

DEPARTMENT OF
Chemistry News



FALL/WINTER 2011

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Potential Redox Shuttle
Shengshuang Zhu, Koushik Ghosh, Jeffrey S. Moore

Redox Shuttle

Concept

Can we protect triarylamine by burying it in the polymer?
Can we minimize side reaction by starting with carbazole derivatives?
Effective concentration of the reactive unit. Physical amount of polymer needed for the study has to be within solubility consideration.
Nature of polymer: Small molecule carries its own micro environment in form of polymer consistently attached.
Polymer solvent interaction: polymer solvent interaction plays a role in determining the redox behavior of the electro active unit.

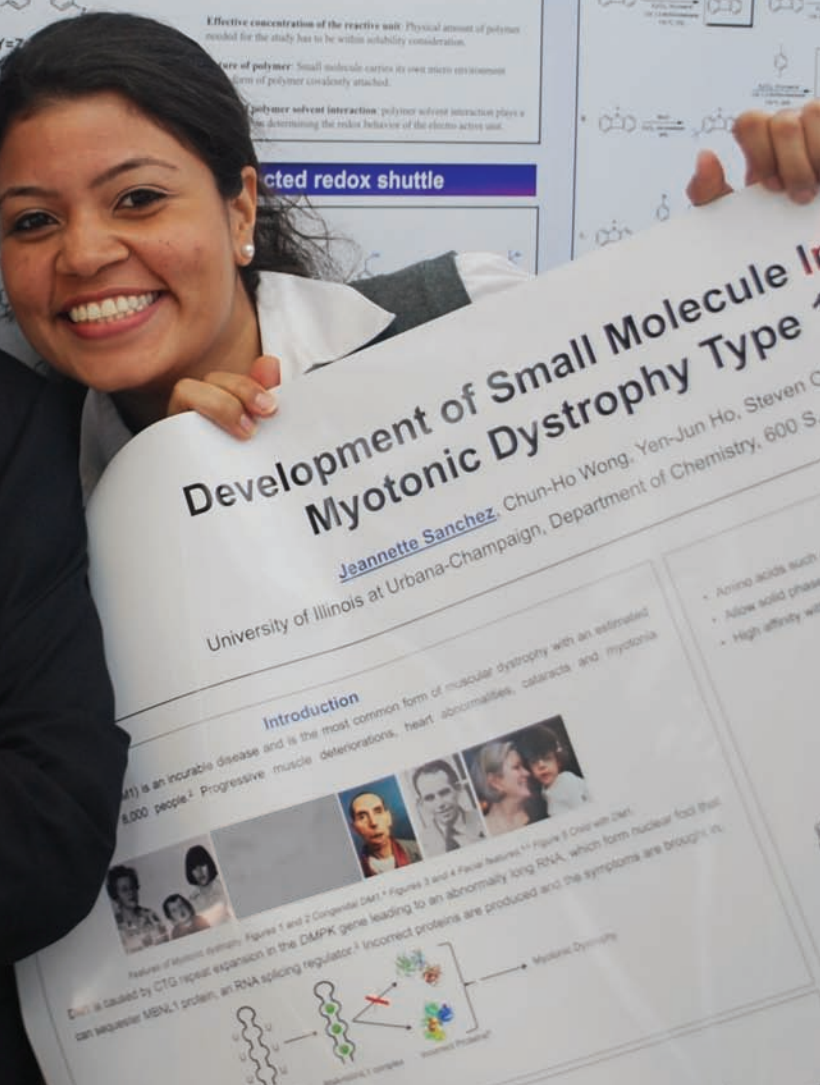
Synthesis of carbazole derivative



Selected redox shuttle



UNIVERSITY OF ILLINOIS
Shengshuang Zhu
Shengshuang Zhu
Adjunct Prof. Jeff Moore



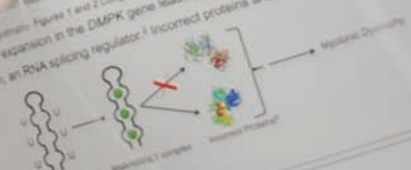
Development of Small Molecule Inhibitors for Myotonic Dystrophy Type 1

Jeannette Sanchez, Chun-Ho Wong, Yen-Jun Ho, Steven C....
University of Illinois at Urbana-Champaign, Department of Chemistry, 600 S...

Introduction



Myotonic Dystrophy Type 1 (DM1) is an incurable disease and is the most common form of muscular dystrophy with an estimated 1 in 8,000 people. Progressive muscle deteriorations, heart abnormalities, cataracts and myotonia are characteristic features of DM1. Figure 1 and 2 Conceptual DM1 + Figures 3 and 4 Facial features + Figure 5 Child with DM1. DM1 is caused by CTG repeat expansion in the DMPK gene leading to an abnormally long RNA, which form nuclear foci that can sequester MBNL1 protein, an RNA splicing regulator. Incorrect proteins are produced and the symptoms are brought in.



- Amino acids such as...
- Allow solid ph...
- High activity...

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Letter from the Department Head



IN THIS ISSUE OF CHEMISTRY NEWS I WANT TO SHARE A FEW NUMBERS THAT DEFINE WHO WE ARE. THE DEPARTMENT OF CHEMISTRY HAS SOME IMPRESSIVE STATISTICS THAT REFLECT ON ITS CURRENT STRENGTH AND IMPACT AND ITS REMARKABLE HISTORY. We often cite the 10 Nobel Prizes, 7 awarded to students and 3 to faculty that have been associated with the department, but also impressive are the number of National Medal of Science recipients, a total of 11. Elaine Fuchs (B.S. '72, Hon. '06), an internationally renowned biologist was the most recent recipient (in 2008), and just the year before, our colleague and early NMR pioneer, Charles Slichter, received the medal in the East Room of the White House.

The number of Illinois Chemists who have received the Priestly Medal, the highest award bestowed by the American Chemical Society, is 13 and the number who have served as President of the American Chemical Society is 23. I can confidently say that the latter number will soon rise to 24 because the two candidates for 2012 ACS President Elect are both alumni of our graduate program. Dr. Dennis Chamot received his Ph.D. in 1969 (W. Pirkle) and is the Associate Executive Director of the Division on Engineering and Physical Sciences of the National Research Council. The other candidate is Dr. Marinda Li Wu, who obtained her Ph.D. in 1976 (R. Drago), and is the founder and president of Science is Fun! Both Dennis and Marinda have recently served on the ACS Board of Directors as a Director-at-Large.

Numbers that we watch very closely and that may change from day to day are 463, the number of undergraduate chemistry majors, and 278, the number of students in our graduate program. The department has seen steady growth in the number of undergraduate majors, an increase of over a hundred majors compared to ten years ago. The size of the graduate program has held steady for at least two decades. This past year the department in collaboration with the I-STEM Education Initiative carried out an extensive undergraduate and graduate program review with the goal of improving all aspects of both programs. The data is providing lots of insight into the experiences of our students that will help us improve the overall quality of the educational experience, from orientation to job placement.

Another number that my faculty colleagues watch quite closely is the number of tenure track faculty. We were delighted to recruit Dr. Prashant Jain, who started his Assistant Professorship this fall (see page 10 for a full profile of Prashant). However, with the retirement this fall of Jim Lisy, John Katzenellenbogen, and Doug McDonald and the departure of Anne Baranger and John Hartwig to Berkeley, the number of faculty dropped by four to a total headcount of 32. We have been authorized to hire four new faculty members this season, so this will be a very busy year with at least 20 candidates being interviewed.

The one number that we all wish could magically increase is 24. That's the number of hours in a day, and there never seem to be enough for my staff and me to do all the things we do in the department. As always, please share your ideas and stories with me (sczimmer@illinois.edu) and best wishes!

Sincerely yours,

Steven C. Zimmerman
Head and Roger Adams Professor
Department of Chemistry

Faculty Awards

Professors **James M. Lisy** and **Ralph Nuzzo** have been chosen as recipients of Research Awards from the Alexander von Humboldt Foundation. The award is granted to researchers whose fundamental discoveries, inventions or novel theories have significantly impacted their fields of research. The award winners are enabled to work on research projects of their choosing in Germany with a native colleague for a period of up to one year.

So Hirata was named a Scialog Fellow by the Research Corporation for the Science Advancement (RCSA). The multi-year grant program funds early career scientists to pursue transformative research on crucial issues of scientific inquiry.

Ben McCall was named a University Scholar, an honored position on campus that recognizes excellence while helping to identify and retain the university's most talented teachers, scholars, and researchers.

John Rogers, Chemistry Affiliate and Professor of Materials Science and Engineering, received the \$500,000 Lemelson-MIT Prize. The annual award recognizes outstanding innovation and creativity. "Rogers' research has resulted in the creation of revolutionary products integral to human health, fiber optics, semiconductor manufacturing and solar power, with many currently in commercial use," wrote Micheal Perry of MITnews.

Kenneth Suslick has been named the recipient of a Guggenheim Foundation Fellowship. Guggenheim Fellowships are awarded annually on the basis of achievement and exceptional promise.

Wilfred van der Donk has been elected a Fellow of the Royal Society of Chemistry, the largest organization in Europe for advancing the chemical sciences. Wilfred has also been elected a Fellow of the American Academy of Microbiology.

