM'64, PhD'67), Distinguished Professor of Chemistry and Director of the Nanomaterials in Environment, Agriculture, and Technology Organized Research Unit at UC Davis, a leading researcher in the field of calorimetry who, at 75, continues to run a dynamic research program.

I am proud to celebrate the achievements of these women and look forward to honoring more alumni in future issues—please send all comments and feedback my way!

Best wishes for a happy new year,

Irene Hsiao
Editor

the chemists club

Winter 2019

Dear friends,

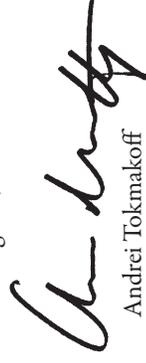
After seven months on the job, please allow me to introduce myself as Chair of the Department of Chemistry at the University of Chicago. It gives me great pride to highlight the phenomenal growth that I am inheriting in our research and teaching, members, and facilities.

Over the past decade, the University has invested incredible resources into chemistry that have built a world-class institution for all areas of chemistry. Half of our faculty started during the past seven years alone. During that time, our research volume has gone up 80%, the number of graduate students has grown by 40%, and the number of postdocs have tripled. Right now, we are a young, dynamic department that reflects the most current ideas and technology. Our newest member is Assistant Professor Sarah King, who is building a one-of-a-kind ultrafast electron microscope to make movies of how electronic energy is transported through molecular semiconductors.

In addition to moving our research and teaching forward, my mission as chair is to build a community-focused department that values diversity and inclusion. In addition to a comprehensive review of the curriculum, we are involving students in all departmental functions, including interviewing junior faculty. We are also instituting new family and medical leave policies to improve student wellness.

As excited as I am about our department today, there is a long history of outstanding scientists and research that has led us to where we are. This issue highlights several remarkable women who have come through our graduate program. We salute their achievements with admiration.

Best regards,



Andrei Tokmakoff
Professor and Chair

