

# THE HEXAGON

FALL 2016

*of Alpha Chi Sigma*



## THE OBJECTS OF ALPHA CHI SIGMA

1. TO BIND ITS MEMBERS WITH A TIE OF TRUE AND LASTING FRIENDSHIP.
2. TO STRIVE FOR THE ADVANCEMENT OF CHEMISTRY BOTH AS A SCIENCE AND AS A PROFESSION.
3. TO AID ITS MEMBERS BY EVERY HONORABLE MEANS IN THE ATTAINMENT OF THEIR AMBITIONS AS CHEMISTS THROUGHOUT THEIR MORTAL LIVES.



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## SUBMISSION DEADLINES

|                   |           |
|-------------------|-----------|
| Spring (March)    | January 1 |
| Summer (June)     | April 1   |
| Fall (September)  | July 1    |
| Winter (December) | October 1 |

**Chapters and groups:** Send stories of events, and don't forget photos. Send contact information as well.

**Alumni:** Personal and professional news is always welcome.

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## Time Passages

This year, I turn 60...I will complete my 35th year as a faculty member... and I just wrote a reflective editorial piece leading a collection of scientific papers commemorating the 75th birthday of my Ph.D. advisor, Professor Barry M. Trost. The special issue of *Organic Chemistry Frontiers*, published by the Royal Society of Chemistry, has appeared (2016, 3, 1225–1227), and the DOI reference to my essay is: 10.1039/c6qo90033j.

One gets a chance, on such occasions, to make a few points that are sometimes difficult to make. First and foremost, Barry is an exemplary educator, and I think, sometimes, an increasingly rare breed in higher education. With permission from the RSC, I quote here a few of the things I wanted to emphasize.

In an era where nearly every graduate student I encounter, everywhere in the world, talks about “working for the boss” rather than “working with an advisor,” we in the Trost group benefited daily from working with an advisor. The work we did was our work; the time we spent was in service to our degrees. I am convinced that this difference in language is not trivial. Language speaks to underlying meaning, attitudes and intent. Language shapes the mental images and roles we assume, which affects our actions, beliefs, and behaviors.

In 2001, at the closing of his 60th birthday celebration, where hundreds of former group members had assembled, Barry reflected masterfully on the (annoying) habit of faculty colleagues who saw research output, rather than human resource development, as the primary goal of academic science: “... after all,” Barry said that day, “if research productivity was the sole outcome, why would we then choose to do it with untrained scientists?” I have repeated that story more times than I can count. Along those lines, Trost has also been outspoken on the intrinsic conflict faced by professors when the demands of their business ventures clash with their academic responsibility to their students.

Barry simply takes seriously the most critical responsibility of an academic's career: to educate.



Barry M. Trost (L) and Brian P. Coppola, from 1979.

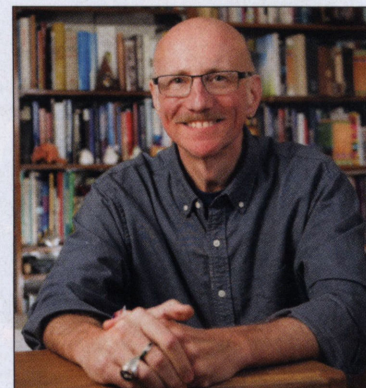
Dear Brothers:

The distribution of the Fall Issue of *The HEXAGON* goes to all of the membership for whom we have mailing information (ca. 32,000 of you), while the other three issues are provided to collegiate members and contributors. I mention this for two reasons. First, you might actually be unaware that there are three other issues of *The HEXAGON* published, and second, this will motivate you to think about your solicitation letter when you receive it!

Yours in the Double Bond—GE

## On the Cover

At the 2016 Conclave, members of the Order of Altotus, plus a few others, gathered to remember members of the Order who have passed on to the chapter eternal. Back: Sherrie Settle, OA; John Stipp, OA; Mark Evaniak, GMA; John Adams, OA; Abbey DeGraffenreid; DeWayne Gerber, OA; Gary Anderson, OA; Peter Yochim. Front: Col. William Myers, OA; Jennifer Showerman, OA; Melissa Ward, NCDC; Randy Weinstein, OA; R. Scott Wilson; D. Mitch Levings, OA. (Photo credit to Jennifer Showerman's phone camera.) Look for more pictures from the 2016 conclave scattered throughout this issue. See page 54 for more information about the upcoming report.



Brian P. Coppola, GE,  
Alpha Beta 1988





Christiane Hassel, Epsilon 2000, and Bryan Duncan, Epsilon 2011

Bryan DUNCAN, *Epsilon 2011*, and Christiane HASSEL, *Epsilon 2000*, were married on May 13, 2016 in Bloomington, Indiana. The photographer was also an *Epsilon* brother, Onye J. Robert-Eze, *Epsilon 2014* (the photo credit goes to him and the photo itself was taken outside of the Chemistry Building on the campus of Indiana University, Bloomington).

On June 18, Rachel Morgan THEALL, *Gamma Theta 1995*, and Allyson DIGMANN, *Delta Delta 2014*, helped with a demonstration at the River Campus Summer Arts Festival at Southeast Missouri State University. Allyson reports the demonstration setup began earlier in the week, "when I cut up beets, blueberries, and red cabbage and boiled them, along with turmeric, to use as dyes for pH indicator paper. In previous years, the festival had up to 2,000 people in attendance, so we planned for up to 200 participants at our booth, since it was directed more toward children. This meant cutting and dyeing 800 pieces of paper and setting them all out to dry days in advance."

"After the paper was dry, we had to experiment with acid and base concentrations to make sure they were concentrated enough to change the paper, but dilute enough to be safe for kids. This became easy once we decided on vinegar and baking soda solutions. We also prepared standard vials to show each of the four indicators in their three states: acidic, neutral, and basic.

At the demo, we had paper set up to glue each of the four indicator papers onto. We then

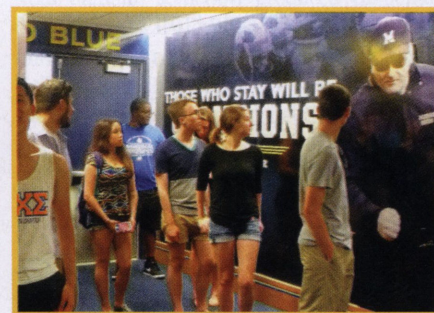


Rachel Morgan Theall and Allyson Diggmann at the River Campus Summer Arts Festival at Southeast Missouri State University.

explained the difference between acids and bases to the participants and let them decide if they wanted to spray theirs with the acid solution or the base solution. It was great to see the excitement on both the kids' and parents' faces when the papers changed colors. We had participants from a wide age range, from young children all the way up to their grandparents. It was fun to show them that chemistry can be a big part of artwork."



Alpha Beta Brothers Saheli Ghosh, Avery Lui and Daniel Harris with REU students in the luxury viewing boxes overlooking the football field.



REU students in the hallway between the tunnel and locker room.

The *Alpha Beta* brothers worked with University of Michigan chemistry department to plan a fun welcome event for the off-campus Research Experience for Undergraduates (REU) students working with chemistry faculty for the summer. MA Caila RYAN, *Alpha Beta 2015*, reports, "During a tour of Michigan Stadium, we saw the luxury suites, the locker rooms and we were able to run on the field. As we walked from the locker rooms to the field, there were also murals depicting the evolution of the Michigan football uniform. Afterward, we were joined by the 40 or so U-M summer research students for pizza. I'm glad we had the opportunity to welcome these students and show them around campus a bit. It was a blast to get to know them and hear about their chemistry research. I even had the opportunity to meet another Alpha Chi Sigma brother in the group."

## A Note for Contributors

We certainly appreciate the added appeal of pictures in *The HEXAGON*. When taking photos for submission, please:

- Always use a flash indoors.
- Do not edit or alter your images. *The HEXAGON* production staff can and will determine if an image needs color correcting or additional processing.
- Set your digital camera quality to its highest setting with the least compression. Photos that are less than 8 inches wide at 72 dpi, or that have a file size of under 1 megabyte, may be too small for print production.
- Please send us the image file that is directly from the camera. Photos that are extracted from iPhoto albums, Facebook pages or Word documents have file sizes that have been compromised.
- Print photos are welcome!



# Rediscovery of the Elements

## Oliver Sacks, The Periodic Table, and Stinkspat



James L. Marshall, *Beta Eta* 1971, and Virginia R. Marshall, *Beta Eta* 2003, Department of Chemistry, University of North Texas, Denton, TX 76203-5070, [jimm@unt.edu](mailto:jimm@unt.edu)

One day during the autumn of 2000, I received a telephone call from Dr. Oliver Sacks. "I just read about your element collection in the *Journal of Chemical Education*," he said, "the one about your 'Living Periodic Table.' I'd like to see it."<sup>1</sup> This was a pleasant surprise; this was the well-known Oliver Sacks, the neurologist from New York City who had published articles of scientific interest in the *New Yorker*,<sup>2</sup> as well as several books on neurology and anthropology, such as *The Man Who Mistook His Wife for a Hat* and *Awakenings*. This latter contribution inspired a play, and then a movie starring Robert De Niro and Robin Williams.

I was curious why a neurologist would want to see an element collection. "Who told you about that?" I asked.

"Roald Hoffmann—I presume you know about him?"

The Nobel Laureate from Cornell! "Golly, I knew he was well-read—but I didn't know he read the 'minor' literature by lesser-knowns, too!"

"Well, I'm writing a book about my boyhood experiences in chemistry, and I'd like to 'relive' some of my memories by seeing the elements again."



Figure 1. Oliver Sacks in front of the element collection. His favorite element was bromine. The Blue Willow cup in the foreground contains hot tea and melted gallium!

Being flattered by Oliver's kind comments, I gladly agreed to his Sacks' visit, and arrangements were made for him to travel to Texas a few weeks later.

I picked him up at the DFW airport, recognizing him from his beard, as he suggested. In turn, I had told him my general description, but he had said that it would be easier if I found him instead. (I did not learn until years later<sup>3</sup> that he suffered from prosopagnosia, or inability to recognize faces).

I drove him to Denton, 35 miles north, and we settled in our living room and he quickly gravitated to the element collection, a three-cabinet 6x9-foot display spread across the living room. He spent a full afternoon playing with one element after the other (Figure 1). Like a schoolboy with a new Gilbert chemistry set, he pulled specimens from the shelves, one by one, fondling each lovingly, telling stories about each one.

"You have a big sample of tungsten! Number 74. This is heavy!" In his palm he bounced a hefty slab of tungsten, as heavy as gold (we did not know at the time that his book about his boyhood chemistry experiences would be called *Uncle Tungsten*). Then he picked up what appeared to be a small dull-gray sprinkler head, sealed in a 4-oz. vial. "And this is beryllium. Number 4." He juggled it with his fingertips. "Light as a feather!"

He asked Jenny to make a cup of hot tea, into which he dropped the gallium. "Look at it melt!" He sipped carefully, then asked for an ice cube to freeze the gallium back to a shiny blob, dried it off with a towel, and returned it to the shelf.

"You have a bar of bismuth!" he cried. "Do you have a string?" He suspended the 3-inch bar to our ceiling lamp, and then tested it with our iron-boron-neodymium magnet. "See," he exclaimed. "It is diamagnetic!" Indeed, the bar



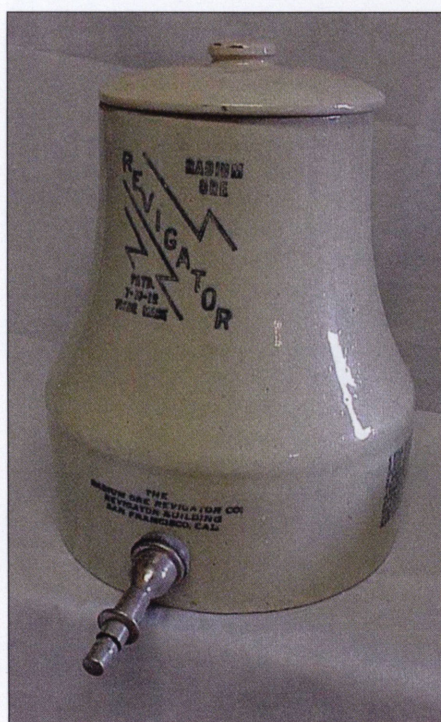


Figure 2. The “Revigator” is a crock pot lined with radium ore, in which water was stored and then drained into a cup to be taken “liberally, six times a day, to improve one’s health,” according to literature of the 1920s.<sup>46</sup> We had purchased our revigator from a Health Quack museum in Kansas, but kept it in the garage, not in the house.

was repelled and rotated away from the magnet.

“And yes, you have gadolinium. Let us try a magnet on it...” First, dunked the metallic button in hot water<sup>4b</sup> and showed it was no longer ferromagnetic. “See, it’s above the Fermi temperature... now let’s drop it into a cup of ice cubes.” The button snapped back up to the magnet; it was now below the Fermi temperature of 16° C.

“Ah, you have a diamond,” as he pressed the pea-sized octahedral crystal to his lips. “It’s cold!... as it should be—a great thermal conductor.”

“I have another thermal conductor to show you,” I said, “here’s a slab of beryllia (BeO). It has been used as a thermal sink in police mobile radios. I obtained it from Motorola when I worked there.”

“It’s really cold!” he exclaimed. “I’ve never felt this before!”

“Now you’d better wash your hands,” I said, “beryllium is poisonous!”

