



**2014 Annual Meeting Report
The 62nd Meeting of MACTLAC
Chemistry in Our Community
Alverno College, Milwaukee, WI
October 24-25, 2014**

General Session 1, Friday Afternoon, 1:00 PM

Heather Mernitz opened the 2014 meeting by welcoming everyone to Alverno College and acknowledging the efforts of the Alverno community in making the event possible. Heather made several meeting announcements and then introduced the Plenary Session speaker. In a deviation from the meeting program, Dr. Mary Beth Anzovino, a post-doctoral associate in the lab of Dr. Stacey Lowery Bretz at Miami University (OH), was introduced. Dr. Anzovino was stepping in to deliver the presentation on behalf of the Bretz lab due to an unforeseen health situation that prevented the scheduled speaker, Dr. Stacey Lowery Bretz, from traveling.

Plenary Address

Measuring Student Understanding of Multiple Representations in Chemistry

Dr. Mary Beth Anzovino, Post-Doctoral Associate, on behalf of

Dr. Stacey Lowery Bretz, Volwiler Distinguished Research Professor of Chemistry, Miami University

Dr. Anzovino presented on Dr. Bretz's groups' aim to answer two specific types of chemistry educational research questions – analytical and methodological. The questions the group aims to answer are:

- 1) What information do students think is encoded in multiple representations?
- 2) What misconceptions exist and how prevalent are they?
- 3) How can Johnstone's domains be used to surface cognitive dissonance/misconceptions?
- 4) How are reliability and validity best established when student knowledge is often incomplete, incorrect, and fragmented?

First, Dr. Anzovino described the variety of methods used in their educational research, which are a mix of qualitative and quantitative methods. One of the more interesting devices described was a pen that records what students write and what they say at that same time, which allows the group to gain insight into how students solve chemistry problems. Multiple choice questions are also used to explore student's existing knowledge and are written using a bottom up design by including distracting answers. Dr. Bretz's group has also developed and tested a wide range of concept inventories (CI):

- 1) Enzyme-Substrate Interactions CI
- 2) Bonding Representations CI
- 3) Redox Reactions CI

- 4) Acid Base Reactions CI
- 5) Organic Acid Strength CI
- 6) Atomic Emission and Flame Tests CI

Attendees interested in using the CI's to add to their dataset were encouraged to contact Dr. Bretz directly.

The overall conclusions from the research suggest that multiple representations are powerful for eliciting cognitive dissonance, students have difficulty translating between Johnstone's domains, misconceptions exist in all disciplines of chemistry, and students do not know what they do not know. Dr. Anzovino suggested that the implications of this research for teaching chemistry were that students need practice with building, decoding, interpreting, and comparing multiple representations, that there is not just one "best" representation across Johnstone's domains, that limitations of representations are important to discuss, and that teachers should assess with multiple representations.

General Session 2, Friday Evening, 7:00 PM

Panel Discussion

Preparing Chemistry Majors of Careers, Graduate Study, and Professional Programs

Panelist:

Tracy Thompson, Associate Professor of Chemistry, Alverno College, Moderator
Lindsay Frost, Career Development Manager, University of Wisconsin-Milwaukee School of Freshwater Sciences
Emily Gregoire, Associate Scientist, Chr. Hansen, Inc.
Dr. Jeanne M. Hossenlopp, Professor of Physical Chemistry, Vice Provost for Research and Dean of the Graduate School, Marquette University
Dr. Roy M. Long, Associate Professor of Microbiology and Molecular Genetics, Medical School Assistant Dean for Admissions and Enrollment Services, Graduate School of Biomedical Sciences Assistant Dean for Graduate Recruitment, Medical College of Wisconsin
Deb Schall, Chemist, Technical Manager for Technical Services and Development, Hydrite Chemical Company
Peter B. Welch, School of Pharmacy Director of Recruitment and Admissions, Concordia University

A lively Q&A was kicked off by moderator Tracy Thompson and continued with attendees, including both faculty and Alverno students, asking questions of the panelists. Panelists weighed in on topics including:

- 1) What qualities characterize successful scientists in your field?
- 2) What are the most important outcomes of a good science/chemistry education?
- 3) How much writing do you do?
- 4) What in your experience/background helped you the most when you got started?
- 5) What impact does internships/experience have on your hiring process?
- 6) What kinds of things do you look for in letters of recommendation?
- 7) How do you value theory versus application, book learning versus hands on ability?

Further, audience members were asked to reflect on the following question: What efforts does your department/institution make to connect students with companies and opportunities? Do you have any special programs for freshman so that they are also connected to future job ideas (e.g. retention/graduation initiatives)?

A DVD of the entire panel discussion is available upon request.

General Session 3, Saturday Morning, 9:30 AM

Plenary Address

The Use of Chemical Signatures to Deduce the Health, Provenance, and History of Groundwater in Eastern Wisconsin

Dr. Timothy Grundl, Professor of Hydrogeology, University of Wisconsin-Milwaukee

Dr. Grundl began his presentation by asking the question “What happens to the groundwater when you put 1000 meters of ice on top of the landscape?” This question was in reference to the ice age glaciers that covered Eastern Wisconsin during the last ice age. Before answering this question, however, Dr. Grundl describing the bedrock geology of Wisconsin and the general hydrogeology of southeastern Wisconsin, as well as two key aquifers in southeastern Wisconsin: a shallow western unconfined aquifer and a confined southeastern sandstone aquifer in the Maquoketa shale layer of the bedrock. Water levels and pumping rates pre- and post-glaciation showed expected differences at both aquifers.

Dr. Grundl then described the ways in which glaciers can melt (surface flow, subsurface flow, and base flow), and he introduced the closed-system equilibration model and described how it can be used to age noble gases in water samples. Using this model along with oxygen-18 data, he was able to calculate the temperature of the ice at time of melting. The conclusions, in response to his initial question, were that identifiably distinct packets of water exist within a stratigraphically continuous aquifer, the confined aquifer was not sealed off during the last glacial maximum, the source of the last glacial maximum recharge varies as a function of distance from terminus, and that large amounts of last glacial maximum water still exist in the confined aquifer.

