

# MACTLAC

MIDWESTERN ASSOCIATION OF CHEMISTRY TEACHERS IN LIBERAL ARTS COLLEGES



**2008 Annual Meeting Report**  
**The 56<sup>th</sup> Meeting of MACTLAC**  
**Molecular Visualizations: Do Our Students See What We See?**  
**University of Dubuque, Dubuque, IA**  
**October 17-18, 2008**

**General Session 1, Friday Afternoon, 1:00 PM**

Dr. Mark Sinton opened the 2008 Annual Meeting by welcoming the 83 MACTLAC participants to the University of Dubuque. He then introduced Dr. Jeffery Bullock, President of the University of Dubuque, who then welcomed everyone and described a bit of the recent history of the University leading to the opening of the Mary Chlapaty Hall addition of the Science Center in the fall of 2006, followed by the opening of the Science Center's completely renovated Goldthorp Hall in January 2007. After Dr. Bullock's comments, Dr. Sinton gave a brief meeting overview and housekeeping announcements and then introduced the speakers for the first plenary session, Dr. George Lisensky and Dr. Rama Viswanathan. After the plenary address, Illinois and Wisconsin participants met to elect new state representatives.

**Plenary Address**

*3D Computer Projection in the Classroom*

Dr. George Lisensky and Dr. Rama Viswanathan  
Department of Chemistry  
Beloit College, WI

Drs. Lisensky and Viswanathan reported on a 3D classroom projection system called GeoWall. GeoWall software and hardware was first conceived by geologist wanting to project 3D images of geological formations to their students. Since its initial inception, GeoWall has been applied to a variety of other subjects, such as chemistry. Drs. Lisensky and Viswanathan introduced the GeoWall software and hardware, described how they use it in their chemistry classes, and gave several visual demonstrations of its uses. Drs. Lisensky and Viswanathan also spent some time discussing the costs associated with building a GeoWall system as well as the benefits and pitfalls of using such a system in the classroom, and how they were able to significantly reduce their costs by building their own system instead of purchasing a prebuilt system. If you wish to learn more about GeoWall, please visit the GeoWall Consortium's web site at <http://www.geowall.org/>.

## **General Session 2, Friday Evening, 8:00 PM**

### **Plenary Address**

*Visualizations in the Chemical Education Digital Library*  
Dr. John W. Moore, W.T. Lippincott Professor of Chemistry  
Department of Chemistry  
University of Wisconsin-Madison, WI

Dr. Moore described the history and recent work of the Chemical Education Digital Library project, which aims to bring together a wide range of tools and visualizations for teachers and students of chemistry (<http://www.chemeddl.org/>). Dr. Moore focused his talk on the visualizations that have been added to the Digital Library in the past few months, and gave extensive demonstrations of the visualization content in the Digital Library.

## **Plenary Session 3, Saturday Morning, 8:30 AM**

### **Plenary Address**

*Designing Molecular Graphics Software for Teaching:  
Getting the Scripting Language Right*  
Dr. Herbert J. Bernstein  
Department of Mathematics and Computer Science  
Dowling College, NY

Dr. Bernstein discussed the evolution of molecular graphics scripting languages from the 1960's to the present day, and how variations in the scripting languages have led to a preservation problem. As new scripting languages have arisen, or new features have been introduced, older languages and/or features have become obsolete and/or unsupported. This means that teaching tools and software that rely on obsolete or unsupported languages and features have themselves become unusable in the classroom. Dr. Bernstein then described his work toward unifying the major molecular graphics scripting languages so as to avoid this kind of obsolescence.