We spent the whole afternoon going through each element. He held each lovingly, like a precious gem, chattering away and issuing facts about each. Very quickly I learned that afternoon that he had extensive knowledge of

the elements, far beyond the ordinary experience of most chemists. He knew, for example, that radon (Figure 2) was *not* discovered by H. C. Dorn (as proclaimed in all of the scientific literature),<sup>5</sup> but instead by Ernest Rutherford and Frederick Soddy, as Jenny and I had found<sup>46,5</sup> from our “Rediscovery” travels. He knew that phosphoro di bologna (barium sulfate), a thermally fluorescent stone, obtained by us from a muddy slope in the Apennine Mountains of Italy,<sup>4a</sup> was not actually the active luminescent principle; instead, it was the reduced barium sulfide.

Finally, as sunset approached, it was time for supper. While consuming soup and a sandwich, he was curious, “You appear to have all of the elements, as well as samples of the ore from which each element was obtained. You mean, from the *exact* mine for each element?”

“Yes, for example, the Riddarhyttan copper mine in Sweden for cobalt; Himmelfürst silver mine in Germany for germanium; Pierrefitte lead mine in France for gallium; Facebánya gold mine in Romania for tellurium; Tangen feldspar and quartz mine in Norway for hafnium; Bisberg iron mine in Sweden for tungsten; and so on and so on.”

“And you have a sample of each element not only in its combined state (how it was discovered), but also in its elemental state?”

“Well, through uranium (atomic number 92), yes. But regrettably there are exceptions. We don’t have the radioactive elements appearing in minute quantities—astatine, francium, protactinium, actinium. For those a lump of pitchblende will have to suffice—a specimen of pitchblende, for example, is estimated to have a few atoms of francium. And there is one more exception of a more common element—fluorine. We have samples of each gas in glass bulbs, but not fluorine—it reacts with glass. We only have a sample of fluorite, calcium fluoride, although it is from the original mine where Scheele found it. (Figure 3) But—as we toured mineral shows across the U.S. and Europe and spoke with several German collectors, we learned that elemental fluorine *might* be present as inclusions in a special form of fluorite—it’s called “Stinkspat.” If that is true, then a specimen of Stinkspat would be the final addition to our collection. We hope to do that, during a future trip to Germany.”

“Well,” said Oliver. “Today was indeed pleasant... time to return to New York.” Oliver’s secretary (Kate Edgar) had reserved a motel for Oliver in Denton and arranged a limousine to take him back to DFW the next morning.

It was during the next year that “9-11” (September 11, 2001) occurred, the disaster where the twin towers were destroyed by terrorists. We were very worried; we hadn’t heard

from Oliver in the meantime. But we received in the mail, a draft of Oliver’s book, *Uncle Tungsten—Memories of a Chemical Boyhood*, just before it appeared in print—with a note thanking us for his “very lovely afternoon indeed” that he spent with us.

**Stinkspat.** We had learned from German mineralogists that the prime source of Stinkspat was Wölsendorf in Bavaria, Germany. Stinkspat was a dark-violet form of fluorite which, when pulverized, exuded a nauseating gas which sometimes forced the miners to leave and recuperate by resting at home for a day. The mineralogists *thought* that the noxious gas was elemental fluorine itself, in the form of microscopic inclusion that could be released by crushing. The fluorite would have been a perfect container for the highly reactive fluorine, since CaF<sub>2</sub> does not react with F<sub>2</sub>. (Henri Moissan (1852–1907), the Nobel laureate who discovered elemental fluorine,<sup>4d</sup> used fluorite caps at each end of a steel tube to contain the fluorine gas during his optical studies of the gas<sup>4d</sup>). Stinkspat always contains uranium (sometimes thorium). It was conjectured that the irradiation from uranium somehow produced elemental fluorine from CaF<sub>2</sub>, as well as a dark form of the mineral itself.<sup>6</sup>

The “scientific name” for Stinkspat was “antozonite,” an informal label that was never recognized officially,<sup>7</sup> but which has been used extensively in the scientific and layman literature. The name “antozonite” was given in 1862 by Christian Friedrich Schönbein (1799–1868).<sup>8</sup>



Figure 3. A historically important specimen of fluorite (CaF<sub>2</sub>) from the Garpenberg mine, the source of Scheele’s fluorite.<sup>4d</sup> Carl Wilhelm Scheele (1742–1786) is considered to be the discoverer of fluorine in 1771, but could only isolate it in compound form, HF (hydrogen fluoride). Henri Moissan finally isolated the violently reactive element in 1886.<sup>3d</sup>





Figure 4. Wölsendorf mine. The area, about 1 km east of the village of Wölsendorf, Germany, is pitted with many mine shafts that furnished first silver, and then deposits of fluor spar (fluorite), used in the fluxing and smelting of metal ores. This is the the Heinrich Kocher Stollen mine (N49° 24.59 E12° 11.24), reconstructed and maintained for historical interest by the local citizens.<sup>4d</sup> The main source of Stinkspat was the Marienschacht, 500 meters south (N49° 24.29 E12° 11.19), one of many mines pitting the area—now appearing as large holes in the ground, filled in. The Marienschacht was developed in 1896, and decommissioned in 1979. A total of 1,000,000 metric tons of fluor spar was removed from the Wölsendorf area. A street Marienschachtweg (“Marienschacht street”) leads eastward from the village to the mine area.

(Schönbein was the discoverer of ozone in 1839 and gun cotton in 1845).<sup>9</sup>

Four years after Oliver’s visit to Denton, we were able to visit Wölsendorf, in the southeast part of Germany close to the Czech border (Figure 4), and we returned with two pounds of this dark mineral (Figure 5).

**Kitchen chemistry of Stinkspat.** It was time for us to study the Stinkspat samples (Figure 6) in an attempt to gain evidence that they contained elemental fluorine. A preliminary step was to obtain an EDX analysis in order to make sure there were not other interfering oxidants such as chlorine. This analysis showed the presence of calcium, fluorine, and lesser amounts of uranium with traces of silicon, magnesium, and aluminum. Our kitchen had been used previously for chemical experiments<sup>10</sup>—we had studied Sniadecki’s “vestium” and showed it could not be ruthenium<sup>4b,11a</sup> and we had repeated Collet-Descotils’ studies with vanadinite and showed his experiments (“proving” vanadium was actually chromium) were sloppy and incorrect.<sup>4b,11b</sup> (These “kitchen experiments” have been a modest copy of the model provided by Agnes Pockels (1862–1935), whose homemade studies with soaps in her kitchen in Braunschweig, Germany, eventually gained the attention of Lord Rayleigh and to eventual publication of her “Surface Tension” in *Nature*.)<sup>12</sup>

Our first experiment was to smash a Stinkspat sample with a hammer. Pew!! The immediate stench made us ill; our best description of the odor was a cross between rotten road kill and Clorox. To proceed with the chemical tests, we prepared Schönbein paper<sup>9</sup> by soaking blotter paper with a solution of potassium iodide and starch—this paper, when treated with an oxidizing agent, turns blue. The



Figure 5. Stinkspat, or antozonite (left), and classical fluorite (right). The Stinkspat was collected from the same source (Wölsendorf) as the Kraus NMR specimen.<sup>6</sup> The fluorite specimen was collected from Denton County, Illinois. Stinkspat is dark, opaque whereas classical fluorite is transparent or translucent, of variable hues of clear, pink, green, and blue.

final step was crushing pieces of Stinkspat on wet Schönbein paper. The result is shown in Figure 7: proof that indeed a strong oxidizer is present in the Stinkspat.

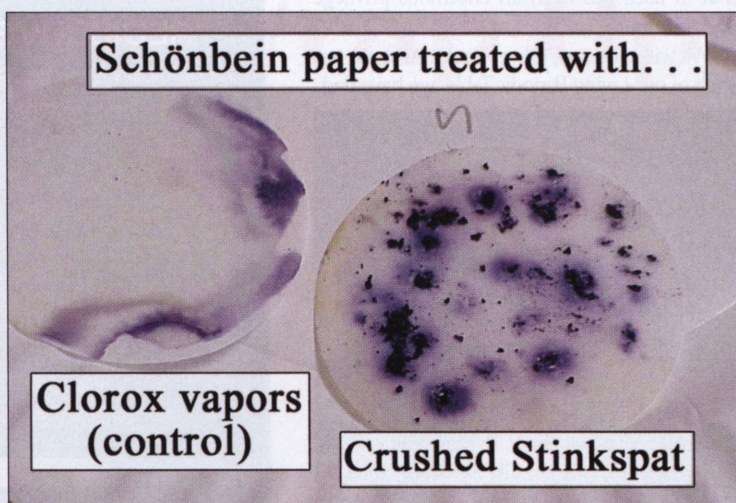
**The exact nature of the oxidizer.** Moissan, who certainly knew what fluorine smelled like, thought he recognized the odor of F<sub>2</sub> from the pulverized antozonite<sup>13a</sup>—but this sensory observation was not definitive. Other possible malodorous oxidative fluorine compounds might exist (such as sulfonyl fluorides or fluorine dioxide,<sup>6</sup>) and there existed the possibility that fluorine might be generated from the electrical discharge when antozonite is crushed.<sup>6</sup> Other suggestions in the literature included the possibility that even if fluorine *did* exist in the antozonite, when the mineral was crushed, the fluorine might rapidly react with water vapor to produce HF, then ozone, and finally hydrogen peroxide,<sup>6</sup> hence, the effusion from antozonite

might be a mixture of oxidizers.<sup>13</sup> Recent mass spectral studies<sup>14</sup> showed that samples of antozonite contain quantities of carbon tetrafluoride and sulfur hexafluoride,<sup>14</sup> the amount of which correlated with the amount of radioactivity present; but this experimental procedure was not able to confirm the evolution of F<sub>2</sub> or other corrosive gases whose molecules would not survive the instrumental environment.

**Final proof of native elemental fluorine.** The authors noted that when the Stinkspat was crushed, there was an *immediate* production of the nauseating odor and blue spray on the Schönbein paper. The authors concluded that the evidence was quite convincing that there was elemental fluorine present in the mineral. But it would be nice to get *direct* proof!

Such proof was not long in coming—from an NMR laboratory in Germany.<sup>6</sup> Florian Kraus and coauthors investigated antozonite (“fetid





LEFT: Figure 6. The author pursuing “kitchen chemistry” in the home, smashing Stinkspat on Schönbein paper.

ABOVE: Figure 7. Photos of crushed Stinkspat on Schönbein paper. As the crystals were smashed, a blue stain squirted out immediately, proving an oxidant was present in the mineral. To show the blue color was due to developed iodine-starch complex and not to another type of unusual stain, it was then reacted with thiosulfate, whereupon the color disappeared.

fluorite”) from Wölsendorf using  $^{19}\text{F}$  magic-angle-spinning solid-state NMR. In their elegant study, an isolated single peak of  $^{19}\text{F}$  at 425 ppm was shown to be elemental  $\text{F}_2$ , apart from the main  $^{19}\text{F}$  peak of  $\text{CaF}_2$  at -108.8 ppm. Thus, “unambiguous, in situ evidence” was obtained that “elemental  $\text{F}_2$  exists in nature.”<sup>6</sup> In this same study, the authors showed that the dark color of antozonite was caused by the existence of calcium clusters formed by the radioactive uranium: pure synthetic  $\text{CaF}_2$  was observed to give such clusters upon irradiation with  $\beta$ -rays.<sup>6</sup>

Our “Living Periodic Table”<sup>1</sup> was now complete—it included a specimen of “Stinkspat” which allowed us to claim a sample of fluorine “in the native state.”

**Final tribute to Oliver Sacks.** Since the visit of Oliver to our home in Denton, we kept in communication with him; in a *HEXAGON* article a photograph is included of Oliver laying a wreath on the grave of Carl Wilhelm Scheele (1742–1786) in Köping, Sweden<sup>4c</sup>—Oliver visited Köping and its Scheele museum after receiving travel instructions from us, as we had been preparing our “Rediscovery” DVD. During his 70th birthday in 2003, we could not accept his gracious invitation to his birthday party in New York City as we were in Europe, but we could celebrate “in absentia” (Figure 8). During this correspondence with him in 2003, upon his request, we sent to him a sample of hafnium, in anticipation of his 72nd birthday two years later.

It was with extreme sadness as we learned of Oliver’s illness and his eventual passing on

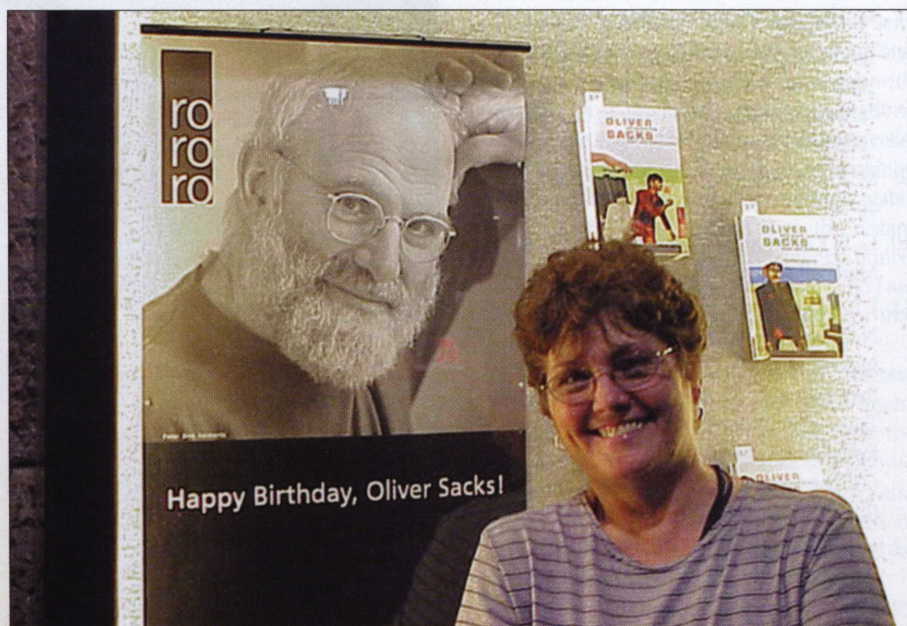


Figure 8. This promotion in a Freiburg im Breisgau, Germany, bookstore was prominently displayed during Oliver Sacks’ birthday in 2003. His translated book “Onkel Wolfram—Erinnerungen” (“Uncle Tungsten—Memories”) was on sale inside the bookstore. Coincidentally, Oliver Sacks’ middle name was “Wolf.”