Four members of the faculty were named Fellows of the American Chemical Society at the National Meeting in Denver. **Cathy Murphy, Jonathan Sweedler, Thom Dunning, Jr., and Ralph Nuzzo** joined ten chemistry alumni in being recognized for outstanding achievements in and contributions to Science, the Profession, and the Society. In the first three years of the ACS Fellows program 12 Illinois faculty have been elected.

Doug Mitchell has been named the recipients of the prestigious NIH Director's Innovator Award, which recognizes bold ideas from promising new scientists. For complete coverage of the award and Professor Mitchell's research, please see the next edition of *Chemistry News*.

Student Awards

Gemma Comellas (Rienstra Group) has been named the winner of a 2011 Baxter Young Investigator Award. The award is intended to stimulate and reward research applicable to the development of therapies and medical products that save and sustain patients' lives.

The Department of Chemistry is happy to announce that first year graduate students **Christopher Barile** and **Joseph Courtney** were recipients of a National Science Foundation Fellowship, bringing the number of students with a NSF fellowship to fifteen. Barile is also the recipient of a Springborn Graduate Fellowship and Courtney also holds a supplemental G. L. Clark Fellowship.

Three incoming students—**Christopher Barile, Jackie Johnson,** and **Josh Kaitz**—were named Robert C. and Carolyn Springborn Graduate Fellows. The Springborn Program has now supported nineteen students at the University of Illinois

Fifteen students in the graduate program were chosen to receive National Science Foundation Fellowships. One of the most prestigious external fellowships a student can receive, the program recognizes and supports outstanding graduate students.

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...connect with other students and alumni and become a facebook "fan" of Chemistry at Illinois?

"Like" Chemistry at Illinois on Facebook: <http://www.facebook.com/chemistryatillinois>

...make a gift to the department?

Visit our giving page: <http://chemistry.illinois.edu/giving/> or call us at 217-333-5071

...network online with other alumni and friends of the department?

Join the SCS Alumni Networking Group on LinkedIn: www.linkedin.com/groups?home=&gid=2177109

...submit an alumni update?

Complete the alumni update form on our website: http://chemistry.illinois.edu/alumni/chem_alum_news.html

Access the SCS alumni database: <http://www.scs.illinois.edu/alumnolist/>

Convocation 2011

MAY 16, 2011 MARKED THE ANNUAL CONVOCATION CEREMONY FOR THE DEPARTMENT OF CHEMISTRY. FACULTY, FAMILY, AND FRIENDS GATHERED TO HONOR 210 GRADUATES IN A CEREMONY AT KRANNERT CENTER FOR THE PERFORMING ARTS, WITH A RECEPTION THAT FOLLOWED ON THE QUAD JUST IN FRONT OF NOYES LAB.

Remarks by Department Head Steven Zimmerman and College of Liberal Arts and Sciences Dean Ruth Watkins opened the ceremony. Then, convocation speaker Stephen Elledge, the Gregor Mendel Professor of Genetics and Medicine at Harvard Medical School, inspired students and guests with a speech that touched on his time at the University, his experiences in the profession, and his advice to the graduating class.

Dr. Elledge, who also stressed the need for students to defend science and reason, said of the experience, "It was a tremendous honor and privilege for me to come back and address my former school. Having the opportunity to think about what it was I would impart to young scientists emerging from their degrees was an enriching experience for me and one that I hoped helped them along in the next stage of their careers."

In addition to honoring all graduates from the Department, the ceremony specifically called attention to four undergraduate students for their achievements during their time on campus.

John C. Bailar Award for Outstanding Undergraduate Thesis

Shin Lee

John David Barnwell Memorial Award for Academic Achievement and Personal Ethics

Gregory Potts

Reynold C. Fuson Award for Academic Excellence

Lars Rikardsen

C.S. Marvel Award for Excellence in Undergraduate Thesis Research

Kathryn Filson

Following the ceremony and despite a rainy day, many graduates were able to make their visit back as 'alums' to Noyes Laboratory where a reception allowed them to interact with their fellow graduates as well as departmental faculty and guests.



2011 Department of Chemistry Graduates

Bachelor of Science in Chemistry

Eileen Eun Young Chung
Mark D. Council
Joshua Day
Graham Dick=
Michael Drolet
Angela Early
Stacy Cecilia Fosu
Benjamin R. Garrett
Dave A. Grych +
Charles Ho
Kendon Holtz
Daniel E. Hoyle
Samone Lin Hu
Aaron Ross Keith
Alexandra Lakshmanan
Brian John Landreth
Yejin Lee
Anthony Hong Cheol Lim
Stephanie Lauren Lucas
Elizabeth Ott
Gregory Potts
Kristin Jean Progar
Robert Lewis Ratcliffe
Lee E. Rittgarn
Nicholas Charles Rubin
Matthew D. Sampson
Steven C. Schmid + #
Courtney E. Shaner
Jacob C. Sicinski
Kristin Marie Stafford
Xavier Woo
Matthew A. Wood

Bachelor of Science in Liberal Arts and Sciences

Jennifer N. Abdo
Hannie Ali
Emily C. Allen + &
Megan E. Augustyn
Nicole Banks
Jennifer Rae Boysen
Du Bong Chang
Stephanie Chang +
Brian Hyunwoo Cho
Soung Chul Cho
Hyo Sun Choi
Jason Choi
Rina Choi
Samuel Chung
Robert Mauro DiFazio
Caryn Rachel Doner
Kathryn Lynn Filson &
Yurica T. Fultz
Drake Alexander Gashkoff
Laura Greene
James Patrick Hamilton +
Michael B. Hamoy
Syed Hussain
Hae Bi Chi Jang
Ji Hoon Jeong
Seulhee Jung
Ruth Christina Kakumanu
Clare Kane
Ravi Kiran Kesari +
Hyo-Sun Kim
Jennifer Hyunjin Kim
Kimeya Koparkar
Martin G. Kucan
Neringa Kunigonis
Arabella Mary Lazar
In Young Lee
Jaekwan Lee
Joy Lee
Shin Wook Lee
Young Lee
Michael Lennon
David Lewandowski &
Jonathan J. Liu
Aye A. Lwin +
Edmund Charles March
Anthony Joseph Mattioli
Brian Meschewski
Farzan Mohammadi
Sonya Mohan
Kyle J. Moomey
Drew Robert Nannini
David A. Nelson
Lynn Nguyen
Alyssa Novak
Sin Yeon Noh
Jung Min Oh
Yusuke Okuno
Lou Gwen Pacheco
Karla Padilla=
Jae Hyung Park
Disha J. Patel
Sushant Rameshchandra Patel
Amelia C. Perillo +
Megan Piotrowski
David Martin Potts +
Martha Prazuch
Richard Regalado
Jessica Reyes
Lars Kristian Rikardsen* + #
Myrna Luz Rivas
Alexandra Lynn Rutz
Hee Dong Ryu
Mary Katherine Santangelo
Jeffrey S. Schutzbach
Yosuke Seki
Hyojung Shim
Woo Jung Shin
Steven Shoyer +
Jaclyn Christine Sievers
Oliver Flores Silerio
Kamil Stelmach

Sara Marie Tischhauser = +
Katie L. Ulivi
Alexander G. Valvassori=
Ashley Nicole Voigt +
Teng Wang
Rebecca Weiner=
James Nolan Winters
Patrick James Woida
Henny Wong
Hyun Min Yoo
Jinyoung Anny Yoo +
Margaret L. Yung

Bachelor of Science in the Teaching of Chemistry

Robert G. Calder
Marisa Kapinos #
Travis James Loesch
Elise McCarren
Stefani Marie Meek
Thomas Moore
Colin Patrick Rice

Masters of Science in Chemistry

Aaron D. Bailey
Corbin James Bringham
Yuan Gao
David S. Huang
Vanessa Alexandra Iiams
Lindsey Abigail Johnstone
Carrie A. Kauffman
Kathleen Helen Kelley
Brian Thomas Phelan
Christopher Randolph Salnave
David F. Shudy
Amanda E. Mack
Ana Lia Maradiaga Maradiaga

Masters of Science in Teaching of Chemistry

Brian Thomas Phelan
Jeffrey Spencer

Doctor of Philosophy in Chemistry

Alaaldin Mohammad Alkilany
Christopher R. Anderton
Stephen Michael Anthony
Divina Betinol Anunciado
Bryan E. Barton
Brian J. Bellott
Ji-Yeon Byeon
Bradley Patrick Carrow
Jeffrey Carter
Mary Margaret Caruso
Douglas Andrew Davis
Jared H. Delcamp
Apratim Dhar

Lindsay C.C. Elliott
Ying Fang
Kristin E. Finch
Aaron Dean Finke
Maria E. Fortunato
Eric Paul Gillis
James Goloboy
John Leonard Haan
Jeremy J. Hatch
Richard James Helmich
Zhen Huang
Jonathan Wayne Kemling
Ann M. Knolhoff
Timothy J. Kucharski
Darrell W. Kuykendall
An-Phong Le
Jin Hee Lee
Nicholas M. Marshall
Teresa Anne Martin
Christopher G. Mayne
Andrew J. Nieuwkoop
Eric Louis Null
Edward Davis Oldham

Matthew T. Olsen
Zakiah Nache Pierre
Sreenivasa Rao Ramisetty
Mark R. Ringenberg
Joshua A. Ritchey
Oscar Rodriguez Jr.
Aaron Mathew Royer
Krishnarjun Sarkar
Gregory Earl Scott
Nathan Sieracki
Patrick Neal Sisco
Russell Christopher Smith
Lindsay J. Sperling
Matthew Sherman Thorum
Kevin Ryan Tucker
Sakulsuk Unarunotai
Giang Dong Vo
Nora Renee Wang
John Thomas Whitteck
Jeremy Todd Wilmot
Rebekah Christine Koch Wilson
Tianjiao Wu
Weichen Xu
Hangxun Xu
Ping Yin
Huaibin Zhang
Tyler A. Zimmerman

*Bronze Tablet recipient
Chancellor's Scholar
+ James Scholar recipient
& Phi Beta Kappa
= Double Major / Dual Degree
• Triple Major

Undergraduate Scholarships: Providing Opportunities

THIS SUMMER THE UNIVERSITY OF ILLINOIS KICKED OFF THE ACCESS ILLINOIS FUNDRAISING CAMPAIGN, AIMED AT CLOSING THE \$75 MILLION GAP IN UNMET NEED FOR STUDENTS ON CAMPUS. IN THE DEPARTMENT OF CHEMISTRY, STUDENT SUPPORT REMAINS A CRITICAL NEED, PARTICULARLY AS THE COST OF TUITION RISES, REQUIRING MORE STUDENTS TO SEEK AID TO MAINTAIN ENROLLMENT. THE DEPARTMENT OF CHEMISTRY IS COMMITTED TO ASSISTING AND REWARDING DESERVING STUDENTS.