### **MACTLAC Business Meeting**

1. President Michael Collins called the general business meeting to order at 9:45 AM.
2. Acting Secretary-Treasurer Larry Ferren presented the 2007-2008 Treasurer's report. A motion to accept the report as presented. The motion was seconded and passed.

assets	9/1/2007
checking	\$5992.71
savings	\$ 0.00
<b>total assets</b>	<b>\$5992.71</b>

<b>income</b>	
dues collected	\$ 482.00
Viterbo meeting	\$ 3397.00
interest	\$ 51.04
Unclaimed property	\$ 95.00
<b>total income</b>	<b>\$ 4025.04</b>

<b>expenses</b>	
postage, duplicating, website	\$ 321.98
Viterbo meeting	\$ 4261.34
placement, archives	\$ 18.24
<b>Total expense</b>	<b>\$ 4,601.56</b>

assets	9/1/07
checking	\$5416.19
savings	\$ 0.00
<b>Total assets</b>	<b>\$5416.19</b>

increase (decrease) (\$576.52)

3. The President then initiated a discussion about the shortfalls that the Association has experienced in the last several years. The general membership spent a significant amount of time discussing how the Association's expenses could be reduced and its income increased. There was general agreement that little could be done to reduce the Association's expenses other than increased use of e-mail to limit the amount spent on postage and printing. There was also general agreement that the dues and meeting registration fees that the Association charges are too low, and should be increased to improve the Association's income situation. At the end of the discussion, the President agreed that the Executive Council would bring a proposal to the general membership for its consideration at the 2009 business meeting to increase membership dues and meeting registration fees.
4. Acting Secretary-Treasurer Larry Ferren then presented the 2007-2008 Archivist's report (Archivist Tracy Thompson was not able to attend this year's meeting). A motion was made to accept the report as presented. The motion was seconded and passed.

**Summary of work to date:**

A transfer of \$1000 from MACTLAC to Alverno College was made to be used for archive activities (Fall 2005 - account # 1-1-51-5010-23970). A student was hired to go through boxes containing annual meeting materials. She inventoried the material, put it in chronological order and removed all staples and clips. She worked a total of 20.25 hours in 2006 and 2007 at \$7 an hour for a total of \$141.75 (\$87.50 + \$54.25).

Duplicating work for most 1950 and 1960 material was completed by 2007 with a cost \$148. Acid-free paper costs were \$86.01.

This year (Fall 2007 – Fall 2008), archive boxes and folders were purchased from University products (catalog numbers L738-0811 (quantity = 1), 727-1912 (quantity = 3) and 540-0771 (quantity = 12)). I used these to organize and store 1950 and 1960 duplicated and original material. One additional stack of 1960 material was located and duplicated on acid-free paper adding \$40.52 duplicating costs. Some early 1970s reports, meeting schedules and correspondences were included in this group of material. Total costs for archive preservation work this year were \$237.90

MACTLAC account at Alverno (account # 1-1-51-5010-23970):

**Costs:**

From 2006	12.5 hours at \$7/hr	\$87.50
Inventory work 2007	7.75 hours at \$7/hr	\$54.25
Duplicating work 2007	8 hours at \$0.03/impression	\$148.47
Acid-free paper 2007	6 Reams at \$11.95 each	\$86.01
(University Products catalog number 680-2011)		
Cartons and Folders 2008	1 SSL envelope fit at \$16.10 each	\$16.10
	# L738-0811	
	3 box file folder at \$37.35 each	\$112.05
	# 727-1912	
	12 cartons at \$7.25 each	\$97.00
	# 540-0771	
	Less discount	(\$43.03)
	Shipping	\$25.26
Duplicating work 2008		\$40.52
Total removed from account # 1-1-51-5010-23970		\$624.13
Balance remaining		\$375.87

In addition, John Zimmerman, Wabash College, agreed to take care of photo representation of the 2007 meeting at this meeting. His costs for printing were \$20, for which he will need reimbursement from MACTLAC funds.

5. Placement Officer Larry Ferren presented the 2007-2008 Placement Officer's report. A motion was made to accept this report as presented. The motion as seconded and passed.

In 2007-2008, 10 applicants used the Placement Service, and 32 positions were listed with the Placement Service. Of those 32 positions, all were from 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 32 MACTLAC positions were advertised only to applicants who had e-mail capabilities. Of the 32 MACTLAC positions listed, 4.9% were Inorganic Chemistry, 22% were Organic Chemistry, 19.5% were Analytical Chemistry, 7.3% were Physical Chemistry, and 31.7% were Biochemistry. (Others: Introductory Chemistry, 7.3%; Environmental Chemistry, 4.9%; Clinical Chemistry, 2.4%)

All MACTLAC schools with positions open had their advertisements forwarded to Craig Bieler who placed them on the MACTLAC web page. I do not know how many people accessed the employment information by referring to the MACTLAC web page on the Internet, but the MACTLAC website has had 1280 visitors in the last 11 months.