August 30, 2015. No one appreciated the simplistic beauty of the Periodic Table more than he. In his final (posthumous) publication, *Gratitude*,<sup>15</sup> he included an essay “My Periodic Table.”<sup>15b</sup> On his round table of knickknacks, he assembled samples of elements with atomic numbers corresponding to his latter years. Next to lead (82, the age he reached) is a sample of beautiful iridescent crystals “terraced like a

Hopi village” (i.e., hopper crystals of bismuth, atomic number 83). “I do not think I will see my 83rd birthday,” he said, “but I feel there is something hopeful, encouraging, about having ‘83’ around.” Utterly curious and optimistic to the very end, as he expressed in another essay,<sup>15a</sup> “My Own Life,” “. . . my predominant feeling is one of gratitude. . . I have been a sentient being, a thinking animal, on this beautiful planet, and



that in itself has been an enormous privilege and adventure."

We will miss you, Oliver Sacks. And our top shelf of our Living Periodic Table, we have dedicated the specimen of Stinkspat, with its caged native fluorine, to you. ☉

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11. J. L. Marshall and V. R. Marshall, 248th National ACS Meeting (San Francisco), invited papers to History Division Symposium on "Found and Lost: Incredible Tales of Spurious, Erroneous and Rehabilitated Elements," August 11, 2014; (a) "The Legend of Vestium," (b) "Undiscovery of Erythronium."
12. [https://en.wikipedia.org/wiki/Agnès\\_Pockels](https://en.wikipedia.org/wiki/Agnès_Pockels). Pockels did her research at Hagenstraße 34 in Braunschweig, now named Steinbrecherstraße 34 (N 52° 16.11 E 10° 32.29). Her published article was A. Pockels, "Surface Tension," *Nature*, **1891**, 43, 437–439.
13. (a) F. Henrich, *Z. angew. Chemie*, **1920**, 33, 20–22; (b) H. Strunz, *Naturwissenschaftlicher Verein*, **1962**, Regensburg, Germany, 35–39.
14. J. Harnisch and A. Eisenhauer, *Geophys. Res. Letters*, **1998**, 25(13), 2401–2404.
15. O. Sacks, *Gratitude*, **2015**, Knoff, (a) 13–20; (b) 21–30.

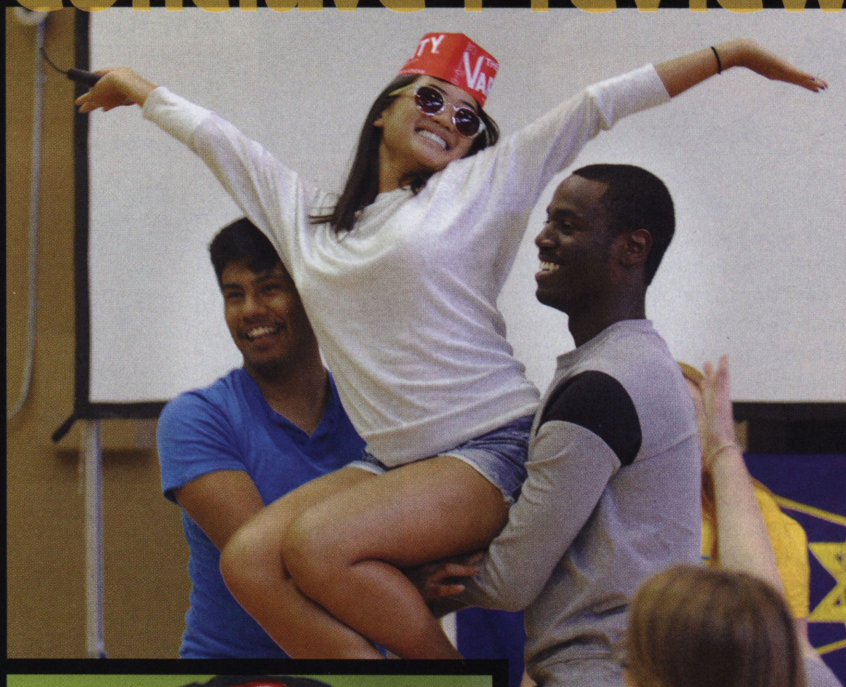
## "REDISCOVERY" ARTICLES ARE NOW ON-LINE

All HEXAGON issues that include "Rediscovery" articles—a series which began in 2000—are now on-line and searchable at: [http://www.chem.unt.edu/~jimm/REDISCOVERY\\_ARTICLES/](http://www.chem.unt.edu/~jimm/REDISCOVERY_ARTICLES/)

These HEXAGON issues, as a group, are fully searchable and thus are amenable to scholarly research. One can search either for words, Boolean "OR" combinations, or for full phrases (by placing in quotation marks). Not only the original "Rediscovery" articles may be accessed, but also cover photographs by the authors and other auxiliary articles connected with the "Rediscovery" project.

Additionally, the UNT Digital Library has separated out all these individual articles and placed them in the "Scholarly Works" section. These articles may be located and perused at: <http://digital.library.unt.edu>. At the top of the webpage, search for "James L. Marshall" as "creator" and for convenience, "sort" by "Date Created (Oldest)." The "Scholarly Works" articles are not searchable as a group, but only within each individual article.

## Conclave Preview



Every two years, delegates gather for conclave, an important event in the life of the Fraternity, where the business of Alpha Chi Sigma, including making lifelong bonds, moves forward. See page 54 for more about the upcoming report from the 2016 conclave.



# 2016 Awards Wrap-Up



Jonathan Owen, ACS Award in Pure Chemistry, along with ACS President Donna Nelson (left) and GMA Mark Evaniak (right). (Photo courtesy of the American Chemical Society)

## 2016 ACS Award in Pure Chemistry

The 2016 ACS Award in Pure Chemistry was presented to Jonathan Owen, a chemistry professor at Columbia University. First awarded in 1931 to two-time Nobel Prize-winning chemist Linus Pauling, the award celebrates independence of thought and originality in research among chemists 35 and under. It is bestowed annually by the ACS "to recognize and encourage fundamental research in pure chemistry carried out in North America by young men and women who have accomplished research of unusual merit for an individual on the threshold of his or her career."

In supporting his candidacy for this award, his nominators noted "using the rigorous principles and methods of synthetic chemistry, Professor Owen has fundamentally changed the way the community understands the nucleation, surface chemistry, and reactivity of colloidal quantum dots."

Professor Owen earned his B.S. in chemistry from the University of Wisconsin (Clark Landis) in 2000 and his Ph.D. in chemistry with John Bercaw at the California Institute of Technology in 2005. He started his independent career as a faculty member at Columbia in 2009, after completing a postdoctoral appointment at Berkeley with Paul Alivisatos. He was promoted to associate professor in 2014. In addition to

the ACS Award in Pure Chemistry, Professor Owen has been recognized with an NSF CAREER Award (2012), a Dupont Young Faculty Award (2011), and a Department of Energy Early Career Research Award (2011).

## 2016 AIChE Award in Chemical Engineering

The 2016 AIChE Award in Chemical Engineering recipient is Dr. Sharon Glotzer, Stuart W. Churchill Collegiate Professor of Chemical Engineering; John Werner Cahn Distinguished University Professor of Engineering Professor: Material Science & Engineering, Macromolecular Science and Engineering, Physics at the University of Michigan.

After obtaining a Ph.D. in physics from Boston University, Dr. Glotzer worked at the National Institute of Standards and Technology in Washington, D.C., before coming to U-M. She manages her research group studies on nanoparticles and molecular self-assembly. In particular, Professor Glotzer focuses on the force entropy exerts on nanoparticles. "It's very common for people to immediately associate entropy with disorder," she notes. "But it also happens that entropy can actually be the reason for a system to order rather than be disordered, and that fact is not widely appreciated."



Professor Sharon Glotzer, University of Michigan, AICHE Award 2016

In better understanding entropy and self-assembly, Professor Glotzer and her group aim to uncover ways to engineer new materials with unique properties. Potential applications include the engineering of improved solar cells, new batteries, or even materials with "cloaking" invisibility attributes and shape-shifting materials. "A lot of this research is in the distant future," she says, "but the fundamental principles of self-assembly that my students and I are discovering are laying the foundation for that future."

Looking back on her childhood, Professor Glotzer doesn't believe she anticipated reaching this point in her career. Growing up in the San Fernando Valley in California, she enjoyed skateboarding, surfing, playing guitar and horseback riding. Although she dreamed of being an astronaut or curing cancer, she had yet to find a clear path.

She previously received the 2014 MRS Medal (co-recipient with Nicholas Kotov) and was elected to the National Academy of Sciences in 2014. She became a fellow of the American Association for the Advancement of Science in 2013.

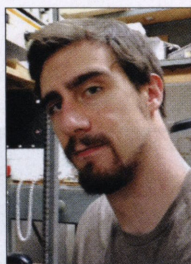
## 2016 Alpha Chi Sigma Scholar

Andrew Dixon, *Beta Tau 2012*, was selected as the 2015 Alpha Chi Sigma Scholar.

Andrew received his undergraduate degree at Millersville University of Pennsylvania; he is now a graduate student at the University of Arizona in the Department of Chemistry and Biochemistry with Dr. Andrei Sanov. His work



focuses on the study of organic radicals and diradicals using anion photoelectron imaging to probe their electronic structure. His recent work is on the newly detected ethylenedione diradical, proposed initially more than 100 years ago, and related perturbed systems.



Andrew Dixon,  
Beta Tau 2012

Andrew first joined the *Beta Tau* Chapter in spring 2012. Since then he has held the positions of VMA, MA and now Alumni Secretary. He takes time whenever he can to volunteer with chapter outreach activities, whether that is visiting local elementary schools, performing demonstrations at the planetarium, or helping out when visiting or new students arrive to the Department.

Andrew is also a member of the American Chemical Society, and is an Eagle Scout.

## 2016 Priscilla Carney Jones Scholarship

Claire Buysse is a senior chemistry major at the College of Saint Benedict and Saint John's University (CSB/SJU) in Minnesota.



Claire Buysse

"I grew to love chemistry in high school," Claire writes, "where I took college-level courses from a phenomenal female teacher, role model, and family friend. In college, I found myself surrounded by a group of amazing young people with a strong, collective sense of determination and ambition in chemistry. Over the years, I've gotten the opportunity to conduct research in several different areas, and as I explored my interests, I discovered how much I love the Earth sciences. I have spent the past two summers pursuing undergraduate research in atmospheric chemistry, and have loved every minute. I intend to pursue a doctoral degree in atmospheric chemistry following my graduation from CSB/SJU."

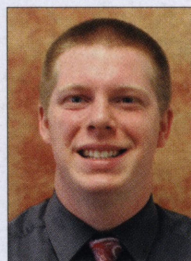
During summer 2016, Claire participated in the NASA Student Airborne Research Program, where she developed her own research project based on the data collected aboard a NASA DC-8 research aircraft. Previously, she conducted research on organic electronics in the Rasmussen group at North Dakota State University.

At CSB/SJU, she works as a tutor and teaching assistant for the chemistry department and

will serve as the Chem Club president this upcoming academic year. "Outside of chemistry," she concludes, "I am involved in many sustainability initiatives, and I spend much of my free time gardening vegetables in a student-run winter greenhouse. I love cooking, dancing, and exploring the outdoors. Some of my favorite hobbies include rock climbing, hiking, backpacking, canoeing, and yoga."

## 2016 Cooper Awardee

Austin Vogel grew up in Nashville, Tennessee, and attended Hume Fogg Academic High School. He played soccer in high school and continues to play many intramurals. He is a member of Tau Beta Pi Engineering honor society where he enjoys volunteering in local elementary schools with the MindSet program.



(Christopher) Austin  
Vogel

Austin has worked in the lab of Dr. Von Arnim in the BCMB department where he focuses on identifying the role of a protein on the small subunit of the ribosome in the model organism *Arabidopsis*. This year, following his graduation, he has moved to Memphis to attend medical school at the University of Tennessee Health Science Center. Also, he will be getting married in October. He is very excited for what this year has in store and furthering his education toward future success and medical advancement.

## 2016 Beta Eta Distinguished Teaching Assistant Award

Sherard is a native of the Bahamas and graduated with a B.S. in chemistry from Jarvis



Sherard Lightbourne (left), accepts the Beta Eta Distinguished Teaching Assistant Award

Christian College in Texas. He is a third-year Ph.D. student with Dr. Jeffrey Kelber at the University of North Texas. He is proud to be the first in his family to pursue a Ph.D. Sherard is also a member of Omega Psi Phi, Inc., and Beta Kappa Chi Honor Society, and serves as the chemistry representative on the UNT Graduate Student Council. In his rare free time, Sherard enjoys diving, swimming, most anything involving a beach, and his active participation in on-campus organizations.