In addition to supporting current students, scholarships also provide a critical recruitment tool. When competing with peer institutions for top students, providing aid packages can give an additional edge.

"With the help of the scholarship, I have the opportunity to pursue my degree in chemistry. The scholarship also keeps me motivated towards reaching my goal."

*Jirapa Jadecharoonvivat
Clarence and Adelaide Muhl Scholarship*

To attract the best and brightest students to the undergraduate program, the Department has begun working with the College of Liberal Arts and Sciences to offer departmental scholarships and aid to outstanding perspective students.

In early 2011, the Department underwent an internal analysis to better understand undergraduate needs and, as a result, the amount of scholarship support provided to worthy students has increased over 100% from 2010 to 2011. However, even with this increase in aid dispersal, only 7.5% of undergraduate chemistry majors received departmental aid during the fall 2011 semester.

The effect of scholarships on students is clear. Each year, we ask current and recent recipients to let us know the impact of their award; below and on the next page are some of those quotes.

"My award has given me confidence and motivation in pursuing my interests in Chemistry, and makes me feel like a "Sm Ar Ti."

*Aaron Gore
Radian Scholarship and National Starch & Chemical Scholarship*

Snyder Scholars

CREATED IN 1990, THE SNYDER SCHOLARS PROGRAM OFFERS A UNIQUE SUMMER RESEARCH OPPORTUNITY TO UNDERGRADUATE STUDENTS. SNYDER SCHOLARS RECEIVE FINANCIAL SUPPORT TO STUDY FOR 10 WEEKS WITH AN ILLINOIS FACULTY MEMBER IN ORGANIC CHEMISTRY, BECOMING AN ACTIVE PART OF A RESEARCH LABORATORY AS WELL AS GETTING THE EXPERIENCE OF GRADUATE SCHOOL IN A RESEARCH INSTITUTION. AS OF 2011, THE PROGRAM HAS SUPPORTED OVER 100 STUDENTS FROM ACROSS THE COUNTRY.

The program offers a number of unique opportunities and advantages, both for the students that participate and the Department itself. It provides excellent students at non-Ph.D. granting institutions an opportunity for summer research at a major university, which they may not have been exposed to otherwise. It acquaints these outstanding scholars with the Illinois Chemistry Department; thus they may be enticed to apply for graduate admission the following year. Finally, it helps the department to cultivate good relations with those schools that have traditionally sent excellent graduates for advanced work at Illinois.

Feedback from the experience has been very positive, both from the student and faculty's perspective. Professor Scott E. Denmark said, "The Snyder Scholar Program allows students from primarily undergraduate as well as research institutions to become immersed in a first class laboratory research experience. Although we certainly hope that the best of these students will apply here for graduate school, even if they do not choose to attend, we feel that the program is successful in encouraging outstanding students to pursue advanced degrees in chemistry. In addition, their experiences will likely also influence other undergraduates in their home institution to consider Illinois. Of the 15 students I have hosted as Snyder Scholars, three have become graduate students in my group and two others have come to Illinois to join other groups. I feel that is a very good return on investment."

Professor Wilfred van der Donk echoed Denmark's statement, "The Snyder program is valuable to both the participating students and the faculty in the organic division. Snyder Scholars experience what it is like to do research in a top tier department and can make a more informed decision whether graduate school will be a good choice for them. They also get to know the faculty during their stay and many

"The Giesecking scholarship has helped me get to where I want to be. Without it, I am not sure I would have been able to continue towards my goals and dreams. I am truly thankful."

*Ashley Kim
John Giesecking Scholarship*

"I really appreciate that I got chemistry department scholarship. I have always believed that hard work will be rewarded. I know it's a cliché, but it really is."

*Sunyoung Lim
Radian Scholarship and National Starch & Chemical Scholarship*

"I am thankful that the chemistry department has recognized my efforts and am looking forward to more discoveries as an undergraduate."

*Jim Tucker
Nieman Memorial Scholarship*



of my colleagues have written letters of recommendation for these students, providing them with a letter from an institution other than their alma mater. In turn, this personal connection often helps in recruiting top students to Illinois."

The fund was established by the students and friends of Harold R. Snyder. Snyder was an alum of the department and served as long time faculty member, Associate Head of the Chemistry Department, as well as Associate Dean of the Graduate School and Secretary of the Research Board. A classical organic chemist, Snyder worked for the National Defense Research Committee, investigated the synthesis of amino acids, mechanistic organic chemistry, and during World War

"I would like to graciously thank my donor, Dr. Gregory L. Schmidt for his generosity and the Department of Chemistry for the opportunity to receive this award. This award has really eased the burden of college costs and is helping keep me out of debt. I aim to continue my chemical education and go to Pharmacy School to become an industrial pharmacist, so having a minimal debt is important to me. I promise not disappoint or let the award go to waste."

*Karol Sokolowski
R. L. Schmidt Memorial Scholarship*

"Receiving the Giesecking Scholarship was a tremendous honor as it was a reward for taking initiative in the many chemistry related opportunities available here at the University of Illinois. The award has allowed me to invest more time and energy towards my professional pursuits and has given me further motivation to gain the experiences and skills needed to make an impact as I move forward in my career."

*Waseem Ahmad
John Giesecking Scholarship*

II produced a crucial path to chloroquine, used to treat malaria in the Pacific Theater.

The Snyder Summer Scholars Program is made possible as a result of the generosity of numerous donors to the Snyder Fund in the Department of Chemistry. Most of the donors are former students or postdocs of Harold Snyder. In recognition of the positive and encouraging influence that Harold Snyder had on them when they were studying, the donors to the fund were eager to have the fund promote activities that would encourage other students to pursue a career of research in chemistry. Thus, they created these summer scholarships for this purpose. Drs. Ernest Eliel and Richard Heckert spearheaded the campaign to establish the Snyder Fund and were aided by a large group of loyal Snyder Group graduates.

*Information on Harold Snyder and the Snyder Scholars Program
excerpted from the American Chemical Society and Professor Scott E. Denmark*

Undergraduate Teaching Technologies: Laboratories



IN THE SPRING / SUMMER 2011 ISSUE OF *Chemistry News*, DIRECTOR OF INSTRUCTIONAL TECHNOLOGIES DOUG MILLS OUTLINED THE MANY WAYS THE DEPARTMENT OF CHEMISTRY IS PURSUING STATE-OF-THE-ART TEACHING TECHNOLOGIES. ONE OF RECENT UPGRADES HE TOUCHED ON WAS IN THE UNDERGRADUATE ORGANIC LABORATORIES FOR COURSES CHEMISTRY 233 AND CHEMISTRY 237. Now with several months of experience, we can report on how these changes have transformed the way students learn in their organic chemistry lab classes.

Both labs feature cutting edge technology and displays that allow teaching assistants to be clearer in their instruction and to reach more effectively their students who may be more comfortable with a high-tech solution. Randy Wilkey, Physical Science Technical Assistant, said of the courses, "I would say that today's students are more comfortable with technology than asking questions from TA's. If a student is unsure of a step in their setup, it is easier for them to watch the instructional video than ask the TA and that frees up the TA to focus more on other aspects within the lab. So, technology not only benefits the students, it also benefits the TA's and the other students."

Each lab's technologies are customized for the space and the course needs. For instance, in the 233 lab, a large display allows the teaching assistant to pull up lab procedures for students to review, while students working in the 237 lab have access to smaller iPad displays, which are better for viewing lab videos in smaller groups. This customization was not only necessary to use the existing space in Noyes Laboratory, but to give teaching assistants the tools they need to effectively teach.

The Chemistry 237 lab features a large display in the middle of the room which offers teaching assistants leading the laboratory section an alternative to a traditional chalk or dry erase board. They are able to display presentations reinforcing lecture topics, detailing safety procedures, or outlining exam reviews by controlling a wireless, handheld device.

The main display is supplemented by three wall-mounted iPad displays located throughout the room which offer short review videos for students needing assistance with classroom concepts and laboratory procedures. These review videos help to save time for the student, who is able to be proactive in solving their own problems, as well as the teaching assistant, who can devote time to more substantive issues.