During the course of this work, Dr. Grundl set out to explore the radium anomaly that he discovered while answering his previously posed question. The Maquoketa shale layer is exposed at the surface and represents a chemical delineator between the water aquifers. To the west, the groundwater is high in alkalinity and low in sulfate, while the opposite is generally true as one moves east past the exposed Maquoketa Shale unit. Barite (barium sulfate mineral) saturation with the addition sulfate from gypsum results in a constant Ra:Ba ratio, while celestite (strontium sulfate mineral) saturation with the addition of sulfate from gypsum results in a constant Ra:Sr ratio. Thus it appears that the two aquifers have different levels of radium because of the co-precipitation controls of radium by barite (unconfined shallow west-most aquifer) and celestite (confined deeper east most aquifer). Dr. Grundl noted, however, that the ultimate source of radium is unknown at this time.

Next Dr. Grundl illustrated how environmental questions can serve as a springboard to illustrate basic chemical principles and are therefore useful in engaging students in the chemistry classes we all teach. Examples that he used described are:

- 1) Can riverbank inducement help supplement the drinking water supply in Waukesha? This question can be answered using flow and geochemical models (PHREEQC among others could be useful here). Geochemical models let students interact with the following chemical concepts: equilibrium phases, solution chemistry, surface exchange, solid, solubility, kinetics, and thermodynamics.

- 2) Can explosive residues be successfully remediated? This question can be answered by using kinetics. This question also has pH and iron speciation components.
- 3) Do emerging contaminants degrade in municipal wastewater treatment plants or are they dumped wholesale into the environment? This type of problem is usually handed as a plug flow reaction using assumptions of constant source/plug flow with dispersion, fast sorption with respect to degradation, pseudo first order degradation, only liquid phase degradation, and that sorbed mass moves the same rate as the water.

To end his presentation, Dr. Grundl showed that environmental chemistry lecture and laboratory classes are a dynamic equilibrium that can be used to reinforce good teaching methods. The significance of environmental chemistry questions is easily grasped by even the most “chemistry allergic” students and can be built into complex second-order questions.

MACTLAC Business Meeting

1. President Jaime Mueller called the meeting to order.
2. The Treasurer’s report for 2014 was presented by Adam Hoffman for Mark Sinton, who was unable to attend this year’s Annual Meeting. A motion was made to accept the Secretary’s report and seconded. The motion passed.

Year	2009	2010	2011	2012	2013	2014
Beginning Assets						
Checking	\$4,453.08	\$5,041.70	\$5,631.52	\$7,373.13	\$8,100.58	\$8,888.59
Savings	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Total Beginning Assets	\$4,453.08	\$5,041.70	\$5,631.52	\$7,373.13	\$8,100.58	\$8,888.59
Income						
Dues	\$673.00	\$445.00	\$420.00	\$1,320.00	\$470.00	\$425.00
Annual Meeting	\$464.27	\$4,155.00	\$4,280.11	\$2,295.00	\$2,110.00	
Interest	\$10.81	\$12.49	\$14.34	\$11.26	\$11.31	\$7.63
Other	\$0.00	\$101.00	\$598.52	\$60.00	\$0.00	
Total Income	\$1,148.08	\$4,713.49	\$5,312.97	\$3,686.26	\$2,591.31	\$432.63
Expenses						
Postage, copying, website	\$163.10	\$363.98	\$246.06	\$147.16	\$199.30	\$46.73
Annual Meeting	\$376.96	\$3,759.69	\$3,325.30	\$2,811.65	\$1,604.00	
Placement, Archives	\$19.40	\$0.00	\$0.00	\$0.00	\$0.00	
Other	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Total Expenses	\$559.46	\$4,123.67	\$3,571.36	\$2,958.81	\$1,803.30	\$46.73
Ending Assets	\$5,041.70	\$5,631.52	\$7,373.13	\$8,100.58	\$8,888.59	\$9,274.49
Asset Change	\$588.62	\$589.82	\$1,741.61	\$727.45	\$788.01	\$385.90

- Secretary's Report for 2014 was presented by Adam Hoffman for Mark Sinton. A motion was made to accept the Secretary's report and seconded. The motion passed.

Year	2011	2012	2013	2014
Beginning Membership	384	297	287	293
New Members	3	25	35	11
Members Removed	90	35	29	8
Ending Membership	297	287	293	296
Member Dues Breakdown				
Emeritus and Honorary members	43	47	47	49
Paid up members	86	65	67	70
In arrears members	168	175	179	166
Total Dues Paying Units	297	287	293	285
Member Dues by Year				
Paid up	86	65	67	70
One year behind	57	74	83	45
Two years behind	64	43	47	54
Three years behind	47	58	49	67

- John Zimmerman presented the 2014 Archivist report. A motion to accept the Archivist report was made and seconded. The motion past.

Several questions arise as I near the end of my MACTLAC Archive task:

- Is it reasonable to close down my operation as complete and current on January 1, 2015?
 - What is the storage location fate of the archival material and its mirrored backup?
 - Is it reasonable to create digital scans of selected quality images for storage?
 - What should we do with the lower quality image material? Save it by year or ditch it?
 - What shape should the future MACTLAC archives take? Do we need an archivist or would the posted meeting summaries suffice?
- Larry Ferren presented the 2014 Placement Officer report. A motion to accept the Placement Officer report was made and seconded. The motion past.

In 2014, 28 applicants used the Placement Service, and 19 positions were listed with the Placement Service. Of all the positions advertised, all 19 were MACTLAC Colleges. All the positions advertised were either located by way of advertisements placed with the Placement Service, C & E News, the Internet, or electronic notices forwarded to me by various sources. The 19 MACTLAC positions were advertised only to those candidates who had e-mail capabilities. Of the 19 MACTLAC positions listed, 25% were Organic Chemistry, 8 % were Analytical Chemistry, 21% were Physical Chemistry, 8 % were Biochemistry, 4 % were Environmental Chemistry and 33 % were General Chemistry.

All MACTLAC schools with positions open had their advertisements forwarded to Craig Bieler who placed them on the MACTLAC web page. The MACTLAC schools are very good at sending me notices of open positions. I appreciate the notices and try to respond promptly when a notice comes in to get it out to everyone on the electronic list and to get it to Craig for posting on the web page.

Applicants to the Placement service were of several groups -- graduate students, Ph.D.'s as post doctorates, and some professors at MACTLAC schools looking for positions. This past year **seven** new candidates came into the Placement Service, and **one** candidate had his name removed from the service after securing a position. Presently, as of September, 2014, **29** candidates are in the Placement Service looking for employment.