## 2016 Dunlap Scholar and Dunlap Grants at Iota

### 2016 Dunlap Scholar

Anne Leonhard, *Iota 2013*, is a junior at Rose-Hulman Institute of Technology, majoring in chemical engineering and computational science with a minor in computer science. She plans to attend graduate school upon graduation in spring 2017 and intends on pursuing a Ph.D. in chemical engineering while researching computational modeling of complex polymer reaction systems. She initiated into the *Iota* Chapter of Alpha Chi Sigma in the fall of 2013 and has held the positions of vice professional chair and webmaster before election to her current position of treasurer. Anne is also involved in Omega Chi Epsilon, Blue Key, and Tau Beta Pi honor societies at Rose-Hulman.



Anne Leonhard,  
Iota 2013

### 2016 Dunlap Grant

Mark Lasher, *Iota 2013*, is a junior from Rockport, Indiana, studying chemical engineering and chemistry at Rose-Hulman Institute of Technology (*Iota* Chapter). He initiated in fall 2013 and has served as the merit badge coordinator for two years before transitioning to master alchemist this year. Mark is also involved in the Student Activities Board, where he serves as the vice president of Performances. He is also an active member of Tau Beta Pi, Blue Key National Honor Society, and AIChE. Mark has interned with AstraZeneca, and upon graduation in May 2017 he plans to work in the pharmaceutical industry.



Mark Lasher,  
Iota 2013



## 2016 Dunlap Grant

Rebecca Swertfeger, *Iota* 2014, is a sophomore at Rose-Hulman Institute of Technology from Cincinnati, Ohio. She began her college career at Rose-Hulman as a chemical engineer in 2014 and has been very involved in the chapter since she initiated in the fall of 2014. In



Rebecca Swertfeger,  
*Iota* 2014

the spring of 2016, Rebecca switched her major to optical engineering but continues to contribute to *Iota* Chapter. Rebecca is involved in numerous extracurricular activities including Alpha Lambda Delta, American Institute of Chemical Engineers, and Chem-E-Car where she is head of a water electrolysis special project. Rebecca has also worked for two summers with the University of Cincinnati as a particle physics computational analyst in collaboration with The European Organization for Nuclear Research (CERN), and is currently working on a high-powered laser project funded by NASA. Rebecca has been on the Dean's List every quarter of her college career and sits at the top of her class with a 3.93/4.00 GPA.

## 2016 Gamma Eta Scholar

Nicholas Lawson recently graduated from Marshall University, where he studied chemistry with a pre-pharmacy concentration. He



Nicholas Lawson,  
Gamma Eta 2015

has been a member of the *Gamma Eta* Chapter of Alpha Chi Sigma since spring of 2015. Nicholas is originally from Chapmanville, West Virginia, and graduated from Chapmanville High School. He is also a veteran of the United States Navy, where he worked as a cryptologic technician/electronic warfare technician.

Through his involvement with Alpha Chi Sigma, Nicholas has enriched his love of science and chemistry as well as assisted others in the same. Nicholas has been very active in various Alpha Chi Sigma activities and is currently working on an essay for submission of his Level 4 Wyvern Pin for volunteer activity.

Outside of class, Nicholas enjoys watching movies, listening to music, playing drums, and spending time with his family and friends. He also loves swimming and fishing. Nicholas will be attending Marshall University School of Pharmacy beginning fall of 2016.



Brothers at the Fall 2016 ACS-Alpha Chi Sigma luncheon enjoy the menu at Maggiano's Little Italy, in Philadelphia.

## The Alpha Chi Sigma–American Chemical Society Luncheon

The Alpha Chi Sigma–American Chemical Society Luncheon was held on Tuesday, August 23, 2016, at Maggiano's Little Italy, in Philadelphia. Twenty-two brothers attended: Helen Webster, *Alpha Rho* 1994; Sidney White, *Psi* 1963; Gary Anderson, *Alpha Eta* 1962; Loyd Bastin, *Gamma Omega* 2013; Andrea Martin, *Gamma Omega* 2010; Allison Moore, *Alpha Omega* 1990; Jeff Moore, *Alpha Omega* 1996; Randi Ress, *Gamma Nu* 2007; Niny Rao, *Gamma Beta* 1999; Randy Guschl, *Alpha* 1967; Bassam Shakhshiri, *Zeta* 1970; Brian R. Thomas, *Gamma Omicron* 2006; Rachel Morgan Theall, *Gamma Theta* 1995; Nicole Carbonaro, *Alpha Rho* 2007; Shevani Shah, *Philadelphia U Colony of Gamma Omega* 2016; Reema Patel, *Philadelphia U Colony of Gamma Omega* 2016; Marlena Patrick, *Alpha Sigma* 2012; Zachary Runyon, *Gamma Eta* 2016; Amanda Smythers, *Gamma Eta* 2015; Nick Kegley, *Gamma Eta* 2014; Sarah Cole, *Gamma Eta* 2015; Yearin Byun, *Alpha Rho* 2010.

## 2016 Alpha Sigma Robert W. Rowden Scholarship

Craig McLean, *Alpha Sigma* 2015, has been chosen by the members of the *Alpha Sigma* Chapter of Alpha Chi Sigma to be the 2016 recipient of the Dr. Robert W. Rowden Scholarship in the amount of \$1,000. McLean is a senior at the University of Arkansas and

expects to graduate with a dual bachelor's degree in chemistry and mathematics this spring. During his time at the University of Arkansas, McLean has worked under the advisement of Dr. Paul Adams as well as participated in summer research opportunities at the Oak Ridge Institute for Science and Education, Stanford, and Woods Hole Oceanographic Institution. In the fall, McLean will begin work





Alpha Sigma Chapter Brothers (L-R) Dr. Christa Hestekin (chapter advisor), Craig McLean (2016 recipient of the Robert W. Rowden Scholarship), Marissa Reynolds (Master Alchemist), and Allie Elliott (Scholarship Chair).

in the doctorate program of chemical oceanography through the MIT-WHOI joint program. With this work, he hopes to facilitate public health treatment systems and to mitigate the effects of urban sprawl in Latin American nations.

The Rowden Scholarship is awarded in honor of Dr. Robert W. Rowden who was an alumnus of the University of Arkansas chemical engineering program, ROTC program, and the Alpha Sigma Chapter of Alpha Chi Sigma. Recipients are chosen based on their judgment of the potential of the candidate to make a significant contribution to chemical science and of how the candidate exemplifies the characteristics of honor, service, and devotion to God, country, family, and friends.

## 2016 Alpha Beta Alpha Chi Sigma First-Year Award

This award is designated by the Alpha Beta Chapter of Alpha Chi Sigma to a student in first-year chemistry who has demonstrated an interest in chemistry, shown outstanding academic potential as judged by instructors, and has demonstrated leadership with fellow students.



Jessica Zhang,  
Alpha Beta 2016

Jessica Zhang is a sophomore studying at the University of Michigan, majoring in biochemistry and minoring in music. Ultimately, she plans to apply her studies to the fields of food science and nutrition, perhaps becoming an ice cream flavor-designing scientist. In her time not spent studying mechanisms, Jessica says she "enjoys boxing, playing the flute, eating good food, and napping too much."



Brothers pose for a photo at the Chicago Pro/Zeta Chapter Transition forum. L-R: Lina Alsamsam, Alex Goetsch, Elizabeth Feltman, Andrew Wiesman, Nathan Haag, and Arielle Martin.

## Professional Transition Forum

Submitted by Eric Haas, Chicago Pro, Sigma 1998

On Saturday August 6, 2016 the Zeta Chapter and the Chicago Professional Chapter co-hosted their first annual Professional Transition Forum. The event was held in a loft space in downtown Chicago and was a great success with more than 40 Brothers attending. Even more impressive, the group included 10 Brothers from Alpha Chapter who drove to Chicago the day before so they could be at the event. A second Professional Chapter was also involved, with several Brothers from Indy Pro in attendance.

The forum provided a casual environment for professional Brothers and soon-to-be pro-

fessional Brothers to network about the job market, adjusting to post-college life and how to be successful in a new job. Dinner was provided from a local restaurant, Portillo's. In one example of the connections that were made, Alyssa Perez from Alpha, who was planning to apply to pharmacy school, met and obtained advice from Ashley Santore of Zeta, who is currently in pharmacy school. The professional Brothers, of course, also were able to network with each other, which provided to be unexpectedly helpful in several cases.

Another feature of the night was an opportunity for the brothers to get "semi-professional" headshot photos in front a backdrop. Having a photo to use for things like a LinkedIn profile that doesn't look like it was taken with a cell



Everything is better over dinner, including networking





Correspondent Eric Haas's son, Niko Haas, who was named after Nikola Tesla.



98.6 mL of red carnations

phone while out with your buddies can be a big plus.

The forum was originally planned by the *Zeta* Chapter. Chicago Pro got involved later, and helped to ensure that an adequate supply of professional brothers were present. In addition to the career-oriented networking, Chicago Pro wanted to demonstrate that it is a vibrant professional chapter into which collegiates can transition after graduation.

After the official event concluded, a large group of Brothers headed over to Henry's on State for additional socializing. A group of *Alpha* Brothers, some of whom were under 21, went to a movie instead. Going forward, Chicago Pro intends to hold the event next year and then every other year after that during non-conclave summers.

Finally, Chicago Pro would like to give a big thanks to the *Zeta* Chapter for providing the complete funding for the event this year (pictures accompanying this article complements of Eric Haas). ○

CROMPTON, Charles E., Jr., *Sigma* 1943  
 DEPPE, William L., *Nu* 1952  
 DOW, Walter O., Jr., *Alpha Upsilon* 1942  
 GUZICK, Norman D., *Beta Theta* 1957  
 HUGHES, Lee P., *Nu* 1964  
 HULBERT, Samuel Foster, *Iota* 1996  
 OTIS, James L., *Alpha Upsilon* 1951  
 PERKINS, Sidney D., *Nu* 1948  
 REMERS, William A., *Zeta* 1955  
 SLOATMAN, William S., Jr., *Nu* 1939  
 UTHMAN, Alan P., *Beta Sigma* 1973  
 WALTON, Hilary Catherine, *Gamma* 1989  
 WEIR, Karen Jean, *Alpha Theta* 1996  
 WHITE, James E., *Alpha Sigma* 1939

CROMPTON, Charles E., Jr., *Sigma* 1943, passed away August 2 at the age of 93. As the first non-native ever born on the remote Alaskan Island of St. George, Charles Crompton continued his life with adventures to far off places. Charles was an only child and his family left Alaska when he was only 1 year old and moved to San Francisco, California. There, his father opened a portrait studio and they lived for many years in the city near the Pacific coast. When Charles was a senior in high school, he won the San Francisco city track meet 100-yard dash with a time of 10.0 seconds. This track record stood unbroken for many decades.

After high school he went to the University of California at Berkeley, where he studied chemistry and specialized in nuclear chemistry. Upon graduation, he tried to enlist in the Navy but was prevented from doing so by the U.S. government which suggested that he join the wartime effort to create an atomic bomb, known as the Manhattan Project.

With that he moved to Oak Ridge, Tennessee, where he met his wife Mary, a local resident who had taken advantage of the abundant jobs being offered at the new Atomic Research facility. While in Oak Ridge, he attended the University of Tennessee, and earned his Ph.D. in chemistry.

After the war, he joined the U.S. Testing Labs with the Atomic Energy Commission in New Jersey, and he kept advancing to new and more challenging jobs every four of five years going through Hamilton, Ohio; Towson, Maryland; Chagrin Falls, Ohio; Chicago, Illinois; Rehoboth Beach, Delaware; and Vero Beach, Florida. In addition to being busy for work, he was active in Rotary and Kiwanis.

Charles and Mary had two children. Eventually, they moved into a seniors' housing complex in Lexington, Kentucky, where they were close to their daughter Lindy. In retirement, Charles took up carving and created intricate sculptures of birds and fish. Mary passed away suddenly in 2006, and Charles passed away after a brief illness on August 2, 2016.

OTIS, James, *Alpha Upsilon* 1951, of Amarillo, Texas, died Saturday, April 30, 2016, at age 84.

Jim was born on December 12, 1931, in Lansing, Michigan. He grew up in the Lansing area as an only child. Jim graduated from Michigan State University in 1953 with a chemi-

cal engineering degree. He met Barbara Alward in 1952, and they were married on June 21, 1953. Jim was in the Air Force for two years, then worked for Dow Chemical in Midland, Michigan, where their two children, Janet and Kirk, were born. Jim earned his M.S. from the University of Michigan, and worked for 23 years for Battelle Memorial Institute. In 1987 he was transferred to Amarillo and later retired at Lake Tanglewood.

(Information courtesy of *ObituaryData.com*)

UTHMAN, Alan P., *Beta Sigma* 1973, died October 25, 2015. He is survived by his wife, Karen; son, Sean; mother, Kathryn; brothers, John (Pam), Bob (Wilan) Uthman; many nieces, nephews and loving family. (Published in *Rochester Democrat and Chronicle*)

WEIR, Karen Jean, *Alpha Theta* 1996, age 39, of Wonder Lake, Illinois, passed away Saturday, July 23, 2016, at her residence, surrounded by many family and friends. Karen was raised in Antioch, where she graduated from Antioch Community High School. She earned her B.S. from Marquette University, and graduated in 2001 with her Ph.D. in pharmaceuticals from the University of Iowa.