Applicants were of several groups -- graduate students, new Ph.D.'s, postdoctorates, and visiting professors, but the largest group would be graduate students. This past year five new candidates came into the Placement Service. Presently (October 13, 2008), ten candidates in the Placement Service are looking for employment.

This year no schools requested resumes or information related to qualified candidates from the Placement service. Mailings to first time candidates were made to acquaint them with the service. All of the first time mailings were done electronically. Electronic mail was sent to the e-mail candidates on a weekly basis as positions were found.

6. The President introduced the following members as having received Emeritus membership status: Dale Nimrod, David Hampton, Brad Glorvigen, and himself. The President then conferred Honorary membership status to Brad Glorvigen and David Hampton by presenting each with a certificate.
7. The President then reminded the membership of Iota Sigma Pi, the National Honor Society of Women in Chemistry. He then invited all who meet their admissions criteria to apply for membership.
8. The President proceeded to introduce the new Illinois and Wisconsin State Representatives: Joshua Rausch from Elmhurst College, for Illinois, and Gail Vojta from Carroll University, for Wisconsin.
9. The President next opened the floor for nominations for 2009 President Elect. Only one nomination was made: Claude Mertzenich from Luther College. Claude was elected by acclamation.

10. Several motions were then made to have the Secretary-Treasurer send letters of appreciation (along with copies to their Dean) to outgoing Executive Council members and State Representatives. The motions were for the following members: Michael Collins from Viterbo University for his service as President; Larry Ferren from Olivet Nazarene University for this service as Secretary-Treasurer; Dawn Wisner from Lake Forest College for her service as the Illinois State Representative; and Kyle Backstrand from Viterbo University for his service as the Wisconsin State Representative. All of these motions were seconded and passed. Two additional motions were then made to have the Secretary-Treasurer send letters of appreciation to Mark Sinton from the University of Dubuque (as well as to forward a copy to his Dean) for organizing the 2008 annual meeting, and to the President of the University of Dubuque for hosting the 2008 meeting. Both of these additional motions were seconded and passed.
11. John Moore, retiring editor of the Journal Chemical Education, then presented free one-year subscriptions to the Journal to all the Associations members in their first year of teaching.
12. Michael Seymour invited the Association to Hope College, Michigan, for the 2009 Annual Meeting. The theme for the meeting will be “Classroom Undergraduate Research Experiences, Development of Inter-Institutional Research Collaborations, and Research Methods as a Means to Improve Science Teaching and Learning”. Mark Sinton the passed the MACTLAC meeting sign to Michael.
13. The President then announced the following future meeting sites:
  - 2009, Hope College (east);
  - 2010, Luther College (west);
  - 2011, Alverno College or Beloit College (central);
  - 2012, Possibly Albion College (east); and
  - 2013, Possibly Westminster College (west).
14. The President then completed his duties by handed the meeting over to Michael Ross, the President Elect.
15. Michael Ross began his duties as President by calling for any new business.
16. As there was no new business, the meeting adjourned at 10:45 AM.

Respectfully submitted,  
Mark Sinton  
Secretary-Treasurer

## Discussion Groups

### General Chemistry

Friday, October 17<sup>th</sup>, 2009

3:00-4:00 PM

Adam Hoffman, University of Dubuque, Session Leader

Tiara Waltz, University of Dubuque Undergraduate Student, Recorder

### Incorporating Molecular Visualizations into General Chemistry:

VESPR is the first class where students begin to visualize molecules.

How can we build them?

Why do we build them: understand lone pairs and polarity.

Ball-N-Stick models.

Students interact with their molecules-encouraged edible items with toothpicks!

Students can have fun.

Computer programs.

2-dimensional visualizations.

Vibration spectra.

Bond measurements and different ways of seeing the molecules.

ChemSketch (freeware).