The Placement service will have a bulletin board at this meeting to advertise positions currently available. This year Jason Gillmore of Hope College and I will conduct a special session during the MACTLAC meeting featuring a panel that will deal with "Transitioning From a Graduate Student/Postdoc to a PIU Professor." We will have on the panel James Goll, Anne-Marie Nickel, and a third member (someone just recently tenured or pre-tenured). Each will describe briefly, the job, the application, and the interview. We will also take questions from the floor for each of the panel members.

I remain willing to serve in the Placement position, but I am willing to step aside as soon as there is someone who would like to do the job. I feel that there are many better qualified individuals in MACTLAC who should have their chance to implement a new plan of attack to make this office work better for the organization.

6. Jaime Mueller then introduced the new State Representatives elected at the end of Friday's Plenary Session. Dr. Vince Hradil, from Concordia University Chicago, is the new Illinois representative; and Dr. Janice Pellino, from Carthage College, was re-elected for another term as the Wisconsin representative.
7. Jaime Mueller next opened the floor for nominations for President-Elect and Secretary-Treasurer. Paris Barnes from Millikin University was nominated for President, and Mark Sinton from the University of Dubuque was nominated for Secretary-Treasurer. Paris and Mark were elected by acclamation.
8. A motion to have the Secretary-Treasurer send letters of thanks to the following individuals was made. The motion was seconded and passed.

Outgoing officers:

Jaime Mueller (President)

Outgoing state representatives:

Paris Barnes (Illinois Representative)

Host institution:

Alverno College

Host organizer:

Heather Mernitz

9. Paris Barnes invited the Association to Millikin University for the 2015 meeting. The meeting theme will be Green Chemistry's Silver Anniversary: A Look Ahead, and will be held on October 16th and 17th.

10. Jaime Mueller reviewed for the membership our future meetings sites. She asked those in attendance from Missouri, Iowa, and Minnesota to consider hosting the 2016 meeting since we do not as yet have a meeting site for that year.

2015: Millikin University (East)
2016: ? (West)
2017: Monmouth College (Central)
2018: ? (East)

11. Jaime Mueller next handed off the meeting to James Wollack, the incoming President.

12. James Wollack asked if there was any other business. As there was none, James asked for a motion to adjourn, which was made and seconded. The motion passed.

Respectfully submitted,
Adam Hoffman for
Mark Sinton
MACTLAC Secretary-Treasurer

Discussion Groups

Postdoc to PUI Prof: A Session for Future Faculty

Friday, October 24th, 2014
2:30-3:30 PM

After each panelist introduced themselves (Jason Gillmore, Larry Ferren, James Gall, Anne-Marie Nickel, Alex Blom), they were asked to describe their job responsibilities. Teaching loads were generally 12 credit hours. There were large variations in research requirements. Hope College requires active research. However, faculty are granted a 25% teaching load reduction (from 12 credit hours to 9 credit hours) to conduct research. Hope faculty are also required to bring in grants to get tenure. The Milwaukee School of Engineering and Edgewood College require some “scholarly activity.” At Olivet Nazarene University “research is not required but is expected.” Alverno College does not require research activity.

Panelists were then asked to discuss the hiring process for new faculty at their institutions. Advice on how prospective faculty could impress potential employers during the hiring process took center stage during this discussion. A recurrent theme for this advice was to “do your homework.” Specifically, job applicants should know their prospective institution so that they can use this information to impress on cover letters, teaching philosophies, etc. Another recurrent theme was “to be good natured.” That is, prospective faculty should be nice to everyone on campus because the impression that they make on anyone (especially students) that they encounter on campus may matter in the hiring process.

Finally, panelists fielded questions from the audience. Highlights of this discussion included that post-docs were not generally required for new faculty hires. However, it was pointed out that it is easier to train teaching skills than research skills. It was also noted that if “big time” research is expected at an institution, then prospective faculty should make sure that this institution has “big time” resources.

Hybrid/Online Learning

Friday, October 24th, 2014

2:30-3:30 PM

Jim Wend described some of the tips and shared information that comes from Alverno's bootcamp for faculty who design and teach online and hybrid classes.

- Curriculum design, information design, do's and don'ts
- Curriculum mapping to plan the course
- Start with outcomes
- Learning opportunities assessments
- Free online tools
- Blogging uses in the classroom
- How to get people to comment
- What is the difference between blogs and wiki's? Wiki's--this would be good for going public
- When creating a course with online content, it is helpful to have someone review your class
- Students can get bogged down and miss content when they work with too much technology

Dina's introduction to her classes includes students working with the technology so they know what to do with technology.

Organization on the Moodle or Blackboard, or other management software is important. Have sections or checklist to track what has been completed

Screencast-O-Matic can be used to create up to 15 minute videos for free.

Educreation (free) and ExplainEverything (inexpensive, \$2 or \$3 maybe) can be used to capture iPad drawings. Educreate is a free app on iPad--this can be used to post answers online. ExplainEverything can create video and then you can upload videos.

Color code different sections.

YouTube videos can be unlisted and only students with link can view. YouTube videos can also be edited.

Some textbooks are good at connecting to Blackboard or other CMS. McGraw Hill has LearnSmart.

Retaining and Graduating Minorities in STEM

Friday, October 24th, 2014

2:30-3:30 PM

Members of the Alverno faculty described their work as part of a state wide consortium that applied for and received a NSF Lewis Stokes Alliance for Minority Participation (LSAMP) grant. Through this grant (WiscAMP), the consortium aims to increase minority student graduation and retention in STEM, and encourage collaboration between the community, industry, and educational settings. UW-Madison collaborates with Alverno toward this objective.

Alverno has a peer mentoring program. This peer mentoring program connects math and science students to each other, whose main goal is community building. Minority students should be good in STEM according to the data, but they tend to leave STEM majors.

The peer mentoring program is completely optional. Peer mentors are advised by a faculty member. There are three aims to the peer mentoring program. 1: work one-on-one with their mentee. 2:

URM (underrepresented minority students) monthly meetings, focusing on STEM opportunities outside the classroom. 3: once a semester meeting/celebration.

Alverno selects 5 or so peer mentors by recommendation of faculty. They are students who are responsible but not academic all-stars. Mentors are compensated for participation and engagement. There are 12 peer mentees per year. Mentees are also compensated. Each mentor has 3 or 4 mentees.

Q & A:

Are there summer research programs that are funded? LSAMP programs have summer research programs.

How do you become an LSAMP member? Contact host institution. LSAMP has to be a campus wide initiative.

Do you have assessment data? Angela presented data that suggests that if students are engaged in the community they are more likely to be retained.