Karen immediately joined the Jewel-Osco pharmacy family and went on to achieve the position of manager at the Fox Lake location for her entire career. On October 20, 2006, she married the love of her life, Todd Weir, in Lake Geneva.

WHITE, James E., *Alpha Sigma* 1939, of Fairfield Bay, Arkansas, passed away December 18, 2015, in Clinton, Arkansas, at the age of 98. Jim was born in Aurora, Missouri, the oldest of four brothers. His father was a railroad station agent while the boys were growing up and moved around Missouri, Arkansas and Nebraska as assignments changed and that forged a very tight "Band of Brothers." Jim attended Monticello and transferred and graduated from University of Arkansas, Fayetteville with a B.S. in chemical engineering (1941) and was inducted into the UA Chemical Engineering Hall of Fame in 1972. Jim married Helen A. Hill in 1941 and began his career and family in Baton Rouge, Louisiana. From there his career took him to New York and London, England. His work as a long-term planner and troubleshooter for Lubes, Oils, Waxes and Greases with Esso Europe/Exxon in London for 11 years allowed the family to travel worldwide. After retiring in 1977 and moving to Fairfield Bay in 1987, Jim became a woodcarver, working on small-scale carvings and larger scale totem poles with the local carving club. (Published in *Fairfield Bay News* on January 4, 2016, by Dan Feuer)

"To aid its members by every honorable means in the attainment of their ambitions as chemists throughout their mortal lives." —Third Object



# Thank you! 2015-2016 ALPHA CHI SIGMA FRATERNITY Contributors

(Contributions acknowledged are for donations received between September 1, 2015, and August 31, 2016.)

Thank you to all brothers who donated to Alpha Chi Sigma. Your contributions help make possible the Fraternity's year-round efforts to promote and support The Three Objects.

The Supreme Council expresses its gratitude for the significant support provided by those brothers composing the Elixir of Life Club, the Paracelsus Club and the Altotus Club.

Special recognition is given to the Reserve Fund Members whose additional contributions help to ensure the long-term financial security of the Fraternity.

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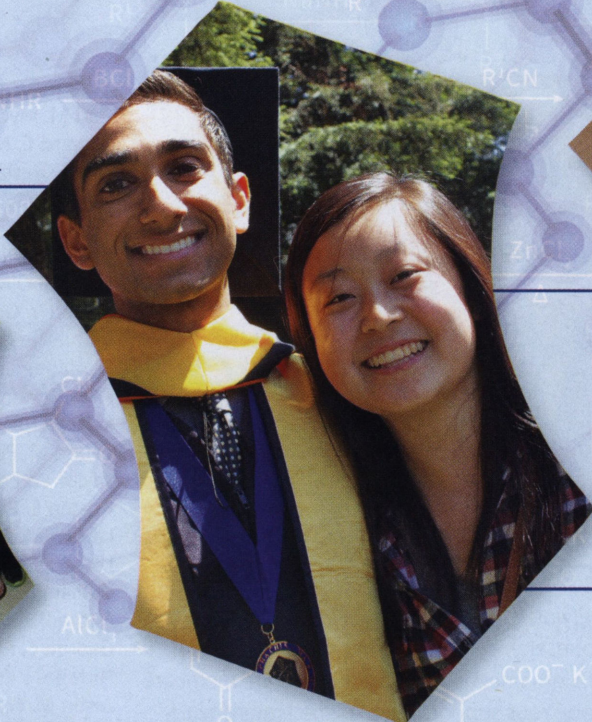
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 (continued on page 50)



# ALPHA CHI SIGMA

Professional in the Chemical Sciences



LIFE of the  
FRATERNITY  
2017 Solicitation

## MESSAGE FROM THE SUPREME COUNCIL

Dear Brother, as we conclude the 53rd Biennium and head into the fall of a new biennium, we are again reminded that life has an interesting way of combining our old experiences with our new ones. So it is with our beloved Fraternity. We continue to grow our existing chapters and to expand onto new campuses, so that even more young scientists will learn of our Brotherhood. These members bring with them energy and ideas for new programs and ways of communicating that help to augment and grow the enthusiasm of the life of Alpha Chi Sigma. All of these new chapters and programs would not be possible without the generous monetary contributions of our members. We would like to humbly ask you to provide a contribution of financial support. These contributions in the past have enabled our new state-of-the-art website, chemistry demonstrations to youth, planning and developing new programs, as well as the addition of new chapters! Your donations make all of these projects possible and will continue to enable the Fraternity to grow and enrich the lives of its members, young and old. As you make your contribution, we are also excited to hear any new ideas or thoughts you may have. Please consider making a donation today to support Alpha Chi Sigma in the 54th biennium.

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## Initiation

Our life in Alpha Chi Sigma starts with pledging and initiation. It all begins there! Your support helps grow the Fraternity so that initiations are now held at 55 chapters and 17 colonies and groups, with Kettering University being the newest!

## Collegiate Outreach

Each year, active chapters are awarded 5 percent of the amount that their alumni contributed to the national solicitation the previous year. This money is used for a variety of purposes. For example, Zeta Chapter and Chicago Pro Chapter co-hosted their first annual Professional Transition Forum. The forum provided a casual environment for professional brothers and soon-to-be professional Brothers to network about the job market, adjusting to post-college life and how to be successful in a new job.



# LIFE of the FRATERNITY



## Graduation

Alpha Chi Sigma recognizes its members at commencement with graduation medallions, local chapter celebrations, and dinners following the Professional Induction Ceremony. Your donation helps our members celebrate the next chapter of their lives.



## Professional Activities

Professional Chapters allow Brothers across the country to stay active with Alpha Chi Sigma, advance chemistry as a science and a profession, and create a bond of lasting friendship. For more than 30 years, Washington Pro Chapter has hosted their annual Shrimpfest, bringing together brothers of all ages. Your donation allows the Fraternity to support professional outreach activities that connect brothers from all industries, backgrounds, and locations.



## CONCLAVE

Your donation allows all the chapters to send a voting delegate to Conclave, our biennial meeting. At Conclave the Supreme Council is elected, there are training sessions and keynote speakers on the present-day topics our members work with, such as Title IX, Expansion, and Chemical Safety.



(continued from page 47)

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 Paul A. Klingsporn, Jr.  
 Alden F. Presler  
 Gary G. Witt

**ALPHA PSI**

Thomas Delahunty  
 Donald I. Hoke  
 Gerald A. Knorovsky  
 Edward C. Nelson  
 William A. Sandstrom  
 Richard E. Thomas  
 Edward N. Walsh  
 Norman E. Wideburg

**ALPHA OMEGA**

Kelly D. Allen  
 Brantly M. Callaway, Jr.  
 Ashlee A. Cribb  
 Abby J. DeGraffenreid  
 Jon T. Goodman  
 Jerome J. Krochmal  
 Jeffrey L. Moore  
 Allison B. Moore  
 Richard D. Palmer

Katelyn E. Reilly  
 Eric P. Slipp  
 Jamie Soler  
 Benjamin Swain  
 James B. Valenti-Jordan

**BETA ALPHA**

David B. Bechtold  
 Delbert J. Cragle  
 Thomas C. Gilman  
 Newton D. Hershey  
 Ernest G. Leser  
 Robert W. McDonnell

**BETA BETA**

Chester W. Delong  
 Raymond W. Mah  
 Richard A. Mikulec  
 Emmett B. Moore, Jr.  
 Alfred H. Zeltmann

**BETA GAMMA**

Robert C. Carter  
 Frederick F. Caserio, Jr.  
 Frank W. Dickson  
 Emil K. Kalil  
 Rodney K. Kurimoto  
 Michael J. Orkin  
 John D. Roberts  
 Diane M. Schmit  
 Eddie T. Seo  
 John M. Skarpelos  
 Ralph Staudenmayer  
 Sheree S. Ung  
 Grant D. Venerable II  
 Roy A. Whiteker

**BETA DELTA**

John E. Adams  
 Ted A. Baer  
 Charles R. Bagnell, Jr.  
 David A. Barclay  
 Donald A. Branson

Julie M. Breckenridge-Briski

Carol L. Davies  
 Gary L. Declue  
 Patricia A. Doyle  
 Gary J. Fennewald  
 Paul D. Griffin  
 Gerald L. Hoover  
 Craig B. Johler  
 Jimmy C. Johnson  
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 Dale A. Kyser  
 Keith J. Lissant  
 Lawrence J. Mikelionis  
 Robert J. Naeger  
 Daniel Palasky  
 Rachel K. Palasky  
 Nicholas J. Potje  
 Yvonne S. Prevallet  
 Jeffrey R. Ramberg  
 Kenneth G. Riley  
 Edgar A. Ross  
 Sandy A. Sansing  
 Michael S. Schmidt  
 Milton M. Silver  
 Robert E. Stevens  
 Omar T. Stuenkel, Jr.  
 James A. Youngman  
 Steve L. Zigrye  
 Jana L. Zigrye

**BETA EPSILON**

Thomas Carter, Jr.

**BETA ETA**

William S. Clark  
 Robert Desiderato, Jr.  
 John M. Erikson  
 Howard M. Fribush  
 Audrey M. Ihrig  
 Richard M. Kattner  
 Alfred W. Moxon  
 O. D. Sparkman



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Philip S. Bailey, Jr.  
 Lisa S. Baugh  
 Joe T. Bouchier  
 Finis E. Carleton III  
 L. E. Drake  
 Charles H. Fletcher, Jr.  
 John C. Gilbert  
 Darren G. Hazlett  
 Richard J. Johle  
 Clark H. Lagow  
 Edward R. Moss  
 Eldon H. Sund  
 Robert B. Walker  
 Laurie F. Walker  
 Roger M. Wells  
 Charles R. Wolle

**BETA IOTA**

Johannes M. Baris  
 James L. Corey

**BETA KAPPA**

Theodore E. Majewski

**BETA LAMBDA**

William M. Giffen, Jr.

**BETA MU**

Alan B. Chaput  
 Richard D. Crosland  
 Robert H. de Groot  
 Joshua Van Vranken

**BETA NU**

Alan N. Baughman  
 Timothy A. Berg  
 Hannah Bowman  
 Diane P. Chun  
 Michael D. Doud  
 Takeo Hokama  
 William Johnston  
 Adam S. Kinne  
 Hailey Q. Levin  
 Debra A. Moreno  
 Karen M. Morris  
 Kevin J. Murray  
 Gary S. Natwig  
 Thomas A. Runge, Ph.D.  
 Robert D. Sherwood  
 Janice L. Vaughn  
 Clifford M. Vogt  
 James A. Walsh  
 John R. Wiley  
 Michael H. Yang

**BETA XI**

Frederick Antosz  
 Russell S. Banush  
 Donald R. Blevins  
 Richard C. Faulkner  
 Andreas Lindert  
 Donald J. Melotik

**BETA OMICRON**

Raymond G. Bailey

**BETA PI**

Robert E. Davenport

Natasha Drew  
 Kenneth N. Drew  
 Julie M. Gallagher  
 Cindy L. Hopkins  
 David W. Maher  
 Ernest J. Oliveras, Jr.  
 Benson H. Wong

**BETA RHO**

Ronald G. Albrecht  
 Allan P. Bohlke  
 Denise A. Cobb  
 Gerald E. Davis, Ph.D.  
 Charles L. Foxx  
 Eric S. Geanes  
 Rebecca A. Kenyon  
 Carol A. Malin  
 Clifton Meloan  
 Joseph V. Ortiz  
 William N. Patry  
 Kristen E. Pforr  
 Jason J. Smee  
 Lucinda I. Sullivan  
 Randy L. Wehling  
 Slava Zakjevskii, Jr.  
 Robert W. Zoellner

**BETA SIGMA**

Norman A. Adams  
 Scott A. Beach  
 Michael Caution  
 Mark N. Evaniak  
 Robert J. Konig  
 Donna M. Marcera  
 Edward W. O'Grady

**BETA TAU**

Michael D. Carducci  
 Paul D. Oram  
 Uzma Zakai

**BETA UPSILON**

Richard E. Meyers  
 Victoria Porter  
 Charles D. Thompson

**BETA PHI**

Kenneth C. Alexander  
 John Bendler  
 Sam C. Colvin  
 John D. Davies  
 Jan W. Dunker  
 Thomas R. Eizember  
 Karl F. Gerdes  
 Connie Giroux  
 Kenny M. Graves  
 Donald R. Hixson  
 Keith E. Kostlan  
 Glenn A. Lambert  
 John G. Nedrud  
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 Margaret A. Smallbrock  
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**BETA CHI**

Joseph M. Crockett  
 David W. Donovan  
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 Mary Kinsel  
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**BETA OMEGA**

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 George H. King  
 Carleton B. Moore

**GAMMA ALPHA**

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**GAMMA BETA**

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 Elizabeth R. Gaillard  
 Adam J. Hopkins  
 William M. Landing  
 Jennifer A. Schnippert  
 Matthew J. Schnippert  
 Gregory J. Suess  
 Michael C. Sumner  
 Gary E. Walker