In the Chemistry 233 lab, a large monitor connected to an iPad display is at the head of the class, making it easy for students to easily review the slides on the screen and to focus on their work with less interruption and distraction.

Technology also increases productivity in the labs, allowing students to review information at their own pace as well as easily cued reminders about lab procedures. Randy Wilkey added, "The TA's are also able to use the wireless display to let the students know what they need to accomplish during that lab period. Breakages won't be down because of the technology, but students will learn more with the added technology."

Discussion of new lab technology equipment began in 2010 and, after months of researching equipment and setups as well filming videos, the instructional technologies staff was able to pilot it in the Chemistry 237 laboratory in the spring of 2011, with the instructional videos being piloted in the summer. ■

A Teaching Assistant's Perspective:

The new technology featured in the Chem 237 teaching labs has definitely had a noticeable impact on both the students and the TA's. I have noticed from experience that pre-lab lectures by the TA's (discussing issues like sample preparation and instrument use) often are difficult for students to remember hours later when it comes time to actually perform the discussed material. The iPad instructional videos are a wonderful aid to this dilemma, as the students can get a quick, visual reminder without having to interrupt a TA. Another advantage is that a group of students can all watch the video together, and various groups or individuals can watch at different times. This saves the TA the hassle of having to explain the same thing over and over again. It also gives the students a semi-interactive experience, where they can fast-forward, rewind, and pause certain sections of the video in order to help them fully understand the process at their own pace (something that is less feasible with written or spoken instructions).

The wireless display has also proven to be helpful in the teaching lab. It is a nice way for TA's to present material to the students in a clearer manner than hand-written notes and reactions on a white board. Also, whatever is presented on the screen can be left up during the entirety of the lab period as a visual reminder to the students (things like goals, helpful tips, etc).

- Greg Snapper, Head Teaching Assistant



New Faculty: Prashant Jain

Welcome! What attracted you to the University of Illinois Department of Chemistry?

As an undergraduate engineering student in Bombay, the international renown of UIUC (that's what we would call it) made it one of my dream schools. I am excited to finally be here, taking the trajectory from Georgia Tech, Harvard, and then Berkeley. The Chemistry department at Illinois has a long-standing tradition of excellence. When I looked into the history of the department, I realized that some of the best-known names in chemistry have passed through this department. I was particularly impressed by how many renowned chemists launched their careers as junior faculty here.

Illinois is probably the only Chemistry department that excels in every one of the sub-fields – organic, inorganic, physical, materials, and analytical chemistry, and chemical biology. This was quite important to me because my work falls in four of these sub-disciplines. There is nothing more attractive than having access to the top graduate students and being able to interact with colleagues who are respective leaders in their fields. I arrived at Illinois confident that my work on novel nanostructures and nanoscale phenomena would thrive in the presence of the MRL and leading experimental condensed matter physics and materials science departments in the country.

On my pre-hire visits, I experienced both the intensity and collegiality of the academic community, without any compromise of one for the other.

How did you decide you wanted to study chemistry?

I was always interested in the inner workings of Nature at the microscopic level. The behavior of atoms, molecules, and electrons fascinated me. The idea that it is possible to watch, understand, and even control the behavior of these elementary constituents of Nature fascinated me even more. Chemistry was the ideal path for me to venture into this exciting world. Especially, present-day chemistry, which has come to be very interdisciplinary, provided me with the concepts and tools – from the art of making new materials to powerful electron microscopes that can resolve atomic-level structure – needed for satisfying my curiosities.

Are there any chemists you are particularly inspired by?

As a student, a number of historical chemists and physicists (Feynman, Bohr, and Lewis) inspired me. I have also been inspired by my own graduate and postdoctoral advisers, themselves very accomplished scientists. During my postdoctoral years at Berkeley, I came to know Gabor Somorjai, often known as the father of surface chemistry. Prof. Somorjai once said that when it comes to science, it is important to have a long-life dream and be ready to develop new tools and ideas to achieve that dream. One's research should at the very least result in an "order-of-magnitude advance in the field." I find his message particularly inspiring.

You recently completed a Miller Fellowship at University of California-Berkeley. So far, how does being a Miller Fellow compare to being a professor?

It is a very different experience. There is a lot to be said about the excitement and power of being able to build one's own lab, choose and mentor one's own students, and define one's own scientific vision as a Professor. I feel like a scientist, a coach, and a manager rolled into one. Besides, I get to fulfill my passion

for teaching and I love every minute of it. (Hope the students taking my class feel the same!)

As a postdoctoral researcher at Berkeley, I focused on learning in two years as much as I could about semiconductor nanostructures and also making my own contribution. I involved myself in several collaborations, scientific discussions, and also graduate mentoring. However, a postdoctoral position by its very nature is not as multifaceted as that of a junior faculty member starting his/her own lab. Having said that, I was extremely lucky to have a special position like the Miller Fellowship. The fellowship gave me the freedom to test out my vision under the advice of Paul Alivisatos, a great mentor. The Miller Institute met regularly for luncheons and seminars. I enjoyed being in the midst of an intellectually rich and diverse community with people like Gabor Somorjai, David Chandler, and Saul Perlmutter (this year's Physics Laureate).

What are your research interests? What drew you to your specific area of research?

In my research, I try to use light to interface with materials at the molecular level. I have always been interested in "seeing" molecules, atoms, and electrons do the dance of chemistry. This has now become possible as a result of recent advances fostered by nanotechnology.

One of my interests is to image with atomic-level precision the chemistry going on a reactive surface, such as the surface of a chemical catalyst or a photocatalyst. Such surfaces are complex and heterogeneous. The hope is that using our high-resolution imaging technique, we shall be able to identify reaction hot-spots on the surface that are responsible for most of the activity of the catalyst. The knowledge gained will be useful for engineering surfaces with a high density of such active sites, making possible super-efficient catalysts.

I am also employing the electromagnetic field of light spatially engineered using metallic nanostructures to induce novel optical phenomena in molecules and materials. The hope is to be able to enhance light-matter interactions that are conventionally forbidden, spectroscopically detect single molecules, and manipulate dynamics of charge carrier absorption and relaxation in artificial photosynthetic and photovoltaic systems.

Anything else you would like to add?

I would like to give a shout out to our Chemistry staff. They have been phenomenally helpful. Without them starting up would have been so much more difficult. ■

The Department Also Welcomes...

Dr. Tina Huang, Instructor



Tina Huang joined the Department of Chemistry in August 2011. She received her B.S. chemistry from Bethel College in North Newton, Kansas in 1990. She went on to complete her Ph.D. in Analytical Chemistry at the University of Kansas with Prof. Theodore Kuwana after spending 15 months in Prof. Frieder Scheller's laboratory as a DAAD fellow at the University of Potsdam, Germany. After graduate study, she worked at the National Institute of Standards and Technology for a few years as a postdoc and research chemist.

Huang began her teaching career at Lafayette College (Easton, PA) in 2003. For the past eight years, her primary teaching has been in general chemistry, analytical chemistry and instrumental analysis. She has also been conducting research with undergraduates in the area of biosensors and surface characterization of modified electrodes.

Dr. Kelly Marville, Instructor



Kelly Marville joined the general chemistry section in January 2011. She received her doctorate degree in chemistry in 2002 from the University of the West Indies, Cave Hill Campus in Barbados. Her Ph.D. degree involved the successful extraction, purification and structural

elucidation of novel secondary metabolites from gorgonians of the genus *Eunicea*. The gorgonian specimens collected and studied were part of the coral reef system of the island Barbados and a chemotaxonomical study of this genus was performed during the course of the doctorate.

Says Marville, "I love teaching chemistry and see education as the catalyst that enables anyone to achieve their goals. I have successfully taught students having very different academic or vocational goals; self-motivation, levels of academic preparation; varying ages, academic abilities, cultural backgrounds, socio-economic status as well as students at every level of their academic development having taught high school, college and university chemistry courses since 1999."

Beak & Zimmerman: Teaching and Learning from Two Perspectives

STUDENTS IN CHEMISTRY 236, FUNDAMENTAL ORGANIC CHEMISTRY, HAVE HAD THE UNIQUE EXPERIENCE OF LEARNING THROUGH CO-TEACHING. THE COURSE, TAUGHT BY PROFESSORS PETER BEAK AND STEVEN ZIMMERMAN, OFFER STUDENTS AN INTRODUCTION TO ORGANIC CHEMISTRY. *Chemistry News* ASKED PROFESSOR BEAK AND ZIMMERMAN ABOUT THEIR EXPERIENCES IN THE COURSE AND IN THE DEPARTMENT.

Can you tell us a little about the course you are teaching together?

Beak: Chemistry 236 provides the fundamental information of organic chemistry. The course is taken by sophomores and juniors who are generally preparing for careers in the traditional fields of the physical and biological sciences, engineering and medicine as well as in the more recent fields of chemical biology and materials science.

Zimmerman: Many of our alumni will remember Chem 236 by its old number, Chem 136. It is the first semester organic lecture course for the chemistry majors, a required course for the Specialized Curriculum in Chemistry. The enrollment is about 200 students. The class is also required by a number of other curricula, most notably, Chemical Engineering so the majority of the students are actually chemical engineers. There are also a significant number of biology students and some of the brighter and more motivated premedical students. Of course, there are always a few other interesting students, for example this semester we have an Italian, Spanish, and Portuguese Major in the class.