Recruiting questions: we do a poor job recruiting minority students. How do you find the peer mentors? Alverno has a lot of underrepresented minority students. What about lower-income student programs? Campus has the diversity but chemistry does not. What are other Departments/Colleges doing along similar lines? The Alverno Math Department is partnering with high schools. Summer science and math academies (summer or during school year for middle and high school students) at Alverno College and Elmhurst College. Alverno also does some sessions to bring parents on campus; parents and students are separated. Parents learn about what it means to go to college. Externally funded scholarships do not necessarily affect financial aid. Mt. Mercy: if your family makes less than some amount (maybe \$40,000), student gets full tuition. Elmhurst College: stipends for students.

Retention ideas: Angela passed out an article entitled, "Designing for Success." The article outlines strategies and approaches for underrepresented student retention. Elmhurst: mini projects to engage freshman students over the summer. Helping students to see themselves as part of a discipline and a professional by giving them opportunities to tutor, work as lab assistants, be in a chemistry club, etc., so they can identify with a group. Summer bridge programs are another option. Science resource center: student run drop in help for students. St. Kate: juniors and seniors take younger students out for coffee, lunch, using a Department account. Socioeconomic status used in S-STEM grant is used by Mt Mercy University. First generation students peer mentoring is used at Elmhurst College.

Assessment of Student Learning

Friday, October 24th, 2014

2:30-3:30 PM

General comments:

Higher Learning Commission (HLC) Institution-wide Reaccreditation has pressed faculty to develop Learning Outcomes. The HLC is open to a variety of methods—they are looking for regular reflection, not prescribing a specific methodology. Several faculty are at various stages in the process—some had onsite visits last week!

Choose things that you (faculty) care about; determine what would be convincing evidence (data that would convince you & your colleagues to change the curriculum); then use these data to influence changes in curriculum.

What do we know about what our students actually know?
How do we change our methods given the assessment data?

“If you aren’t assessing what’s important, then what you assess will become important.” (Quote heard from earlier speaker.)

“Teaching to the Test” is fine if you are assessing what you want.

Direct vs. Indirect assessments: as scientists/chemists we are less comfortable with indirect assessments

ACS:

The American Chemical Society provides great resources for us, in particular the Committee on Professional Training’s “Undergraduate Professional Education in Chemistry” resource.

List of Student Skills (from ACS) to be assessed & discussion of assessment instruments:

1. Problem Solving
 - a. ACS DUCK exam
 - b. Sub-discipline
 - c. ETS Major Field Test in Chemistry for graduating seniors – similar results as DUCK
 - i. Slightly preferred compared to DUCK because it is a little bit more explicit about breaking content into sub-disciplines and more detailed (Mark Nussbaum @ Hillsdale College)
 - d. Identical 10 questions on the 1st semester Gen Chem exam (Kevin Metz@Albion);
 - i. Past 6 years of data indicate that various teaching methods give fairly equivalent results
 - ii. Overwhelming evidence that none of the teaching methods actually led students to learn acid-base chemistry in first semester. (Students show success on these questions following a Quant. Class)
 - e. Beware that some concepts take several viewings to sink in (Glen Fredericks @ Westminster)
 - f. Using some multiple-choice Concept Inventories (Stacy L. Bretz’s ESICI & Misconceptions test from Jennifer Lewis @ USF) as pre-tests (coming into biochem) and post-tests (leaving biochem) (Heather Mernitz @ Alverno)
2. Chemical Literature
3. Laboratory Safety
4. Communication
5. Team
6. Ethics
 - a. Challenging to assess!
 - b. Organic II students run a project viewing the entire waste stream of the lab; (Tracy Thompson @ Alverno)
 - c. Waste stream analysis
 - d. Lab notebook is a professional ethics piece
 - e. Plagiarism in capstone?

Specifics about other Assessment Tools:

Rubric writing: write out what would the products of a “great student”, “good student”, and “poor student” would look like. Develop rubric from there.
Look online.

Talk to your colleagues in Oral Comm & Composition/Writing for help in those areas.

Mount Mary University has Portfolios for every chemistry major. Each semester, for each science or chemistry class, the students select one item to enter. At the end, the faculty assess each item on 1 to 3 scale. Hopefully, they see improvement across the years. Currently, they are still using paper files. (Colleen Conway @ Mount Mary University)

We use digital portfolio repositories. (Heather Mernitz @ Alverno)

ACS standardized exam:

Student push-back because mid-term exams are not multiple-choice
Student push-back because it's a 2-semester final exam (gen or organic)
Some schools added multiple choice questions in mid-term exams to help with this
Some schools dropped ACS for 2-sem organic because of this problem
Do more multiple-choice clicker questions in class
Teach how to read/answer a multiple-choice question in gen chem (with clicker questions)
Someone heard of a multiple-choice with partial credit (scratch-off tickets)
Adaptive exams? Adaptive homework? (Get question wrong & it gives more practice; get it right and move through quickly)
McGraw-Hill Connect does Adaptive homework
Mastering Chemistry might be adaptive?

Motivating students for assessment exams/activities:

Hillsdale uses the ETS exam as a graduation requirement (cannot graduate in Chemistry without performing above one standard deviation below the national mean)

Portfolio:

Developmental tracker—it's okay if they don't pick the greatest stuff their first year. The goal is to show development over their college career.

Senior Seminar:

Write a 5-10 page original research proposal (picked up from a J. Chem. Ed. article). Includes several small milestones (graded); students were graded on peer critique quality (not on critique received; anonymous peer-review); class determined who would get funded—they received prize (Starbucks gift card) (Vince Hradil @Concordia University-Chicago)

Literature survey approach – paper topic. Includes small milestones, but don't have grades associated with them so he lacks student participation in these. (Joshua Neukom @Carthage College)

Senior Seminar/Capstone may include discussions about career-prep, application to job/research/med school/etc; other profs give practice interviews + feedback.