**GAMMA DELTA**

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 Renee B. Thomas

**GAMMA EPSILON**

Mark E. Kaye

**GAMMA ZETA**

Christina A. Bailey  
 Derek Marin  
 Jeannette Osterloh

**GAMMA ETA**

Patricia F. Arnett

**GAMMA THETA**

Rachel J. Allenbaugh

Laura J. Blunk  
 Season Kerns  
 Kyle A. Miller  
 Eric Null  
 Oliver Penrose  
 Sarah J. Pickett  
 Jessica L. Pryor  
 Eli P. Riekeberg  
 Kevin A. Robb  
 Hayley E. Scheerer

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Claudia P. Brodtkin  
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 Jennifer C. Duff  
 Preston Durrill  
 Erin M. Fagan  
 Richard D. Gandour  
 Karen H. McLean  
 David B. McLean  
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 Wendy S. Robinette  
 Charles W. Saunders, Ph.D.  
 Angela M. Snow  
 Andrew J. Talmadge

**GAMMA KAPPA**

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**GAMMA LAMBDA**

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**GAMMA NU**

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 Alexander P. Herbert  
 Klaus Himmeldirk  
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 Abigail E. Vallance  
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**GAMMA OMICRON**

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 Ned D. Heindel  
 Jessica L. Huff  
 Vanessa R. Kern  
 Sarah Muse  
 Timothy Prozonc  
 Brian R. Thomas

**GAMMA PI**

Allison R. Hord

**GAMMA SIGMA**

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 Vickie Krupka  
 Stephan Woods

**GAMMA UPSILON**

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 Joseph P. Richardson

**GAMMA PSI**

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 David Holtzapple

**GAMMA OMEGA**

Douglas E. Albertson  
 Stephen W. Ingham  
 Andrea E. Martin

**DELTA ALPHA**

Taylor W. Perkins

**DELTA BETA**

Christopher H. Peterson

**DELTA DELTA**

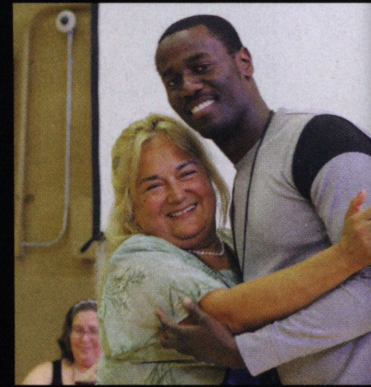
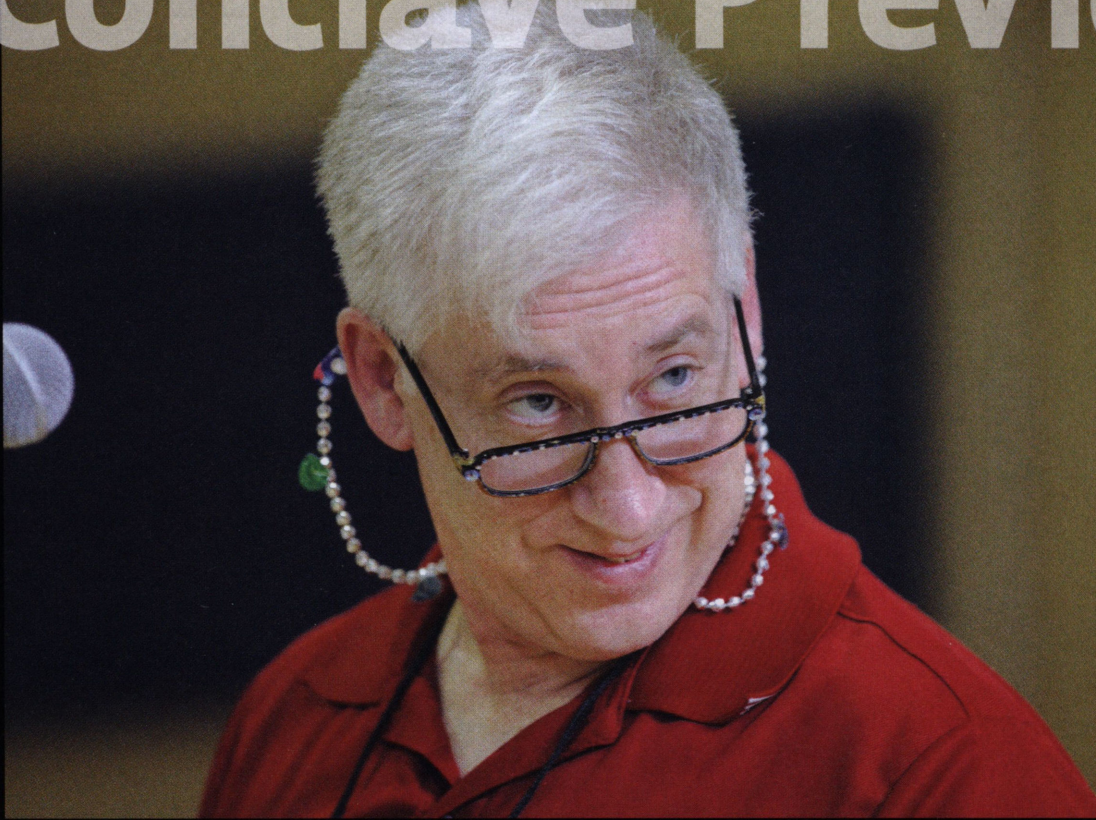
Sariah Q. Cantrell  
 Allyson K. Digmann  
 Katherine A. Dumbell  
 Justin M. Pratt



**THE BIENNIAL CONCLAVE** "It's one of the best weeks you can spend as a member of this organization," could quite well be "The Conclave Refrain" (see page 54).



# Conclave Preview



**NEXT ISSUE:** From July 25–30, 2016, the 53rd Biennial Conclave of Alpha Chi Sigma was hosted by *Alpha Omega* at the Georgia Institute of Technology.

In our next issue, we will feature the full report . . . but for now, enjoy this preview!



The otherwise uncredited (and terrific) images associated with the most recent Conclave used in this issue were generously provided by Charles McAnany, Iota 2008, who has released these photos for use under CC-BY 4.0, <https://creativecommons.org/licenses/by/4.0/>







# Beta Delta Chapter

The *Beta Delta* Chapter at the Missouri University of Science and Technology turned 80 years old on May 2, 2016. To celebrate, they threw a party and invited a few friends. The party started on Friday, April 29, the weekend before the actual anniversary, with a reception and trivia contest at the home of the chapter advisor, Douglas Ludlow. On Saturday, rounds of mini-golf were held and visitors and alumni got tours of the new Chemical Engineering Building. The party capped off with a combined chapter formal and anniversary banquet at the Rolla Comfort Suites Conference Center. Tables in the banquet hall were adorned with red carnations in laboratory glassware and identified with an element from the periodic table. In one corner of the hall a loop of photographs from the *Beta Delta* archives were laid out. On display were several *Beta Delta* awards, memorabilia and artifacts, including the two large hexagon plaques signed by every member initiated since the 1970s. Well-wishers from neighboring chapters were in attendance, as was a delegation all the way from *Alpha* Chapter. At the end of the evening, everyone enjoyed slices of an anniversary cake baked by event organizer, Abigail Buchheit. The weekend concluded with a Professional Induction Ceremony on Sunday afternoon.

An Alpha Chi Sigma chapter at the Missouri School of Mines and Metallurgy was first envisioned by Houston Taylor as early as 1920. In 1925, *Alpha* Chapter alumnus W. T. Schrenk began discussions with the Supreme Council about a chapter in Rolla, but it was not until 1932 that Epsilon Pi Omicron was created. The local chemistry fraternity had four stated purposes. The first three were remarkably similar to Alpha Chi Sigma's Three Objects, with the fourth being to petition Alpha Chi Sigma for a chapter at MSM.

On Saturday, May 2, 1936, Epsilon Pi Omicron became *Beta Delta* Chapter. The installation was conducted by GMA Wiedemann, with an initiation team from the *Delta* Chapter at Missouri-Columbia, *Alpha Epsilon* Chapter at Washington University in St. Louis and the St. Louis Professional Chapter. After an informal luncheon at the Hotel Long, a large group made their way to



Anniversary Cake (image by D. Mitch Levings)

the Mining Building where the initiation ceremony started promptly at 2:30 p.m. After the initiation, the group returned to a banquet at the Hotel Long where the GMA formally installed the chapter and the chapter's first Master Alchemist, E. W. Volz. Among the charter members initiated that day was future GMA Frank Zvanut.

During the chapter's 80 years, there have been a number of significant (and some not so significant) events happening in Rolla. In spring 1937, *Beta Delta* held a banquet to celebrate their first anniversary. The guest speaker at the *Beta Delta* banquet was former GMA Wiedemann.

During the chapter's early years, chapter advisor W. T. Schrenk maintained a summer tradition of hosting a lawn party for the chapter; the event usually involved food, drink and softball.

A strong bond was established between *Beta Delta* and the *Kappa* Chapter in Kansas. In spring 1940, in addition to initiating their own pledges, *Beta Delta* (Missouri-Rolla) also initiated four *Kappa* (Kansas) pledges and two *Delta* (Missouri-Columbia) pledges. Several members of the St. Louis Professional Chapter were on hand to help out with the ceremony. The initiation banquet was held that evening in nearby Newberg, and the next day was spent playing softball, roasting hot dogs and enjoying a beautiful spring day. The next spring, in 1941, the *Kappa* Chapter hosted the joint initiation at

its house. Although only five from *Kappa* and four from *Beta Delta* were initiated, representatives of *Delta* (Missouri-Columbia), *Nu* (Penn State), *Alpha Phi* (Tennessee), and the Kansas City Professional and St. Louis Professional Chapters attended the event.

In summer 1941, *Beta Delta* hosted the dedication of their new chemistry building. Later, at the home of DC W. T. Schrenk, *Beta Delta* Chapter defeated the St. Louis Professional Chapter in a friendly game of baseball by the score of 29-5.

In fall 1946, *Beta Delta* hosted the Midwest District Conclave and Jamboree. The highlight of the meeting was a picnic at the home of District Counselor W. T. Schrenk. *Alpha Epsilon* Chapter and the St. Louis Professional Chapter claimed a moral victory by only losing 18-10 when they joined forces to take on *Beta Delta* in a raucous baseball game.

Again, in 1949, 75 brothers from area chapters met in Rolla, Missouri, for the Midwest District Conclave. Registration was held at the Chemical Engineering Building, but the assembly quickly moved to the home of GMC W. T. Schrenk. In a softball challenge, the collegiates defeated the professionals 28-18.

The 1951 Midwest Jamboree came back to Rolla during the fall. Attendance for the event, which included GPA Merle Griffin all the way from New York, totaled 72. The highlight of the weekend was a football game between the collegiates and professionals. The winner's trophy, dubbed the Wiedemann Cup, went to the collegiates.

In 1964, Alpha Chi Sigma was well represented in the administration of the Missouri School of Mines. New appointments included *Beta Delta* Brothers: Dr. Dudley Thompson, 1956, as Dean of Faculty; Mailand Strunk, 1942, as chair of the chemical engineering department; and William Web, 1938, as chair of the chemistry department. Brother Web was also District Counselor for the Missouri Valley District.

At the 1970 Conclave, a motion passed lifting the male-only membership requirement. The Supreme Council declared that women may pledge immediately, but could not be initiated until September 1, 1971. *Beta Delta* responded by sending the first pledge election





ABOVE: Beta Delta House Party at Douglas Ludlow's place (image by D Ludlow)



Bonding over the cake (image by D. Mitch Levings)

report with women on the list. On September 1, nineteen women were recorded as duly initiated members of the Fraternity. The initiates from *Beta Delta* were Carol Langemach, Cecilia Meyer and Patricia D. Poertner.

At the 1978 Conclave, the initiation ritual underwent a major modification. Because *Beta Delta* Brothers DeWayne Gerber and D. Mitch Levings were part of the working group that modified the ritual, *Beta Delta* had all the revisions to the ceremony so with approval of the Supreme Council, *Beta Delta's* fall 1978 pledge class was the first group initiated under the revised ceremony.

The liveliest debate that took place during the spring 1985 Supreme Council meeting cen-

tered on where to hold the 1986 Conclave. GPA Maurice Bursey was supporting a bid from his home chapter, *Rho* (North Carolina), while GMC Mitch Levings was championing a bid from his home chapter of *Beta Delta*. A third bid, from *Gamma Beta* (Florida State), well, it didn't stand a chance. With the GMC and GPA making points and counter points for their home chapters, GMA Lynn Swanson and GCA Arden Dougan realized that the decision would be up to them. Finally, the GMA called for a break during which he and the GCA conferred out of earshot of the GMC and GPA. When the break was over, a quick vote was taken and the *Rho* Chapter was awarded the 1986 Conclave by a vote of 3-1.

On November 5, 1993, *Beta Delta* initiated Brother Anica Elaine Winkle, the Fraternity's 50,000th member.

The St. Louis Professional Chapter joined the Missouri collegiate chapters (*Delta*, *Beta Delta*, and *Gamma Theta*) in hosting what was called The Millennium Conclave. The site of the Conclave was the Henry VIII Hotel and Conference Center. The hotel, located near the St. Louis airport, was scheduled for demolition to make way for a new runway.