How does co-teaching compare to the courses you've taught as a solo instructor?

Beak: Steve is always one of the highest ranked instructors so I am challenged to do well. I gain a better perspective by consulting with Steve on course content and discussing problems which come up in the semester.

Zimmerman: Although it is fun taking students through a whole term, I simply could not find enough time to teach for a full semester while serving as Department Head. So having Peter Beak agree to co-teach was wonderful. He does the first half and I take the second. It is challenging because Peter is an outstanding lecturer and the students get used to his style. But overall, I think we are similar enough that the students adjust quite well.

Professor Zimmerman, as someone who runs a research group that consists of mostly graduate students, how does teaching an undergraduate course compare?

Zimmerman: Actually, I am very committed to providing undergraduate research experiences for our students. I currently have eight undergraduate researchers in my group and prior to late last month when five new graduate students joined my group, the undergraduates slightly outnumbered the grad students! But to answer your question, the experiences are really very different. The graduate student experience is much more of a close apprenticeship where you watch them grow into independent scientists over an extended period. That is very rewarding experience. The undergraduates are usually wide-eyed and just so appreciative for any personal attention they get from faculty.

Professor Beak, you retired from the department after 45 years and aren't required to teach anymore. Why do you choose to do it?

Beak: I am teaching because I missed the pleasure of teaching the bright and motivated students we have in chemistry.

What are your favorite aspect(s) of teaching the course so far?

Beak: Teaching students a topic which will be applicable in their careers is important work. There is pleasure in seeing them become competent and independent as they gain understanding of the principles of structure and reactions of organic compounds.

Zimmerman: Chem 236 is one of my favorite courses to teach mainly because in a number of students I see a light bulb turn on. They discover their love of organic chemistry. Seeing someone find that something that they are passionate about and want to spend a lifetime pursuing is a very special and gratifying experience.

What have you learned from teaching the course (and other courses)?

Beak: We have followed our colleague Jeff Moore in making short topical videos which the students can view before lecture. This has the advantages of students being prepared for the lecture, of allowing us time to give problems during the lecture which actively engage



A Student's Perspective: Ellen Briggs

HAVING TWO PROFESSORS TEACH THE COURSE WAS BENEFICIAL IN THE SENSE THAT WE LEARNED THE MATERIAL FROM DIFFERENT PERSPECTIVES. WE ALL HAD BECOME COMFORTABLE WITH THE TEACHING STYLE OF PROF. BEAK AND THEN IT WAS AS IF THE SEMESTER STARTED AGAIN AND WE HAD TO ADJUST TO A DIFFERENT TEACHING STYLE PROVIDED BY PROF. ZIMMERMAN. IN THE END I ENJOYED THE APPROACH OF EACH PROFESSOR AND I FEEL LIKE I LEARNED A LOT IN THE CLASS.

Ellen Briggs (Class of 2012)

the students and of being useful to them in reviewing for exams. The general lesson is instruction needs to respond when students develop different styles of learning.

Zimmerman: Although I have always really enjoyed teaching the undergraduate courses and take it quite seriously, what has really struck me in the past couple of years is how much more responsible I feel about doing the absolutely best job possible. The cost of undergraduate tuition has skyrocketed. So going into the classroom, I feel a bit like Bruce Springsteen, wanting to give the audience a 120%, a show they won't forget. One thing I learned from Peter Beak was to take the top ten students on the hour exam out for coffee or lunch.

If you were to give advice to your students at the end of the semester, what would it be?

Beak: Specifically, to be alert for applications of organic chemistry in your own field. Generally, to use an approach for multi-step problem solving of restating the problem, defining the steps needed for a solution, applying those steps by recall and extension of material and evaluation of your solution.

Zimmerman: Switch your major to Chemistry! It is a great career choice. ■





Torn Between Two Worlds The Life of Carlos Montezuma

CARLOS MONTEZUMA WOULD NEVER FORGET THAT TERRIBLE NIGHT OCTOBER 1871 WHEN HIS LIFE WAS FOREVER ALTERED. AROUND 3 O’CLOCK IN THE MORNING, A BAND OF PIMA INDIANS DESCENDED UPON A SLEEPING YAVAPAI CAMP PITCHED NEAR THE SUMMIT OF IRON MOUNTAIN IN EASTERN ARIZONA TERRITORY. The Pima warriors slaughtered dozens of Yavapai Indians and captured 13 children, including Wassaja, a boy about 5 years of age. Wassaja didn’t know it then, but the course of his life had been radically changed. Renamed Carlos Montezuma by the man who bought his freedom, the youth would go East, graduate in 1884 from the Illinois Industrial University (precursor to the University of Illinois), become a Chicago doctor and gain a name as a champion of American Indian rights. Finally, unable to resist the call of his old existence, he would return to the home of his people, his life ending where it had begun.

Following his capture, young Wassaja (pronounced Wah-SAH-jah) was hauled on horseback across the desert to Adamsville, a dusty outpost about 35 miles southwest of Iron Mountain. Here he encountered the first white man he had ever seen – Carlo Gentile, an Italian-born photographer. “I did not think [his skin] was a pretty color, and was afraid of him,” Montezuma later recalled. He was wary of Gentile in part because of the photographer’s camera, which, with its protruding lens and heavy wooden tripod, looked like a cannon to the boy. Such fears proved to be unfounded. Instead of harming him, Gentile purchased Wassaja from his Pima captors, paying 30 silver dollars.

After changing Wassaja’s name, the photographer crisscrossed the country with his new charge. Late in 1872, the pair settled in Chicago, a city still recovering from the great fire of the year before. William “Buffalo Bill” Cody happened to be in town, starring in his first stage production, “Red Deviltry As It Is” and somehow Gentile made the acquaintance of the soon-to-be legendary showman. Before long, Carlos – billed as the “Apache son of Cochise” – was

performing in Cody’s play. Throughout much of his life, Montezuma would mistakenly believe that he was indeed an Apache.

Gentile’s association with Cody’s show ended in 1873, and Carlos began going to school. By 1875, the youth had made great strides in his studies and could speak English fluently. “Monty is rather superior in aptness and intelligence to boys of his age, and is, apparently, thoroughly civilized,” a Chicago Tribune reporter noted in a profile of Gentile’s “protégé” from that year.

A small article adjacent to the Tribune feature on Carlos reported that U.S. President Grant had taken “decisive steps” to open up the Black Hills to white settlement. This story, buried in the back pages of the newspaper, would have momentous consequences. Grant’s decision sparked strong opposition from the Sioux Indians, who considered the Black Hills to be sacred land. In a little more than a year, Gen. George Armstrong Custer and more than 200 members of his 7th Cavalry would fall at the hands of the Sioux and Northern Cheyenne near the banks of the Little Bighorn River; not long after that, the last of the Sioux would be confined to reservations. The Yavapai, Montezuma’s own people, were removed to a reservation in 1875.

During these eventful years, Carlos attended schools in Galesburg and Brooklyn, N.Y. Hoping to provide a more stable home life for the youth, with whom he was now living in Boston, Gentile entrusted Carlos to the care of George Ingalls of the American Baptist Home Mission Society, headquartered in New York City. In a letter, Ingalls outlined his ambitions for the young boy; “I want Montezuma to become, first, a Christian and then to be a Physician and with a good education and love of Christ in his heart, to go back to his people and labor for their good as a Christian or Missionary physician.”

After spending two years in the preparatory school of the Illinois Industrial University, Montezuma enrolled in the University itself. The school (renamed the University of Illinois in 1884) was a far cry from the “Big U” of the present day, having some 350 students,

just 30 faculty members and roughly half a dozen building in 1882. The students and the administration were locked at the time in a bitter battle pitting “the ideal of discipline” against “the ideal of freedom,” in University historian Winton Solberg’s words. Winning major victories in the struggle, the students would eventually force the ouster of two successive regents – John M. Gregory in 1880 and Selim Peabody in 1891.

Montezuma gained a measure of acceptance in Urbana. Joining the Adelpic Literary Society, Monte (as he was nicknamed) overcame an initial “tendency to embarrassment” and soon won acclaim for his oratorical prowess, for his “master of a tongue not by any means a mother one to him,” according to literary society’s records. In May 1883 he delivered a speech on “Indian’s Bravery,” one of the high points of his college days. “The most vivid, pathetic, and beautiful picture ever painted in our Hall, was ‘Monto’s’ [sic] in his description of the Indians in America before the arrival of the white man,” the student newspaper gushed. Capping his University career, Monte was elected president of the class of 1884. The University of Illinois seems to have occupied a special place in his heart. In later years, even when his finances were shaky, the first American Indian graduate of the University made sure to pay his membership dues to the Chicago Illini Club and the University of Illinois Alumni Association.

Shortly after graduating at age 18 from the Illinois Industrial University in June 1884 with a bachelor’s degree in chemistry, Montezuma entered the Chicago Medical College, precursor to the Northwestern University School of Medicine. While in medical school, he came under the influence of Brig. Gen. Richard Henry Pratt, who advocated the total assimilation of American Indians into white society and opened the Carlisle Indian Industrial School in Pennsylvania. Pratt had no use for American Indian culture and traditions. He strictly forbade the use of native languages in the school, considering the English tongue to be a strong “civilizing” force.