Center for Biomolecular Modeling Workshop

Friday, October 24th, 2014

2:30-3:30 PM

Resources:

- cbm.msoe.edu<<http://cbm.msoe.edu>>
- MSOE Model Lending Library (will lend models at return shipping costs)

Activities:

- 1) water kits...molecular representation
 - temperature analogy associated with rubbing in hands...s-l-g
 - solvation sphere of Na⁺ and Cl⁻
 - covalent bonds (snap off hydrogen) and ionic bonds (magnetic interactions)
 - NaOH + HCl = H₂O + NaCl
 - how is the model correct and how is the model wrong
 - bonds are not magnets.
 - no dynamics in solid models
- 2) Hemoglobin model (3D printed)
 - heme comes out
 - one subunit comes off
 - 2 glutamic acid groups
 - 2 valine
- 3) Collaborative Programs
 - SMART high school kids
 - CREST college
 - Tutorial creator- <http://cbm.msoe.edu/crest>
 - go to "jmol resources"
- 4) Discussion on measuring impact of models on student learning
- 5) Amino acid starter kits
 - identify amino acids
 - toober + amino acid protein folding
 - select amino acids...place on toober...then fold.
 - enzyme analogy/pH differences
 - fold Zn finger
 - ex. Scorpion toxin
- 6) DNA model
 - major/minor groove
 - histone modeling

Organic Chemistry

Friday, October 24th, 2014

4:00-5:00 PM

New faculty teaching organic chemistry, how to make it more interesting for the students?:

First semester is the hard part – teaching them how to think like an organic chemist.
Does NMR belong in first or second semester?

First semester – treat as set of problems rather than teaching to the “chemists” that make it to second semester.

Connecting organic for pre-med students:

You’re learning the skills that you’ll need in med school – diagnosis skills.

Putting it into perspective – being a doctor is hard too but you’re not going to kill someone if you don’t get an organic problem correct.

Study skills:

Skim sections before coming to class, work the in-chapter problems as soon as possible after class, then only read the sections that you need to help you answer the problems.

Finding a schedule to help you plan when you’re going to work on organic.

Give students the ability to give themselves permission to change their study habits.

Think of every problem they do as a data entry – structural data, thermodynamic data, orbital data – put in tables to then put together a written discussion.

In-class assessments, written reports – use this framework as an analysis tool when working on problems.

Link reactions to writing code – two layers of understanding – what the products are and how the reaction really works.

Mechanistic based text (Karty) – break everything down into steps – 8 different steps that are basic and all mechanisms follow these basic steps. Discussion regarding language used when talking about reaction mechanisms followed. Discussion regarding whether or not textbooks are still going to be around in 10 years. Clayden – textbook that is written by a drug chemist not a physical organic chemist – challenge as to whether or not the students will get it.

MO theory – who uses this? Some use it more than others. Struggles with the students understanding bonding and anti-bonding. Treat anti-bonding orbitals as electrophiles. Use concepts to explain some medicinal concepts – anti-oxidants. Some students understand aromaticity better through MO theory – it’s not just magic or Hückel’s rule. How MO and resonance theories relate/support each other.

Multiple choice questions on exams

Put things there when you don’t want to grade awful drawings

Prepare them for the ACS final exam or MCAT

Break the idea that multiple choice exams are easy

A well written multiple choice exam has wrong answers that are viable options

Training the students how to take a good multiple choice exam

Use the questions for the ACS exam as your unit exams

One group member purposely writes his first exam to be much longer than a student can take in an hour but it trains them to answer the questions they know how to do first

Another talked about spending class time on how to study organic chemistry

Telling the students that it’s ok that you don’t understand.

Facilitate discussion as a part of office-hours or have a space where students can come and work on problems near faculty members

Allowing the students to explain to each other or to the instructor a concept.

Class sizes, pedagogies:

10 students – break into groups and presented on an addition reaction – student do something outside and present to the class.
50 students per section – 3 lecture sections and one PLTL day
12 students – POGIL in organic and but bigger class in GOB
60 students – lecture with problem of the day
75 students to start with but it was because no one had asked – now three sections of 25 – question about staffing
12 students – print out problems and do sample problems to connect concepts in lecture – started three weeks ago
Note-taking

Students don't really know how to do – teaching students how to write notes
Successful students – take notes from lecture and translate it into new notes – don't just transcribe – build their own textbook
Stop students from taking notes for a moment and listen for a minute
Reading textbook – don't just transcribe – read the chapter carefully then write down what you learned (discussion followed about how to get students to do this)
Make your notes more focused on the sections that you don't know very well
Would students actually take notes on a video if the classroom is flipped? – classroom time is guaranteed time that the students will take notes.

NMR:

Strike a balance between theory and interpretation?
Limited set of guideposts
Theory in lecture – interpretation in lab
Website at Notre Dame and UCLA and Arizona for NMR structures
Every lab and every exam have NMR puzzles
Carbon NMR in fall and proton in spring?

Yes – some do – especially to explain symmetry

NMR in lab fall semester then lecture in spring
Does any other class teach NMR besides organic?

Instrumentation for majors
Pre-med students don't need it for the MCAT.

Assessments of students:

Self-assessments on how well they are studying – feedback given by instructor
Another group member does something similar but has students share with each other
Students who do poorly on exams – ask students very specific questions about how they are completing the problems
Two steps of understanding

Step 1: understand it well enough when watching someone else do it
Step 2: doing similar problems on their own.
Come back a day later and try the same problem to see how you understand it.

Physical Chemistry
Friday, October 24th, 2014
4:00-5:00 PM

Best practices:

- thermochemistry and beer (enthalpy of combustion, heating water, cooling water)
- adding kinetics (POGIL activity)
- prelab reports (forcing safety knowledge), ticket to lab, tell me what you are going to do, convince me that you are going to do this safely. Include expected results, equations
- common experiments from Shoemaker
- data acquisition equipment Pasco, Vernier, Microlab
- probes temp, pH, conductivity, pressure

Some labs mentioned:

- measure vapor pressure, experimental data Methanol/acetone, and Raoult's law
- rotation-vibration gas phase IR experiment
- Parr Instruments Moline, IL; they give tours
- Gaussian/WebMO calculations; GAMMES

Software:

- IGOR, Origin, SigmaPlot, Mathcad, Excel, ChemDraw 3D

Repository of p-chem stuff website:

- link to J. Chem. Ed articles
- Mathcad worksheets
- ChemEd DL software
- pictures of orbitals
- rotation/vibration spectra

Questions from new to-be-faculty:

- dealing with difficult math/practice problems
- tell students that these are transferable skills
- in small classes you will know the aptitude of your students
- challenges...first few years
- follow the book, don't reinvent the wheel during your initial years
- lab resources (not having any), ask for teaching lab \$\$\$

Exams:

- take home exams
- lab exams
- assign projects/talks.