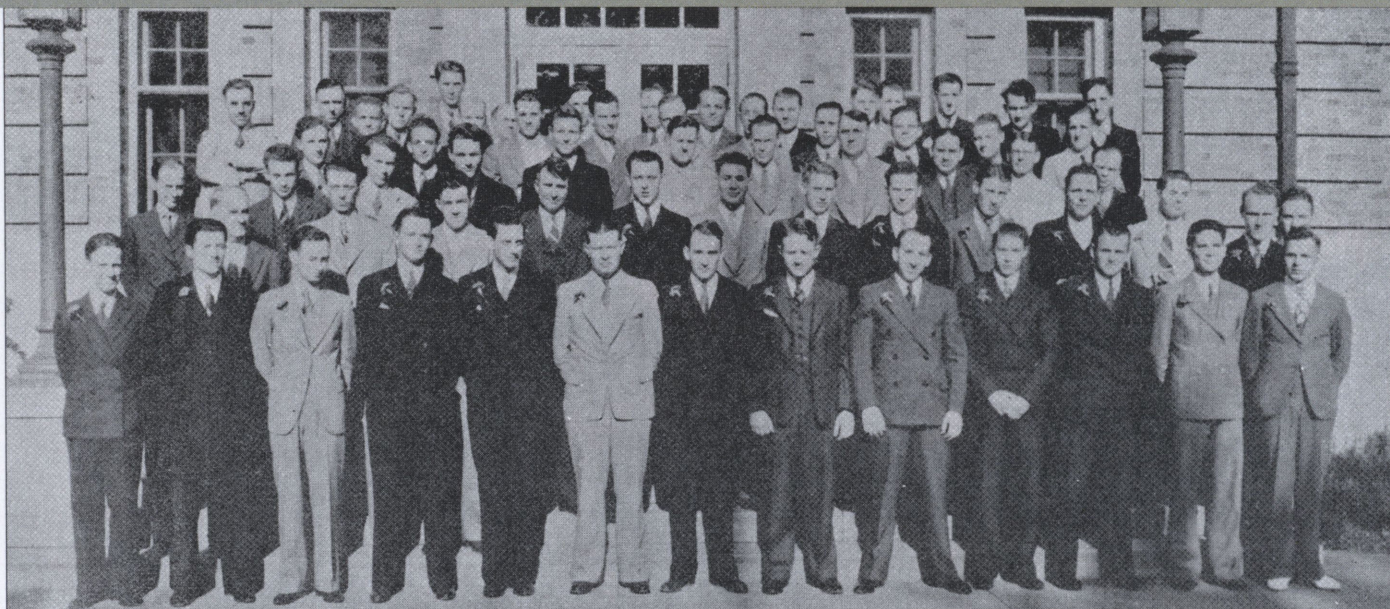
It took more than 300 person-hours in the spring of 2004 to complete, but the brothers of *Beta Delta* addressed a complaint from first-year chemistry students that the periodic table hanging in the front of Schrenk Hall's G3 lecture room was much too small and completely out of date. The solution, headed by Trini King, was to paint a wall-sized mural of the periodic table. Work began on Friday, April 23, with the final brush stroke coming nine days later.

In early 2016, *Beta Delta* held an 80th birthday party to look back and reflect on where it came from and to look forward to where it was going.

*Beta Delta* has given the Fraternity five Grand Master Alchemists, second only to the *Alpha* Chapter—one in each of the following decades:

- 1950s Walter T. Schrenk (Doesn't really count since Doc Schrenk was initiated at *Alpha* but is listed in the *Beta Delta* charter)
- 1960s Frank Zvanut, 1936, *Beta Delta* charter member
- 1970s Ed Schneider, 1942
- 1980s D. Mitch Levings, 1975
- 1990s DeWayne Gerber, 1975
- 2000s John Adams, 1971





Beta Delta installation (November 1936 *HEXAGON* Vol. 27(2), 56)

## AUGUST 18, 1970

### *Beta Delta and the vote that made Alpha Chi Sigma Co-ed*

Conclave Motion 15, by NEDC Robert Schaffrath (*Pi*), seconded by Raymond Cousins, delegate from *Beta Rho*: "Amend Bylaws Article 1, Section 1, Part 1, Paragraph (a), to read, 'Any chemist or any student of chemistry' and to bring any other Article in the Bylaws into conformity with this amendment." That wording would remove being male as a requirement for membership. The Membership Standards Committee determined that this motion involved changes to membership standards and therefore must pass by a 3/4 majority; 52 votes. The final count: 50 yea and 19 nay. The motion failed ... but not for long.

The idea of inducting women into the Fraternity had actually been around for some time. In a 1946 *HEXAGON* editorial, Louis Monson of *Alpha Epsilon* (Washington University in St. Louis) suggested that the Fraternity should regard women as prospective members. Brother Monson, a member of *Tau Beta Pi*, related how that honor society was facing a controversial decision to remove the "men only" provision from its constitution and bylaws. *Tau Beta Pi* awarded its first "Women's Badge" in 1923. By 1945, thirty-five other women engineers had earned special recognition, prompting *Tau Beta Pi* to consider electing women to full membership. The concept was generally considered unworkable, for a variety of reasons, including the rationale that no married men would be able to join without facing severe opposition from their wives.

As more women enrolled in chemistry-related majors, the debates would surface on their potential value as members. Arguments of morality, tradition and concerns that women "just wouldn't fit in" always prevailed and the

status quo persisted. Driven by the economics of falling membership, the controversy stirred anew during the late sixties. Ed Schneider, *Beta Delta*, was GCA from 1966 through 1968. He recalls the difficulties of the times, "I had a fair amount of correspondence with a number of colleges. I don't want to over simplify it, but it was their feeling that the college could provide all the social needs of the student and that fraternities were neither needed nor wanted. My answer to this was that we weren't merely a social fraternity, but were a professional fraternity, and we were interested in advancing chemistry both as a science and a profession. Their answer was, 'If this was true, why didn't we allow women students to join?' To this I had no answer."

The late sixties also ushered in an anti-establishment attitude among students. Fraternities, with their secret rituals and forced discipline, were branded bourgeoisie and were generally shunned. Membership in all Greek letter societies, including *Alpha Chi Sigma*, was dropping and chapters were closing all over the country. The Fraternity was facing a membership crisis and increasing the potential membership base by bringing in women seemed the obvious way to combat the decline. This debate became a frequent topic of Supreme Council discussions. There were mixed feelings on the subject, but the Council became convinced it was the right course to take. A motion was brought to the floor during the 1968 Conclave that would have paved the way for women to join, but opponents got the motion declared out of order on the grounds it would violate the Articles of Incorporation.

Two years later, Conclave Motion 15 came to the floor. The GMA had consulted lawyers and

was prepared to take care of the details that had previously derailed the process. Heated debate took up most of the morning session. Predictions of the Fraternity's demise if women were allowed in were made by some, while projections of a similar fate, if women were kept out, were made by others. House chapters feared they would have to close their doors. Amendments and counter proposals were made and rejected. A proposal to create an official Little Sisters Program with the same membership qualifications as *Alpha Chi Sigma* nearly won approval, but fell short in the end. The session ended with a failing vote that apparently put the issue to rest again.

But GMA Schneider was not going to give up that easily. Disappointed that his home chapter had been one of the nay votes, he cornered the three-member *Beta Delta* delegation over lunch. *Beta Delta* Delegate Gerald Hoover said he could support the motion, but was under strict orders from the chapter not to vote for anything that would let women into the Fraternity. After some persuasive negotiation by the GMA, Brother Hoover agreed that if the motion was amended to not take effect for a year, he could convince the chapter to accept it. Delegates from other opposition chapters were lobbied and the GMA corralled enough votes to pass the measure. When the afternoon session was called to order, the *Beta Delta* delegate moved to reconsider Motion 15. And after a little more debate, the amended motion passed by a vote of 65 to 3 (one abstention).

With that vote the Fraternity was forever changed. On September 1, 1971, nineteen women, (including three at *Beta Delta*) were recorded as full members of *Alpha Chi Sigma*. ☉



# ALPHA CHI SIGMA FRATERNITY

# Risk Management Policy

*Adopted by the Supreme Council on June 13, 2010.*

Its Three Objects guide Alpha Chi Sigma, the Professional Chemistry Fraternity. The National Fraternity, as a resource and support organization, provides the following Risk Management Policy to govern its own events and to guide its chapters as they conduct local events. The responsibility for implementing this policy at local chapter events remains with the local chapters. In addition, members are responsible for their and their guests' compliance with this policy.

## ALCOHOL AND DRUGS

1. The possession, use and/or consumption of ALCOHOLIC BEVERAGES, while on Chapter premises, or during an official Fraternity event, or in any situation sponsored or endorsed by the chapter, must be in compliance with any and all applicable laws and regulations, whether they be those of the state, province, county, city or educational institution.
2. No alcoholic beverages shall be purchased through the Fraternity or Chapter treasury, nor shall purchase of such beverages for members or guests be undertaken or coordinated by any member in the name of or on behalf of the Fraternity or Chapter. The purchase and/or use of a bulk quantity of alcoholic beverages, e.g., kegs, is against Fraternity policy.
3. The Fraternity's name shall not be associated with any event co-sponsored with an alcohol distributor, charitable organization or tavern/bar where alcohol is given away, sold or otherwise provided to those present.
4. No alcohol shall be present at any rushing, pledging, or initiation event or at any pledge or chapter meeting.
5. It is against Fraternity policy to sponsor events at which non-members of the Fraternity, unless specifically invited, have unrestricted access to alcohol.
6. No member shall permit, tolerate, encourage or participate in "drinking games" while on Chapter premises during a Fraternity event, or at any event sponsored or endorsed by a chapter.
7. The possession, sale and/or use of any ILLEGAL DRUGS or CONTROLLED SUBSTANCES at any Chapter house, at any Fraternity sponsored event, or at any event that an observer would associate with the Fraternity, is strictly against Fraternity policy.
8. Any function where alcoholic beverages are present shall also have non-alcoholic beverages and food available.
9. Events at which alcohol is available shall have a guest list, with all attendees registered and with age verification at the door. Any alcohol present is the responsibility of the individual who provides it. A safe ride home program should be provided.
10. It is recommended that events where alcoholic beverages are present be conducted at establishments licensed for the sale and service of such beverages.
11. This policy shall be an integral part of membership training materials. It should also be posted at the door of all parties. Each guest should sign in when they arrive indicating that they have read, understood, and agreed to follow these regulations.
12. Any violation of this policy may be the subject of discipline by a local chapter or by the National Fraternity if it is aware of the violation. If Alpha Chi Sigma receives information alleging a violation of the Risk Management Policy by a chapter, it will conduct an investigation appropriate to the circumstances and take any necessary action. The investigation will give the chapter an opportunity to respond to the allegations.

## HAZING

The Fraternity does not tolerate or condone any manner of hazing. Hazing activities are defined as: "Any action taken or situation created intentionally, whether on or off Fraternity premises, to produce mental or physical discomfort, embarrassment, harassment or ridicule." Such activities include, but are not limited to: the use of alcohol; paddling in any form; creation of excessive fatigue; physical or psychological shocks; and any other activities inconsistent with Fraternity Law, ritual or policy, or with the applicable laws and regulations of the state, province, county, city, or educational institution.

## SEXUAL ABUSE

The Fraternity does not tolerate or condone any form of sexually abusive behavior, whether physical, mental, or emotional, on the part of its members. This includes any actions that are demeaning to any person or group, including but not limited to date rape, gang rape, or verbal harassment.



## ALPHA

Manar Alherch  
Chris K. Bastin  
Brenna L. Bomkamp  
Dan T. Cappabianca  
Julia L. Graham  
Samuel L. Haack  
Cole R. Harder  
Devin R. Ketelboeter  
Jason J. Kim  
James E. Lintner  
Vladimir P. Miltchev  
Beth A. Nachman  
Paige E. Pistono  
Monica P. Samsin  
Brendan J. Short

## BETA

James Cox  
William Dean  
Jake Drehmel  
Kathleen Klopfenstein  
Sarah E. Lardy  
Victoria Longley  
Nikko Sideris  
Jacob Solinsky  
Matthew Vincent  
Lucy Wang

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Phoebe Y. Huang  
Jennifer Munoz  
Thomas Ouyang  
Victoria U. Sung  
Aaron M. Yun

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Colleen M. Compas  
Connor L. George  
Kathryn L. Gowdy  
Abigail C. Graham  
Cortney K. Hutson  
Taylor A. Klimt  
Emily E. Lager  
Nathaniel W. Mahloch  
Brittney L. Marshall  
Emily L. Montgomery  
Andrew G. Muenks  
Linda E. Mushi  
Tara M. Parnacott  
Michael D. Phipps  
Kevin N. Rudberg  
Sydney D. Spencer  
Hayley M. Stiers  
Jessica M. Thomczek  
Elizabeth B. Tustison  
Alaina M. Weise  
Jason O. Williams

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Kevin K. Caraway  
Connie Chen  
Amanda S. Essex  
Kelly A. Fox  
Rachel L. Gibson  
Alekhya M. Govindaraju  
Fahad Hasnain  
Christophoros A. Herodotou  
Eric Hofer  
Rohini Kalluri  
Revati Kalluri  
Eric N. Kim  
Joseph E. Kim  
Haley L. Klimaszewski  
Sterling D. Manka  
Ricardo Martinez  
Marc A. Mertsching  
Nora K. Pendergast  
Meghan R. Porter

Vasu Sheel  
Jay C. Shukla  
Sara E. Skrabalak  
Christopher M. Sublette  
Steven L. Tait  
Joseph K. Vu  
Zixuan Wei  
Jonah L. Wirt  
Abigayle R. Zielinski

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## 100 years ago... Fall 1916

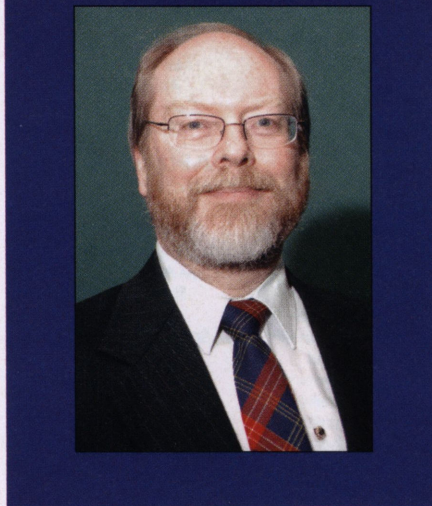
The brothers of *Alpha* Chapter (U Wisconsin) attracted a large number of local alumni to their two-day Homecoming celebration. The event started with a dance at Lathrop Hall followed the next day by the Chicago-Wisconsin football game. *Lambda* Chapter (Ohio State) also hosted a large number of alumni at their Homecoming celebration. The football contest featured a match-up between Wisconsin and the home team. Of all the Homecoming games reported, only *Delta* (Missouri) announced a score. The Tigers defeated the University of Texas 3-0. In other football stories, *Rho* (North Carolina) Chapter's Brother Tennent was seeing a lot of action as a fullback on the UNC varsity team. Brother Tennent was also captain of the basketball team, but fall is football season. Carrying the football theme to the bizarre, *Xi* Chapter (University of Maine) developed their own terminology for the game. The contest pitted the seniors (aka The Aromatics) against the initiates (aka The Aliphatics). The football was renamed a molecule, and each team got to perform three "experiments" (downs) to yield a "condensation product" (touchdown). The rules also required the quarterback's signal calling to be in the form of chemical reactions. The Aromatics won.