For much of his life, Montezuma would be an ardent supporter of Pratt and his policies. As early as 1888, Montezuma delivered an address, “The Indian of Tomorrow,” that dramatically demonstrated his pro-Pratt sentiments. “The Indian of tomorrow,” Montezuma declared in the speech, “will be, not an unfortunate savage, clothed in the accouterments of his former benighted condition, but the Indian redeemed, transformed, and raised to the plane of manhood.”

Montezuma received his medical degree in March 1889. According to his biographer, Leon Speroff, Montezuma barely missed out on being the first American Indian physician in the United States. That honor belongs to Susan La Flesche, who graduated from medical school just two weeks before Montezuma.

Following a brief attempt to set up a private medical practice in Chicago, the young doctor decided to work for the federal government’s Bureau of Indian Affairs. During a four-year period, he worked on reservations in North Dakota, Nevada and Washington.

IN LATER YEARS, EVEN WHEN HIS FINANCES WERE SHAKY, THE FIRST AMERICAN INDIAN GRADUATE OF THE UNIVERSITY MADE SURE TO PAY HIS MEMBERSHIP DUES TO THE CHICAGO ILLINI CLUB AND ILLINOIS ALUMNI ASSOCIATION.

The experience was disheartening and strengthened Montezuma’s belief that reservations should be abolished. He would later condemn the reservation in unsparing terms as a “demoralizing prison, a barrier to enlightenment, a promoter of idleness, gamblers, paupers, and ruin.” Perhaps most discouraging to Montezuma, many of the reservation Indians never accepted him, viewing him instead as a white man. Montezuma eventually expressed his frustrations in a letter. “I dislike this lonely business,” he wrote. “It may look nice to others, but it is hard on me who likes civilization.”

In 1893 Montezuma escaped from reservation life and returned to “civilization,” taking a job as a physician at Pratt’s Carlisle Indian Industrial School. His enormous ambitions unsatisfied at Carlisle, Montezuma soon resolved to return to Chicago and restart his private medical practice. He was a man on a mission. “I resigned from the Indian Service to prove that I, a lone Indian born in savagery, could make my way by myself, unaided, in the world alongside white men,” Montezuma explained. “And if I could, so could my people.”

Realizing his aims to a degree, he managed to establish a moderately successful private practice in Chicago. For much of Montezuma’s medical career, he operated out of two offices = one on the South Side and the other in the city’s bustling heart. Though never wealthy, Montezuma lived comfortable until 1914, when his finances began to slip. It has been suggested that Montezuma could have become rich had he patented a special salve of his own creation. A similar mixture of Vaseline and menthol boasts a familiar trade name: Vicks VapoRub.

Montezuma used the Society [of American Indians, an organization he helped to found in 1911, which was dedicated to the advancement of the American Indian] as a platform to voice his long-held beliefs. Speaking at the organization’s 1912 conference, he advocated “the entire wiping out of the reservation system” as “the only true solution of the so-called ‘Indian problem.’” A few years later, in the same forum, he delivered his most famous speech – “Let My People Go” – urging the immediate abolition of the Bureau of Indian Affairs. This particular cause would consume the remaining years of Montezuma’s life. In 1916, he began publishing *Wassaja*, a monthly newsletter to which he gave his boyhood name. The publication was devoted to

the elimination of the bureau. Critics considered Montezuma’s stance to be unrealistic and radical, especially since he failed to offer any alternatives.

Yet, despite Montezuma’s professed hostility toward reservations and American Indian culture, he increasingly began to reconnect with his Indian roots. Starting in 1901, Montezuma made regular pilgrimages to Arizona, retracing the route of his Pima Indian captors. The experiences reinvigorated him. During Montezuma’s first return trip to Arizona, he confessed in a letter to Pratt, “I am having the real dream of my life.”

By 1920, he had decided to take the dramatic step of enrolling in a tribe. Still believing that he was an Apache, Montezuma petitioned the hated Bureau of Indian Affairs to make him a member of the San Carlos Reservation, the homeland of the Apache. “I belong there,” he told his lawyer in explanation. Montezuma’s application, though, was rejected after an investigation determined that he was in fact not an Apache. The news stunned him: “If I am not an Apache, there is [sic] no such Indians as Apache Indians,” he asserted. Montezuma’s sense of self had been built on a perceived identity as being a part of the tribe, popularly known as fierce and indomitable warriors. The Yavapai, on the other hand, did not possess a well-defined public image.

Montezuma ultimately accepted the fact that he was a Yavapai (also known as the Mojave Apache). Terminally ill with tuberculosis, he traveled late in 1922 to the Yavapai’s Fort McDowell Reservation, hoping to die among his people. Montezuma had spent more than a decade of his life fighting for the land and water rights of the Yavapai and, as a result, was welcomed by them with open arms.

Montezuma died on Jan. 31, 1923. His tombstone in the Fort McDowell military cemetery includes both of his names (“Wassaja” and “Carlos Montezuma M.D.”) and the description “Mohave Apache Indian.”

After 52 years, Wassaja had finally come home. ■



Longer version originally published in the September/October 2006 issue of Illinois Alumni. Author John Franch is a freelance writer and the author of “Robber Baron: The Life of Charles Tyson Yerkes” (University of Illinois Press, 2006).



Remembering David Yarrow Curtin

PROFESSOR OF CHEMISTRY EMERITUS
UNIVERSITY OF ILLINOIS
AUG. 22, 1920- JULY 31, 2011

David Yarrow Curtin was born in Philadelphia, Pennsylvania on August 22, 1920 the eldest of three sons of Margaretta Cope Curtin and Ellsworth Ferris Curtin. As both his parents had done, he attended Swarthmore College and received his A.B. degree in 1943. He carried out his graduate work under Charles C. Price at the University of Illinois where he obtained his Ph.D. degree in 1945.

His graduate work was focused on the synthesis and chemistry of heterocyclic compounds, including pyrimidines, quinazolines, and benzimidazoles. Some of this work was with Nelson J. Leonard and related to the ongoing antimalarial research program (with C. C. Price and H. R. Snyder) to help with the synthesis and production of chloroquine in time for its use in the Pacific. This early period in Urbana was also marked by a lifelong interest in music. Indeed, as a graduate student frequently he could be heard playing the flute in the organic laboratory on the second floor of Noyes on Sunday mornings. Following his graduation, he carried out a year of postdoctoral work at Harvard University with Louis Fieser.

In 1946 he joined the Columbia University faculty as an instructor, where he remained for the next five years. Near the end of his stay at Columbia he formulated what ultimately became known as the Curtin-Hammett Principle, an extremely important principle that could be applied to a broad set of chemical reactions. Because he believed that Louis P. Hammett played a key role in his work, he generously gave credit to Hammett who, in turn, noted that "Because Curtin is very generous in attributing credit, this is sometimes referred to as the Curtin-Hammett Principle [rather than] the Curtin

CURTIN WAS KNOWN AS A PIONEER WHOSE WORK WAS OFTEN WELL AHEAD OF ITS TIME.

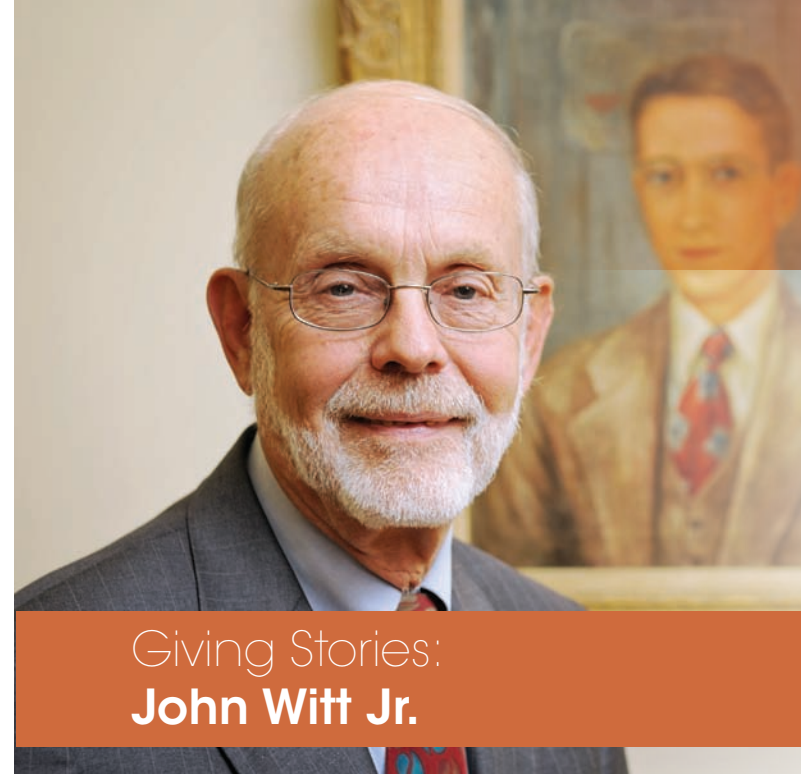
Principle." The principle continues to be learned by scores of organic graduate students each year and is regularly used by researchers when analyzing certain types of reaction schemes.

In 1951 Curtin returned to join the University of Illinois faculty where he remained for the duration of his career. His hiring at Illinois in 1951 was prompted by the untimely death of Eliot Alexander in a plane crash in that same year. At Illinois his research continued in the area of physical organic chemistry. This work involved the mechanistic study of a wide range of chemical reactions including additions, eliminations, and rearrangements. Stereochemistry was often employed as a tool to understand the details of the mechanism.