Text:

- McQuarrie/Simon: Physical Chemistry
- Engel/Reed
- Sylbe (???)
- Chang...for life sciences...not generally used

Biochemistry
Friday, October 24th, 2014
4:00-5:00 PM

Labs people generally do:

SDS-PAGE & agarose gels.

Chromatography: separate lysozyme from eggs.

Protein crystallography: students make lysozyme crystals (5 g ~ \$100 from Sigma); try different solutions to see which work and then refine (anion is important); what's a good crystal?; works great because everyone gets crystals, read about the structure etc.

Kinetics: tyrosinase; wheat germ acid phosphatase.

Wheat germ acid phosphatase lab: isolation, kinetics, Bradford assay.

Make students make their own buffers (at least at some point)!

Sunil Malapati's course: Give students a list of proteins and sources and have them choose and purify an enzyme from it. Enzymes that work well (he has this list and has offered to share it):

LDH from beef heart or liver;

Cytochrome C from most tissues;

Nitrate reductase from freshly germinated roots;

Plastocyanin from plants; and

Wheat germ acid phosphatase.

One suggestion for a research project: transcribe small RNA; purify protein; design and perform a binding assay for the two of them.

Quick Western assay using a Biorad kit: fish muscle; digest it; run gel; compare bands to those on a phylogenetic tree to support evolutionary biology.

Good software lab: ImageJ for analysis of TLC of beta-carotene.

Good POGIL textbook:

"Foundations of Biochemistry" as it focuses on what's important, and has lots of details.

Kinetics:

Deemphasizing derivations and the math. Focus more on rate equations. What do rate constants mean? Steady state assumption. Reading graphs. (Then again, math is where they learn the assumptions are critical.)

One idea: put a derivation and calculation online in a video.

New MCAT:

Emphasis on Biochemistry, all of it. Includes ion channels, P_{50} curves, Hill plot. Integrates biochem, inorganic; requires students to really interpret data. Whether to cover beta-oxidation? Not everyone does.

General split of one semester vs. two:

Biomolecules first semester, then transcription, translation and other proteins.

What do you do during course time when the lectures are online in videos?:

Mostly a textbook. They work through everything together.

Sapling Online homework is great for Biochemistry; great practice problems.
Harvard's online animation resources for hemoglobin are great; ATP synthesis is good.

How often do people assess?:

Some material doesn't lend itself well to quizzes, but general consensus is giving quizzes often is best.

Textbooks:

Leninger: good balance of biology and chemistry.

Tymoczko: good for one-semester course.

Vogt, Vogt and Pratt: good reference, problems a bit hard, bad illustrations.

General Chemistry

Friday, October 24th, 2014

4:00-5:00 PM

1. What do folks do to prepare students to read and what do they have student read?
 - a. Primarily literature, C&EN News.
 - b. Don't require students to read text.
 - c. Quizzes to ensure students read.
 - d. Spend time the 1st day teaching students how to read the textbook – close reading.
 - e. Hand out questions to guide the students for chapter readings.
 - f. Use of popular literature is minimal, but included: Disappearing Spoon and Healthy, Wealthy, Sustainable World.
 - g. Have the students do self-assessment and commit to reading the material.
 - h. Have the students take notes (and teach them how to) on the lecture and the textbook.
 - i. Post notes ahead on time on Moodle or other course management system.
2. What textbook are used?
 - a. Intro to Chem, volume 1 (www.flatworldknowledge.com)
 - b. Atoms 1st by Burge and Overby
 - c. Brown and LeMay
 - d. Masterton & Hurley, Principles of Chemistry
 - e. Ebbing
 - f. NOTE: One campus didn't have an onsite book store and another campus charges students \$125 per semester and then the students get to rent all their books.
3. What online learning systems are used?
 - a. Owl
 - b. LearnSmart/Connect (McGrawHill)
 - c. Lon-capa
 - d. Mastering Chemistry
 - e. Moodle lab quizzes
4. How often does group learning take place?
 - a. Most, if not all have students work together on problems during class time
 - b. POGIL
 - c. Study group, led by students, is built in to some classes

Center for Biomolecular Modeling Workshop

Friday, October 24th, 2014

4:00-5:00 PM

Margaret Franzen from the Center for BioMolecular Modeling (CBM) at the Milwaukee School of Engineering conducted a workshop on molecular modeling. Initially, she showed a model of a protein that had been built by the CBM's rapid prototyping machine. All four of the attendees at the workshop were impressed with the quality of this model. One attendee noted that the quality of this model was vastly superior to the model that he had had built through the CBM for a class taken at Marquette University about 8 years before.

Two other molecular model kits were shown. One of these kits relied on magnets to hold atoms together. Franzen explained and demonstrated how this model kit could be used to illustrate acids, bases, salts, cleavage planes in solids, open packing of water molecules in solids and polarity. A second kit consisted of plastic models of the side chains on the 20 common biological amino acids and an approximately $\frac{3}{4}$ meter long flexible foam covered tube designed to act as the backbone of a protein.

Attendees were divided into groups of two, and engaged in a protein building and folding exercise with the second molecular model kit. Thus, attendees were able to experience first-hand how this model kit could be used to illustrate and reinforce the principles that govern the geometry of protein chains.

Inorganic Chemistry

Friday, October 24th, 2014

4:00-5:00 PM

Discussion topics:

textbooks,
how/where solids are included,
what needs to be in the course,
labs, and
ionic viper website.

The recorder for this session believes that inorganic is the best of all of the disciplines in chemistry and that all future funding should be directed toward inorganic chemists. ;-)

General, Organic, and Biochemistry

Friday, October 24th, 2014

4:00-5:00 PM

Textbook: the one we use is not the way we teach.

Class Salon: upload document that students can annotate, collaborative annotations are available, can set up tabs, can sort by questions, can require students to annotate or ask or whatever a certain number of times.

Ebook that you can highlight and annotate, but this is not collaborative.

Is it a disservice to "write" packets as opposed to letting students choose the important?

Students in high schools now are not necessarily using textbooks and don't have the experience of annotating or reading textbooks.

Cost of texts are crazy.

Dina is using online text and posting on discussion board questions from their reading. This gets students in habit of reading and posting their questions/problems so they are having to read the text. Students can answer the other student's questions.

Text updates can really kill time or remove the existing structure.
Nursing students and science majors might need different texts.
Flatworld knowledge and other customizable books.
Rental books are good but less flexible; outside resources are problems for that type setup due to cost issues.
Reading as a possibility, not a requirement.
Access to text – is it enough? Or is the skill of text reading important?
How many students use the text? Most say not many actually read.
Flipped classroom might do better, but many students self-describe as “visual learner”.
Students are much more used to using Google to find answers rather than reading texts.
Small number of students access the answer keys when available.