If you pay for it, you can upgrade and see IR spectra, etc.

Molecular Visions kits.

Basic organic kit= \$9

Do a nice job of showing lone pairs vs. bonded pairs.

Can also see linear relationship and this is important in an introductory class.

C.A.S.H.

\$3000 for a license

Works with all of the above as well as hybridization, valence shells, etc.

### Wide Disparity in Incoming Chemistry Students

How do we get a good baseline?

Weekly assignments over the Chapters.

Encourages students to actually open their book and read it.

Ask students what they would like to be talked about in class.

More feedback.

Better understanding of what the students want.

ACS placement tests.

Measure math readiness.

Need to score at these required levels in order to begin a chemistry class.

Counsel students if they are doing poorly.

Monitor their progress.

General Chemistry Education Magazine.

- August article gives information about chemistry placement tests.
- A “Prep-Chemistry” course to make sure students are ready.
- A placement test the first day of class.
  - Based on your scores on that exam.
  - Professors would predict whether students should stay in the class or drop it.
- Need to take pre-calculus/calculus.
  - Strong math backgrounds seem to lead to success in classes.
- High School background is needed
  - Professors need to know what background their students have.
- AP (Advanced Placement).
  - Students with advanced chemistry usually have gaps in their chemistry.
  - Still need to take an entry level chemistry class to ensure those gaps are filled.
- To make students understand units.
  - Walk them through problems with only units and no number.
  - Talk about setup since students who are doing poorly may be taking poor notes.
- Chapter quizzes.
  - Guesstimate answers instead of using calculators.
    - Encourage canceling things out and setting problems up correctly.
    - Answers can be obvious-students just have to set up the problem.
- Assess which students you can make a difference with in helping their progress.
  - See which students are motivated, how much they are studying, etc.
  - The quicker you learn that there are just some students you cannot help to pass the class, or care to pass the class, the more sanity you will save for yourself!
- Have a discussion section-give an assignment on a problem you had in class.
  - Tell students to come up with a variation of the problem.
  - Trade the problems in class
    - Helps to show that more than one template for any problem.
    - They learn the type of problem, not the specific problem.
- Give homework problems on what they’re going to be covering in the future.
  - “Warm-Up” questions.

Ball and Stick Model VS Computer Model:

- Lights go dim for a computer model to be shown and students pull out their cell phones.
- A computer has been seen before, students can go right to FaceBook or onto other sites.
- A computer is not very interactive.
- Ball and stick model is 3-dimensional.

## Organic Chemistry

Friday, October 17<sup>th</sup>, 2009

3:00-4:00 PM

Laura Parmentier, Beloit College, Session Leader

Brandon Phelps, Loras College Undergraduate Student, Recorder

Textbooks-What books they've used?

McMurry (carbonyl chemistry too late)

Clayton et al. (carbonyl earlier, but poor in problems & Fischer projections)

Freeware

Using YouTube or other freeware sites to make available to students

Website saying what professors think of each book and notes concerning facts

Best types of visualizations:

Line vs. zigzag vs. condensed vs. drawing all C's, H's...

Model kits (manual is better than computer?)

Understanding 2-D visuals (slants meaning towards the direction the atom is facing)

Showing mechanism is a way to help teach

Students struggling with ball & stick model and prefer computer programs even though it is still a 2-D picture

ChemSketch version 10 is free drawing kit is available to student

Also helps with naming

Are students catching on to the position of side H's or other molecules in 2-D structures?

Answer keys/ study guides that have a different answer visuals than what students put down, which makes students not realize how atom arrangements occur without changing the overall molecule

Stereochemistry

Is stereochemistry covered enough in organic to be applied in biochemistry or other upper level courses

Books spending too much time covering stereochemistry?

Providing motivation for students to care about stereochemistry

Drugs, how they work, Tylenol...