Curtin was known as a pioneer whose work was often well ahead of its time. For example, in the mid 1960's he turned his attention to solid-state organic chemistry and the correlation of chemical reactivity in the solid state with crystal structure. In particular, he sought out examples where the reaction involved color change, allowing the direction of the process to be monitored and explained in terms of the molecular packing. He continued working in this area until his retirement in 1988. For the next 18 years he was a regular fixture in the Department, attending daily coffees and working in his office. His colleagues knew him as a true gentleman. Despite his many accomplishments, he was unpretentious and treated others with the utmost kindness and respect. In 2006 Dave and Connie Curtin moved to Florida where he remained until his death.

Curtin published close to 200 journal articles, supervised 72 Ph.D. dissertations at Illinois, and together with his colleagues, including Reynold Fuson and Ralph Shriner, was a coauthor of the seventh edition of the very popular textbook entitled "The Systematic Identification of Organic Compounds." He served as an editor of Organic Reactions for Volumes 8-13 (1954-1963). Curtin was elected to the National Academy of Science in 1964.

Curtin married Constance Belwyn O'Hara on July 1, 1950. He and Connie were married for more than six decades. He is survived by his wife, one brother, Richard, a son, David and two daughters, Susan and Jane. ■



Giving Stories: John Witt Jr.

Witt stands in front of a portrait of his mentor, Harold Snyder, in the SCS Library, Noyes Laboratory.

FELLOWSHIPS HAVE LONG BEEN AN IMPORTANT AID TO GRADUATE STUDENTS IN THE DEPARTMENT. IN THE PAST COUPLE OF YEARS, THE DEPARTMENT OF CHEMISTRY HAS BEEN FORTUNATE TO HAVE MOST OF ITS STUDENTS SUPPORTED BY A PARTIAL OR FULL FELLOWSHIP. However, with a declining teaching assistant budget and uncertain federal support, the need grows each year. Dr. John Witt Jr. (Ph.D., '61) recognized this need and created the *John and Margaret Witt Fellowship Fund* in 2006. In the five years since its inception, the Witt Fellowship has supported ten students.

It was his endowment support he received at Illinois while working with Professor Harold Snyder that pushed Dr. Witt to create his endowment. He commented on his decision to direct his support to the department in the form of fellowships, "My educational experiences were greatly enhanced by the availability of scholarships and fellowships at both the undergraduate and graduate levels. I feel it is important and have a need to provide similar assistance to the current and future students in the department to have the same availability of those resources."

His endowment provides more than just financial support to graduate students; a named fellowship recognizes a student's potential and can foster creativity in research and develop help them to develop as scientists. Witt Fellow Kaitlyn Gray said of the fellowship, "Dr. and Mrs. Witt's generosity allowed me to focus my efforts on developing my research. It is contributions like theirs that allows for the advancement of science."

Although many things have changed since Witt's time working under the supervision of Harold Snyder, he stays current with visits to campus in which he has the opportunity to meet with students who receive his fellowship. Those fellows consistently comment on

"MY EDUCATIONAL EXPERIENCES WERE GREATLY ENHANCED BY THE AVAILABILITY OF SCHOLARSHIPS AND FELLOWSHIPS AT BOTH THE UNDERGRADUATE AND GRADUATE LEVELS. I FEEL IT IS IMPORTANT AND HAVE A NEED TO PROVIDE SIMILAR ASSISTANCE TO THE CURRENT AND FUTURE STUDENTS IN THE DEPARTMENT TO HAVE THE SAME AVAILABILITY OF THOSE RESOURCES."

how meaningful the opportunity to meet the person supporting their education is. Brad Zeiger said of the opportunity, "I had the pleasure of meeting Dr. Witt and the honor of receiving his fellowship. Dr. Witt was personable and engaging, and his very generous fellowship was a tremendous [benefit in] an otherwise very stressful year."

Witt chose to support graduate students specifically because, "The quality of excellent students is critical to maintaining the high reputation and rating of the chemistry department. There are a number of reasons for our current reputation and it needs to be maintained. Excellence in our students is one of those reasons." He described his own time on campus as "...intellectually stimulating and challenging. The faculty, and my major professor, were all interested in my development and success, in addition to producing research results."

John Witt Jr. was born in Muskegon, Michigan on October 5, 1935. He received a B.S. degree from Michigan State University and a PhD from the University of Illinois in 1961 with Harold R. Snyder. Additionally, Witt holds an MBA from the University of Chicago. He enjoyed a successful career at G.D. Searle and NutraSweet Companies, retiring as Vice President for Research and Development and later serving as a consultant after starting his own company, Witt Science Consulting, Inc. In addition, John served several terms as a member and President of the Glenview School Board and was a guest lecturer in the Department of Chemistry at the University of Illinois. His wife Margaret, also an avid departmental supporter, received her B.S. in Biology in 1960 from Allegheny College in Pennsylvania and is an active community volunteer. ■

Share Our Vision

Vision 2020 Update

THE VISION 2020 FUND WAS CREATED IN 2008 TO HELP ENSURE THAT THE DEPARTMENT OF CHEMISTRY'S TRADITION OF EXCELLENCE CONTINUES FOR GENERATIONS TO COME. By creating an endowed fund, each gift, no matter the size, will have a lasting impact on the department's future. Vision 2020 replaces the Partnership for Chemistry Fund as well as the Chemistry Development Annual Fund, both of which provided current use funds, but were not endowed. Typically annual gifts provided about \$200k in support of a broad range of critical needs.

Once the Vision 2020 Fund reaches a level of about \$5M, the endowment income will equal that of the annual giving in the department. That means that growing Vision rapidly in these early years is essential. Then upon reaching this "break-even point," each addition gift will provide a new level of endowed support for the department's most pressing needs.

What We're Doing

Vision 2020 will support a variety of programs and initiatives within the Department of Chemistry with a focus on attracting and retaining the very best students and faculty. For example, beginning during the 2012-13 academic year, the Larry Faulkner Professorship will be supported by the fund. The Faulkner Professorship was made possible by a major gift given by Peixin He and Xiaoming Chen in honor of their advisor and former Illinois faculty, Dr. Larry Faulkner. Look for more information on the Faulkner Professorship in an upcoming issue of *Chemistry News*.

As Vision 2020 grows it will also help to support a variety of other programs within the department, including critical support of undergraduates in need, general undergraduate scholarships, support for the orientation and professional development of graduate students; providing support for the annual convocation ceremony and reception which brings together students of all levels to celebrate their achievements.

Giving to Vision 2020

A major gift to the Vision 2020 fund provides you, the donor, the opportunity to always be impacting the Department of Chemistry in the most critical areas of need, whether it be recruiting a top faculty member or supporting a student who might otherwise not have the

opportunity. Major gifts to the Vision 2020 Fund provide individualized stewardship and recognition options to the donor, along with general recognition options (see the Recognition section below). The only criterion for gift under the Vision 2020 'umbrella' is that the gift be unrestricted to meet contemporary challenges. Who would have anticipated just a few years ago that undergraduate tuition would rise so rapidly?

With a lead gift in 2009 by Mark Pytosh (B.S., '86), Vision 2020 has attracted donors looking to leave a lasting legacy by giving the Department the most flexibility possible. Vision 2020 offers the flexibility of creating individualized endowments whose accounting falls under a Vision 2020 'umbrella'.

Big or small, every gift makes an impact and Vision 2020 is supported in large part by annual fund donors. By directing your annual fund gift to Vision 2020 your gift has a lasting impact on the Department and its' students and faculty. Gifts of all sizes help to continue the Department's nationally recognized programs and provide vital support in the areas of greatest need.

Giving to Vision 2020 is easy—simply fill out and return the postage-paid enclosure inside this issue of *Chemistry News* or visit chemistry.illinois.edu/giving. Have questions? Do not hesitate to contact us at (217) 333-5071 or chemweb@scs.uiuc.edu.

Recognition

In January 2012-- the fourth anniversary of the creation of the fund-- the Vision 2020 Donor Recognition Project will begin with donors to the fund who receive additional recognition for their generosity when giving at or above the \$10,000 and \$20,000 levels. For an annual gift to Vision 2020 of \$10,000 or a pledge of \$2,000 per year for five years, an engraved brass nameplate will be permanently installed on a seat in G. L. Clark Hall (formerly 100 Noyes Laboratory). For cumulative gifts above the \$20,000 level over a five-year period, the donor will be further recognized on a permanent plaque in the main hallway of Noyes Laboratory.

In Memoriam

Harriet A. Harlin

Longtime supporter of the Department of Chemistry Harriet Harlin passed away October 30, 2010.

Born in 1924, Harlin attended the University of Illinois and received her bachelor's degree in Home Economics with a concentration in hospital dietetics. After graduation she worked as a chemical analyst in the food and chemical industries, but teaching was her true calling. She retired after teaching chemistry in 1988, after 34 years serving the students of the Chicago public school system.

A longtime supporter of educational opportunity, Harlin left her legacy in 1997 with a major gift to the Department. As someone who worked for years in the public school system, Harlin recognized the need to help students achieve their educational goals and realized that by doing so she could facilitate the Department's goal of recruiting and retaining the best students and faculty. Toward that end, she asked that her gift be designated for undergraduate support or a professorship.

A future issue of *Chemistry News* will detail the impact of Harlin's generous gift.