Graded vs nongraded systems:

How to merge the two ideas?
How to do with 96, 40, 24 students in class?
2nd semester content could be designed for occupational safety: nursing students, and the various safety issues related to them.

Depth vs breadth:

Struggle between both.
Teaching GOB is really a semester of G plus a semester that has a review of G plus OB, one professor has a 1 semester GOB.
Use examples to how this applies to them – students required to research and required to post, and comment on others posts. Students can this way see how it applies, but it doesn't take class time away.

Recruitment and Retention of Majors

Saturday, October 25th, 2014

11:00 AM-12:00 PM

Concerns:

Loss of chemistry majors to newly developed biochemistry programs.
Partially influenced by how well students like the professor.
Department name change from “Chemistry” to “Chemistry and Biochemistry” creates influx of interest

Recruiting efforts:

Efforts should be focused on chemistry majors who want to be in a liberal arts environment.
Point to job placement by your graduates.
Talking to parents of recruits, ensure good treatment of their sons/daughters.
What happens when admissions promises individual attention, but department is overstretched and cannot deliver on that promise?
Get students to apply to REUs.
Older instrumentation can limit your research scope.
Better communication with marketing about realistic opportunities for research.
Collaborations with sister institutions who can support the research.
Stratify the students, initially students propose research and only the upper level students are conducting lab research.
Community outreach.
Chemistry fun nights.
Hands on activities, free pizza at local elementary schools, 3rd to 5th grade.
Chem musical show put on by student groups.

Funded by student government, community foundations, Department supply fund.
After school programming, 2nd, 3rd graders.
Admissions Departments working with Marketing Departments.
Marketing efforts show off programs, rather than the college as a whole.
Summer programs for under-represented populations (girls in STEM).
Creating e-mail lists of local chemistry teachers to begin communication.
Send chem clubs to high schools for exposure.
Providing content for high school teachers.
Symphony Education, consulting firm.

Retention:

4 chemistry seminar courses for each year.
Placement tests for chemistry can filter out students who come in as chemistry majors on paper.
Have a supplemental term in between semesters to catch up students taking remedial general chemistry.
Create honors program to accelerate high level high school students into upper level chemistry.
General chemistry I and II condensed to one semester .
Based on ACT science and math score, also AP scores of 1-3.
Med school programs might be concerned seeing only one semester of general chemistry, but this could be fixed by indicating on the transcript how they fulfill that requirement.

Liberal Arts Chemistry/Thematic Courses

Saturday, October 25th, 2014
11:00 AM-12:00 PM

Mark Nussbaum – for non-science majors had one semester of chemistry and physics; next year one semester chemistry and one physics.

Glenn – Westminster College – one semester chemistry, lecture and lab, but can also can take just course.

Willa Harper – Olivet Nazarene University – Physical science and Geosciences Department – the geologists teach Chemistry, Physics and Weather; also Astronomy.

Andre – St. Ambrose – Used to offer ‘History of Chemistry’ and ‘Chemistry of Art’ but no staff to cover them now.

John Morris – Marion U. – has taught ‘Elegance of Design’ as an Honors Course.

Christy Bell – Alverno College – semester course on physics, chemistry and earth science and another on chemistry of materials science for non-science majors.

John Pretzky – Grad student at UC Irvine – At Ripon College took course on Environmental Chemistry and another on Glass Blowing which was either an art or chemistry credit.

Evin Brown – Beloit – has 3 courses on Climate change, Conservation and Food/Fuel debate.

David Oostendorf – Loras College – Loras College has the most unique thematic courses. These are taken junior or senior year and all students take them. It is the capstone of the 11 Liberal Arts Courses that they are required. They are required to take 2 courses as a cluster. Instructors decide how courses are clustered: ‘The Chemistry of Art’ and ‘The Science of Painting’ is a cluster, for instance. Must take both course at the same time. Lab component and research component. Run

about 8 labs and then students select one of the labs, propose research and complete research related to one of the previous labs. Upside is students are excited about the courses and it is related to something they are interested in. Downside for Chemistry Department is that if students find they really like the science they are too far in their college career to change majors.

Willa – brought up how/do we all teach critical thinking skills – some have specific introductory course for frosh concerning critical thinking models, college vocab, etc. For Loras, many instructors teach at different times and cover the required concepts using whatever theme they want: examples given were Cubs, molecules, Jack the Ripper. Alverno has the problem solving ability inventory, and students must complete 4 levels of ability to graduate. They run problem solving labs in 100 level courses and assess for their problem solving ability. They also analyze ability: students make observations, use observations to make inferences and provide good support. Must meet this criteria to pass 100 level science courses.

Good resource – Chemistry Collaborations, Workshops, and Communities of Scholars (www.ccwcs.org). They offer week-long class on a variety of science topics for instructors. Classes, food, and housing free. Just get yourself there. About 24 people in a course.

Organic Chemistry

Saturday, October 25th, 2014

11:00 AM-12:00 PM

Topic: Online training.

Sapling software was recommended. Other systems do a similar function. These online homework programs are usually connected to a company. WebAssign was the only one that does not have a connection to specific publisher. People felt organic was the least supported for online support. These programs have however gotten a bit better over the years. Online flash cards were brought up using Anki freeware. Anki is the program for flashcards online. Another online program called quiz loop was also brought up. Perkin Elmer also has a program for IR interpretation. Chem By Design app was suggested for upper level organic.

Topic: Build research into the lab curriculum.

Second semester lab at Hope is for 5 hours a week. They use SciFinder and propose and complete a three step synthesis. Students are given five weeks to complete the three steps. Previously this was thematic (by reaction, pharmaceutical, food dye). Now they do targets related to someone's research, so students are making compounds for somebody. About 30 of the students choose to do the independent projects out of 90 second semester students. Targets have been made for 10 different faculty members at the institution.

Lawrence synthesizes open source malarial targets that look feasible and tries to make them in organic 2 lab. If it works they post it on line for testing against malaria. If someone wants to test it they send it away for this testing. Sometimes they also test them in house for other biological properties. This testing is done in another course.

St. Kate's gives everyone a specific three step synthesis at the beginning of second semester. The last 2/3rd of the term are dedicated to independent projects students develop. Green chemistry metrics are included in these projects.