## 75 years ago... Fall 1941

*Alpha Iota* (Pennsylvania) established a committee to develop a new fraternity flag. The committee had come up with several designs already. In order to avoid an increase in badge prices, the Supreme Council authorized official Fraternity jeweler, Burr, Patterson and Auld, to reduce the gold content of the badge from 14 karat to 10 karat. The badges, a required purchase for all initiates, went up to \$5.45 each. The cost included the 10 percent National Defense Tax levied on fraternity jewelry.

*Psi* Chapter (Louisiana State) won the first place trophy in LSU's Homecoming parade for their float depicting a fight between moonshiners and "revenooers." On the sporting front, *Alpha Iota* (Pennsylvania) sponsored a series of football contests between the chemistry and chemical engineering departments. *Alpha Gamma* (Kentucky) recently purchased a new ping pong table and noted a significant drop in house grade point averages! *Alpha Beta* (Michigan) kept the pressure on *Zeta* (Illinois) to finish the bowling competition suspended last spring due to snow and *Zeta's* "preoccupation with skating, studying and women." In addition to all the local activities, the National level concentrated on the Alpha Chi Sigma safety program during the fall of 1941. The Supreme Council appointed Francis R. Holden chairman of the Alpha Chi Sigma National Safety Program.

In other safety related matters, Alpha Chi Sigma became an Associate Member of the National Safety Council and the Supreme Council voted to purchase a copy of the National Safety Council's book, *Student and Employee Safety in Colleges and Universities* for each collegiate chapter, District Counselor and Supreme Council member.



D. Mitch Levings, OA, Grand Historian  
Beta Delta 1975

## 50 years ago... Fall 1966

The price of the official 10 karat badge rose once again from \$6 to \$9.50. On October 8, after 21 months as *Pi* Colony, *Beta Sigma* Chapter was installed at the Rochester Institute of Technology. At 2:22 p.m., John Patterson called to order the final meeting of *Pi* Colony. He called upon GMA Miller to read the Supreme Council proclamation establishing *Beta Sigma* Chapter of Alpha Chi Sigma. The meeting was adjourned at 2:25. GMC Mack Barlow then directed the initiation of Joseph Dayton, Gary Demkovich, Paul Hammesfahr, Melvin Hollander, John Kalnins, Roger Shaw and Charles Allen. All went well at the ceremony, despite the fact the new regalia did not arrive from the manufacturer in time (borrowed regalia worked just fine). The initiation banquet was held in the Sibley Room of the Treadway Inn. More than 30 people attended the affair, including the entire Supreme Council and two members of the Order of Altotus. Brother Mack Barlow brought the banquet to a close by regaling all present with a dozen or so of his "classic stories."

In other Council action, Brother Ken Edwards was appointed District Counselor for the Pacific District, and *Alpha Theta* Chapter (Iowa) was selected as the host chapter for the 1968 Conclave. Supreme Council Proposition 2234 established the Investment Committee. Chairing the committee was C. P. Neidig with Brothers Foster Snell and Richard Moore also serving. The function of the committee was to make responsible investments of the Fraternity's money. They were also required to make detailed quarterly reports to the Supreme Council regarding all holdings and transactions

## 25 years ago... Fall 1991

On October 19, in Austin, Texas, Dave Jurberg, president of the UT Alchemists, called a special meeting to dissolve the local chemistry club. At the close of that meeting, GMA Paul Jones called to order an extraordinary session for the Grand Chapter to declare *Beta Theta* Chapter reactivated.

*Beta Theta's* reactivation came six and a half years after the chapter was declared inactive.

In response to several high profile court cases finding colleges and the fraternity system liable for alcohol related accidents, universities began implementing strict new rules. Penn State was among the first universities with an Alpha Chi Sigma chapter to implement new policies. One of Penn State's new rules required that all fraternity parties be BYOB and that a guest list be generated and maintained for each event. This represented a major change for the entire Penn State fraternity culture, including Alpha Chi Sigma's *Nu* Chapter. With similar, but not identical, policies being instituted in an increasing number of universities, the Supreme Council sought advice from the Professional Fraternity Association and other legal sources to stay on top of the changing social attitudes. To address these issues, the Supreme Council took the existing anti-hazing policy and rushing guidelines and worked them into a comprehensive risk management policy. Many drafts and markups with considerable debate, discussion and argument went into the formation of a single document to deal with hazing, alcohol responsibility and sexual harassment. Consensus and agreement was difficult to achieve as each university had its own set of guidelines, the chapters were reluctant to change time honored traditions and the DCs were uncomfortable with the role of having to enforce whatever policy was enacted.

With the help of Ernest Gilmont of *Alpha Zeta* and *Pi* Chapter's George Lew, Alpha Chi Sigma maintained its visibility at the National Meeting of the American Chemical Society. The Fraternity continued to staff a registration table for brothers and host a special luncheon for members and guests.

## 10 years ago... Fall 2006

A large crowd of collegiate and professional brothers gathered at John's Grill in downtown San Francisco, on September 12. The event was the Alpha Chi Sigma Luncheon held in conjunction with the meeting of the American Chemical Society. Special guests were Bassam Shakhshiri, *Zeta*, and Jim Walsh, *Beta Nu*. Both brothers were candidates for the presidency of the ACS.

A phone call to the Fraternity's 1-800 number in the fall of 2003 put the wheels in motion to establish a chapter at Duquesne University, in Pittsburgh. Three years and four pledge classes later, the *Gamma* Chapter sponsored colony at Duquesne mailed a petition to the National Office declaring they were ready to become a chapter. The petition was circulated to the Grand Chapter, and a favorable vote was recorded. *Gamma Upsilon* was declared an active chapter effective November 20. A dual installation ceremony was planned for February that would formally welcome *Gamma Upsilon* and nearby *Gamma Sigma* from Kent State. *Gamma Sigma* was granted their charter on May 8, 2006.

Melissa Ward was appointed Northern District Counselor and Bryan Bals was appointed Great Lakes District Counselor. ☉





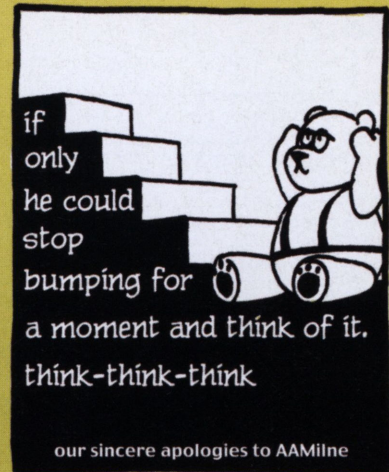
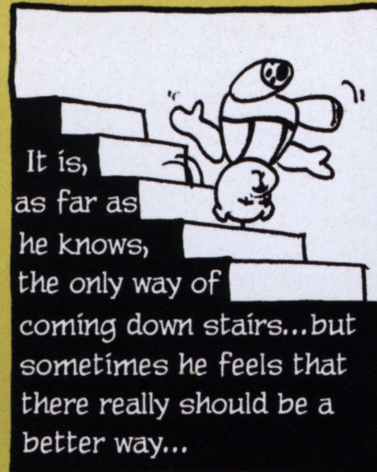
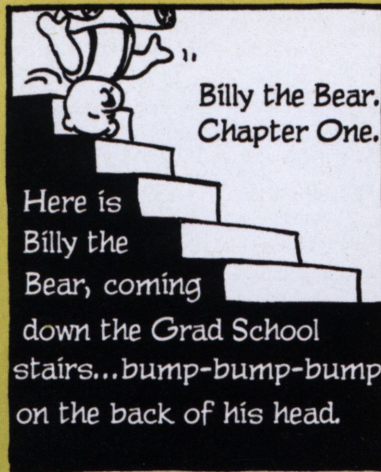
**HOT RETORTS**

# Under the Hood

**GE NOTE:** The cartoon strip series "Under the Hood" ran for a year or so, almost 20 years ago, in the now-defunct monthly magazine called *The Chemical Intelligencer*. GE Brian Coppola and some of his former undergraduate research students, who were reflecting on their graduate school experience, created and produced the series.

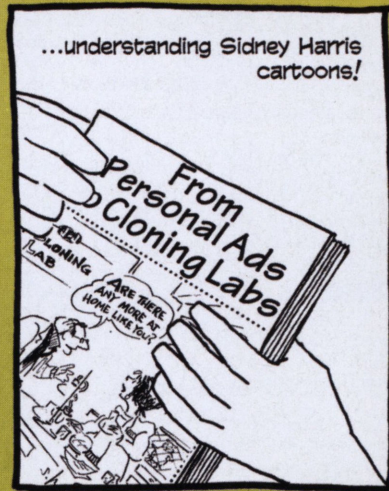
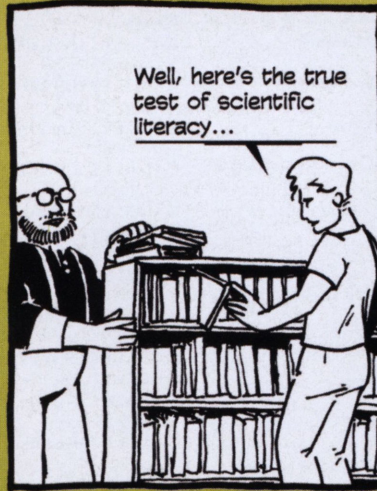
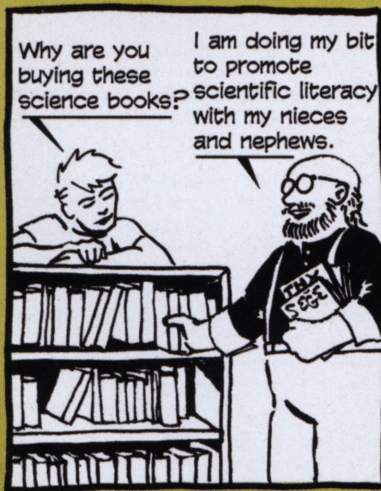
The GE had a casual correspondence with stellar science cartoonist Sidney Harris, who gave permission to use the image in the second of these strips, and contributed the last panel of the third one.

Under the Hood by Coppola and Daniels



LTHDDBrian P. Coppola and Douglas S. Daniels

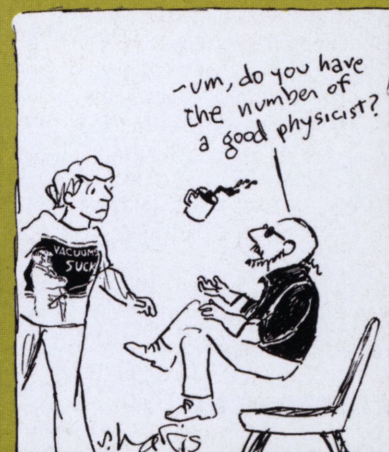
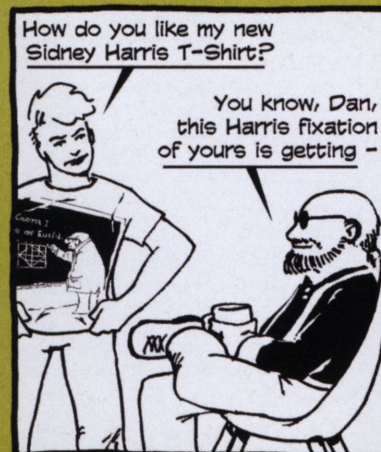
Under the Hood by Coppola, Daniels and Harris



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LTHDDBrian P. Coppola, Douglas S. Daniels, Sidney Harris

Under the Hood by Coppola, Daniels and Harris



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LTHDDBrian P. Coppola, Douglas S. Daniels, and Sidney Harris





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**DELTA-University of Missouri**  
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**EPSILON-Indiana University**  
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**ZETA-University of Illinois**  
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**IOTA-Rose-Hulman Institute of Technology**  
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**MU-University of New Hampshire**  
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