Clyde E. Arntzen (B.S. '38) died Thursday, July 7, 2011. Dr. Arntzen was born in Crescent City, IL. He earned a B.S. in Chemistry from the University of Illinois and a Ph.D. in Organic Chemistry from Iowa State University of Science and Technology. He worked for Westinghouse near Pittsburgh, PA for 36 years. At Westinghouse he held several management positions including Director of Westinghouse Materials Engineering and Manager of one of the divisions of the Westinghouse Research and Development Center. For twenty years he was very active in Cub Scouts and Boy Scouts and received the District Award of Merit. His church activities in Pennsylvania and in the First Presbyterian Church of Tequesta, FL, included those of Elder, Scouting Coordinator, and Foundation director. For 67 years he was an active amateur radio operator; his Florida call letters were KD4KN.

Peter Arvedson (B.S. '59) died July 14, 2011, at the age of 74. Reverend Arvedson received BS in Chemistry at University of Illinois and PhD in Inorganic Chemistry

from UW-Madison; Master of Divinity from General Theological Seminary, New York City. He served as Episcopal priest in parishes in Effingham, IL, Okinawa, Japan, Madison, WI and Buffalo, NY, where he retired from St. Andrew's Church in 2002. He was active in the Society for Ordained Scientists. Since he and his wife Joan moved to Elm Grove, he continued teaching and ministering in many ways at Trinity Church, Wauwatosa. He was a docent, researcher, and active supporter for restoration projects at the Pabst Mansion.

Ed Dunlop (Ph.D. '42) passed away April 26th at age 95. Ed was born in Center, MO and graduated from Westminster College in Fulton, MO and the University of Illinois where he received his Ph.D. He retired as Research Manager of the Physical and Analytical Division of Central Research and Development after almost 39 years at E. I. DuPont. During WW II, he was assigned to the Manhattan Project at Hanford, Washington. Dr. Dunlop was a member of the American Chemical Society (ACS), the Society for Applied

Lenore Hey Matheson

Lenore Hey Matheson, a generous supporter of the Department who in 2003 honored her late husband with the *Arthur R. Matheson Award*, passed away June 26, 2011.

The Arthur R. Matheson Award provides critical aid to deserving undergraduate students with junior or senior standing. The award honors Matheson's late husband, Dr. Arthur R. Matheson (1915-1993), who was a leading nuclear consultant to the private and public sectors both in the US and abroad. A 1948 Ph.D. graduate of the Department of Chemistry, he served on the U.S. Atomic Energy Commission and as chairman of the Atomic Industrial Forum Committee.

A University of Illinois alum (AB '40, MS '48), Lenore Matheson taught in Georgia, Illinois, Washington, and California before retirement. She was a member of Kappa Delta sorority, the American Association of University Women, and Delta Kappa Gamma Society International. She is survived by four children, a sister, eight grandchildren, and six great-grandchildren.

Spectroscopy (SAS), the Optical Society of America (OSA), and has been a member of the American Society for Testing Materials (ASTM), The American Institute of Chemists and the Chemical Society. He was national chairman of the Analytical Chemistry Division of the ACS, as well as chairman of the Delaware Section of ACS, and the Delaware Valley section of SAS. He was one of the founders of the Federation of Analytical Chemistry and Spectroscopy Societies (FACSS). He also served on advisory panels for the National Bureau of Standards, Oak Ridge National Laboratory and the Winterthur Museum. He was a 50-year member of the DuPont Country Club where he enjoyed playing tennis

C. Gordon McCarty (Ph.D., '63) passed away peacefully at his home on June 20, 2011. Gordon was born on November 26, 1935, in Hutchinson, KS, a son of the late Gerald W. and Dorothy M. McCarty. He was a graduate of Wichita High School East (1953), Wichita State University (1957 and 1959), where he received a

B.S. and M.S. degree in Chemistry and at the University of Illinois in Urbana-Champaign (1963), where he received a Ph.D. in Chemistry specializing in physical-organic research. Gordon started his teaching career in 1964 at West Virginia University as an assistant professor and became a full professor in 1977. He left WVU in 1980 and was employed by Mobay (now Bayer Corporation) in New Martinsville, WV as an analytical laboratory coordinator. In 1986 he moved to Bayer Corporation in Pittsburg, PA as a Research Advisor and was employed with them until he retired in 1999 as their Manager of University Relations.

He was a 55-year Emeritus member of the American Chemical Society and was a member of the ACS Board of Directors for eight years as well as serving on numerous other ACS national committees throughout his career. He received the 2003 ACS Pittsburg Award, the ACS Henry A. Hill Award and was a member of the 2010 class of American Chemical Society Fellows.

Alumni Notes

Milton L. Cofield (Ph.D., '79) was elected to the board of governors of the New York Academy of Sciences at their meeting of September 10, 2011. The New York Academy of Sciences is an independent, not-for-profit organization committed to advancing science, technology, and society worldwide. Cofield is Teaching Professor of Management at the Tepper School of Business and executive director for undergraduate business administration at Carnegie Mellon University. Prior to his career in education and administration professor Cofield was a scientist in the research laboratories of the Eastman Kodak Company for over a decade. His scientific background is in magnetism and magnetic resonance spectroscopy and, especially how these were applied to the study of imaging materials and processes. He was named distinguished professor of imaging technology management in the Rochester Institute of Technology in 1996, and Fulbright Senior Scholar in the Graduate Institute of Technology and Innovation Management of the National Chengchi University of Taiwan in 2001.

Cofield also currently serves as vice-chancellor of the New York State Board of Regents, the state's educational policy making and regulatory organization having authorities encompassing all institutions, both public and private, offering education in the state – including libraries, public television, and museums.

Jonathan Goodman (Ph.D., '99) recently formed Synthesis Intellectual Property to help chemical businesses recognize, plan, and protect their research and development. He focuses on addressing hurdles in patent and trademark protection, licensing, product and process design, and value creation. Previously, he was a patent attorney with a well-respected law firm in Chicago.

Jeff Spencer (MS Teaching of Chemistry, '11) has been chosen as a Knowles Science Teaching Foundation Fellow. The fellowship provides funds for professional development and classroom resources as well as serving as a professional development/ science teacher support base for people who were trained and worked as scientists that have made the decision to go into education.

Sean O'Brien (B.S., '84), Senior Member Technical Staff at Texas Instruments, has been chosen by the American Chemical Society for two honors.

The Dallas-Fort Worth local section has given him the Wilfred Doherty research award. Sean gave his presentation entitled "Our Micro-mechanical and Nanotech World" at UT-Dallas in September.

Sean has also been given the ACS Southwest Region Research award. Of the 63 prior winners 55 were in academia, the other 8 industrial winners were all employed in the oil industry. Sean will be presented the award at the ACS SW Regional Meeting in Austin in November.

Sean discovered C60 and the fullerenes with Nobel Prize laureates Smalley, Kroto, and Curl at Rice University where he earned a PhD in chemistry. He joined Texas Instruments in 1990 working on surface preparation and photolithography. He currently develops processes for MEMS and Digital Light Processing (DLP).

Michael J. Watson (B.S., '84) has been spending the last 27 years developing polymeric materials and compounds as well as insuring their durable usage in applications at Northrop Grumman in airborne electronic and infrared countermeasures devices, and for many different customer applications through the Dow Corning Corporation. He has specialized in adhesives and adhesion technology development for many market segments including automotive, construction, electronics, healthcare, aerospace, and others. Most recently (October 2011) Michael has moved into the Solar Solutions Business at Dow Corning where he will be working on technology development for various materials in hopes of eventually lowering the cost of solar power production to below what it would cost to power buildings with standard energy sources.

Michael has also been the Lead Recruiter for Dow Corning on the Urbana/Champaign campus of the University of Illinois for the last five years. In his spare time he has been a strong proponent of: economic transformation through transportation in rural areas of Africa through Sahel Automotive spending time promoting Dow Corning's efforts with the Center for Vision in the Developing World to help over a billion people that would never have the opportunity to see with 20/20 vision, and personally supporting efforts in the slums of India to bring education and hope to those who have little of both.

American Chemical Society Fellows

Ten alumni were named as part of the 2011 class of American Chemical Society Fellows.

Ronald D. Archer (Ph.D., '59)
K. Darrell Berlin (Ph.D., '58)
M. Bonner Denton (Ph.D., '72)
Thomas C. Farrar (Ph.D., '59)
Gary M. Hieftje (Ph.D., '69)
Robert J. McMahon (B.S., '80)
Catherine J. Murphy (B.S., '86) (also faculty)
Yorke E. Rhodes (Ph.D., '64)
Sheldon G. Shore (B.S., '51)
Steven L. Suib (Ph.D., '79)
David F. Wiemer (Ph.D., '76)

The ACS Fellows Program was created by the ACS Board of Directors in December 2008 to recognize members of ACS for outstanding achievements in and contributions to Science, the Profession, and the Society.

Correction

Manley Johnston (Ph.D., '69) was inadvertently left off the giving list that appeared in the Fall/Winter 2010 issue of Chemistry News. Dr. Johnston and his wife, Mrs. Marian F. Johnston, are longtime supporters of the Department and should have been appropriately recognized by inclusion at the Bronze Society giving level.

Please Join Us! Spring 2012 Alumni & Friends Reception

in conjunction with the
American Chemical Society

Sunday, March 25, 2012
San Diego, California

Come visit with your fellow alumni, department faculty, and celebrate the 2011 Class of ACS Fellows!

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