Northwestern does a project driven lab. The semester starts instruction with SciFinder. Then students are given a list of projects to choose from. The list usually has projects related to each professor's research. They can also choose their own project.

Alverno has students find their own projects from J. Chem. Ed. Sometimes they do it exactly. Sometimes they use different starting materials. This also helps students create a waste stream document.

Topic: Safety.

Have a list of chemicals they are not allowed to use and which ones instructor needs to distribute. Pregnant students: Are they allowed in lab? Alverno allows it for Organic I. Alverno does not usually let them for Organic II. Sometimes they allow them to do alternative projects or Organic II. They have a list of chemicals in each lab and give to students up front.

Topic: How to make pre-med students care.

Tie synthesis and chemical structure to biological properties and medicinal applications. Push that organic is taught in a style like first year medical school. Treat concepts as puzzles to solve. Sudoku is like NMR. Brominated peanut oil makes Jiff smooth. Brominated something is in Mountain Dew. Sodium benzoate degrades into a bit of benzene. The story about organic chemistry is about designing something to send to market: BPA, for example. Why? Glass bottles hurt babies. Solve one problem and get another. Then solve that problem. Warn against chemophobia. Good to have a discussion about this topic. Henry Irving quotes were mentioned about seeking truth. Food Babe was brought up: a website from a woman that tries to persuade people not use to certain products because they have specific chemicals in them. The emperor scent and how scent works is another example. This could be spectroscopy based.

No reports were submitted for the following sessions:

Active Learning, Flipped Classrooms, Friday, October 24th, 2014, 2:30-3:30 PM

Analytical Chemistry, Friday, October 24th, 2014, 4:00-5:00 PM

Meet the Panelists Session for Students, Friday, October 24th, 2014, 4:00-5:00 PM

General Chemistry, Saturday, October 25th, 2014, 11:00 AM-12:00 PM

Vendors and Sponsors

The organizers of this year's meeting wish to express their thanks to the following vendors and sponsors:

3D Molecular Designs

Alverno College Departments of

Admissions

Institute for Educational Outreach

Marketing

Physical Science

American Chemistry Society – Committees on Chemical Safety and Educational Programs

ACS Joint Great Lakes – Central Regional Meeting Organizers

Advion

Anasazi Instruments

Billie Davids

Bostik

Center for Biomolecular Modeling at the Milwaukee School of Engineering

Chr. Hansen

International Equipment Trading

MicroLab

Nanalysis Corporation

PASCO Scientific

Perkin Elmer
Pike Technologies
Pine Research Instrumentation
ThermoFisher Scientific
WiscAMP

MACTLAC Officers and Representatives for 2015

Past President:	Jamie Mueller	St. Mary's University of Minnesota
President:	James Wollack	St. Catherine University
President Elect:	Paris Barnes	Millikin University
Secretary/Treasurer:	Mark Sinton	University of Dubuque
Placement Officer:	Larry Ferren	Olivet Nazarene University
Archivist:	John Zimmerman	Wabash College
State Representatives:		
Illinois:	Vince Hradil	Concordia U. of Chicago
Indiana:	Todsapon Thananattthananchon	University of Evansville
Iowa:	Joshua Stratton	St. Ambrose University
Michigan:	Michael Seymour	Hope College
Minnesota:	Kim Ha	St. Catherine University
Missouri:	Christopher Halsey	Westminster College
Wisconsin:	Janice Pellino	Carthage College

MACTLAC Weather Report

It has become somewhat of a tradition to mention something about the weather surrounding the MACTLAC meeting.

Friday's Weather

Friday started with a little fog, but saw that fog burn off by the time most folks were arriving at Alverno. It was a sunny afternoon with a high of 62°F (17°C) and a low of 53°F (12°C). The day had a light but steady wind at 6 mph (10 kph) out of the southwest. The barometric pressure slowly fell all day from a high of 29.92 inHg (760.0 mmHg) in the early morning.

Saturday's Weather

Saturday was a lovely late fall day with a high of 65°F (18°C) and a low of 39°F (3.9°C). It was partly cloudy with gusty winds of 15 to 27 mph (24 to 43 kph) out of the west. The barometric pressure was steady all day at 29.8 inHg (757 mmHg). There was no precipitation for either day.

MACTLAC News

Placement

MACTLAC's Placement Officer maintains two lists: 1) a list of faculty positions available within the MACTLAC member colleges, and 2) a list of candidates seeking positions with member colleges. Our goal is to ensure that candidates are in contact with the colleges having positions available. If you are currently recruiting new faculty, are looking for a teaching position at a Liberal Arts college, or have any other questions, please contact the Placement Officer. A copy of the list of available positions can also be found at www.mactlac.org.

Website

The address for the Association's website is www.mactlac.org. Feel free to visit this site to get information on our organization and the services that it offers. Be sure to check out the links page as there are some things on that page that may be of interest to you.

Honorary and Emeritus Membership

Honorary membership is granted only by a unanimous vote of the Executive Council, and shall be reserved for those persons who have rendered extraordinary service to the Association or who have made noteworthy contributions to the improvement of chemistry teaching in member colleges. To be considered for honorary status, the candidate must be nominated by a colleague in a letter submitted to the Secretary-Treasurer at least one month prior to the Annual Meeting at which the letter is to be considered by the Executive Council. A second letter of support from another colleague should also be submitted at least two weeks before the Annual Meeting to the Secretary-Treasurer. These letters should attest to the criteria needed for honorary membership status. An Honorary member will be excused from further payment of dues and will be listed as an Honorary member.

Emeritus membership is reserved for any person who has been an active member of MACTLAC for 10 years and who has retired from teaching. An Emeritus member will be excused from further payment of dues and will be listed as an Emeritus member. Anyone seeking emeritus membership should request it, preferably by sending a letter to the Secretary-Treasurer of MACTLAC.

2015 Meeting

The Chemistry Department at Millikin University cordially invites everyone to the 63rd Annual Meeting of MACTLAC. We have chosen Green Chemistry's Silver Anniversary: A Look Ahead as the theme for this year's meeting. We are excited to announce that Dr. David J. C. Constable, Director of the American Chemical Society's Green Institute, will present *Innovating Towards Sustainability in the Global Chemistry Enterprise* at this year's Friday evening Plenary Session. Additionally, Dr. George Bodner, the Arthur Kelly Distinguished Professor at Purdue University, will be speaking at our opening plenary session on a chemistry education topic. We hope to see all of you this coming October at Millikin University!