Learning styles/rates:

Making notes available

Trouble visualizing because students lack note taking ability

Complaints from Doctors about having to know organic from Wall Street Journal story

Student's understanding due to electron density:

Hybrid-orbital model theory

Hot-cold electron density maps  
PC Spartan Plus program

How to measure how well students are understanding material:

What type of questions best assess their knowledge?  
Open ended questions that make students write their words/thoughts

### **Physical Chemistry**

Friday, October 17<sup>th</sup>, 2009

3:00-4:00 PM

Carolyn Mottley, Luther College, Session Leader

Amy Stutzman, University of Dubuque Undergraduate Student, Recorder

Book survey:

Engle & Reed (too many mistakes-corrections found on instructor's website)  
New version for 2009 adaptability  
Ladler  
Corey-physical chemistry

ACS guidelines:

Conflict with changes-5 fundamental courses, loss of year long courses  
Implementation of environmental tracks  
Grant certifications-made for certified programs so no need to change curriculum

Math issues:

Students seem to have less background in math, afraid of calculus...should we require more math?  
Could need change in curriculum to make sure that the information is fresh when they begin to take P-Chem  
Students can calculate but can not understand the true concepts and are not able to apply them  
2 semesters of calculus are required, some only require 1 but are attempting to require more

Retention:

Students have difficulty retaining lab procedures and other criteria, what have you seen/what can you do to help with retention  
Could be an issue of distance of time between courses...students may not expect professors to expect them to retain the information and apply to other courses  
Don't keep the text books to aid in retention of material  
Gen Chem review websites to review information

Issues with e-books that they lose

Need to perhaps take time at the beginning of the semester to provide information that they need to know for a course from previous courses (math reviews, chem reviews)

Diversity in the classroom:

Diversity in grades on exams

Some are going for med school, required to take a second semester-have better grades

Diversity in range of knowledge and skills

Diversity in majors/participation

How much time to take to deal with diverse issues

Lab Notebooks:

Bomb calorimetry-heat of reaction and combustion

Not a wide use of lab manuals, choose from various sources, some use old MACTLAC book

Start with "canned" labs to build foundation of techniques and then are set to find and perform experiments on their own

Solution calorimetry-non ideal solution (no instructions given) published by member of MATCLAC

Written lab reports on the chemistry of the experiments and the contributions of each element  
2 hour lab constrictions

Heat capacities of gases ( $O_2$ , He,  $CO_2$ ) (failed-find out why, use adiabatic expansions, Kuntz tube), 3 experimental procedures to choose to write about in a write up

Kinetics and Biochemistry lab experiments-use lysosome-Brent Frieger

Acid-base catalysis use spectrometer (12 samples as a time-pH values)

JCHEM ED-iodine clock, UV vis

General contact hours:

Students should spend 2 hours out for every hour in (4 for every contact hour)

Students spend closer to half that time or less

Generally spend a good quantity of time-varies with grades...

Given homework to involve more time to review, review notes outside of class

Take class and lab together, if fail can go back and take just one

Try not to have separate

Use lab time for lecture, testing, problem solving

Can pass the course if they do well in the lab-grade for lab and lecture are the same grade (20-25%) or vice versa

Labs generally perform experiment one week, collect data second week, due the following week

Writing abilities:

Not having enough scientific writing skills

Not sure if they want to take class time to spend on writing skills  
Difference in biology lab writing vs. chem. Lab writing (passive ext)  
Written in lab manual- how to write (Syme)  
Provide examples of correct v. incorrect writing, given credit for proofreading labs  
Collaboration between English department in editing science journals

### **Inorganic Chemistry**

Friday, October 17<sup>th</sup>, 2009

3:00-4:00 PM

Claude Mertenich, Luther College, Session Leader

Cheryl Westphal, University of Dubuque Undergraduate Student, Recorder

Possible Options for Inorganic Chemistry and other course organization:

First semester core inorganic principles and second semester modern inorganic  
Instrumental course emphasizing analytical problem solving  
Shape class determining the shape of chemicals and relate it to the functions

Book Discussions:

Cotton and Wilkinson's book is too complex

More of an encyclopedia of elements than a textbook and has no background knowledge  
required to understand the material

Rodgers book is good for coordination chemistry

It is used in a sophomore level inorganic class

Smartinmore is good for solid state but has no information on crystallography

Schreiber and Atkins is used by two of the professors as an upper level biochemistry class

Meisler over emphasizes orbitals and doesn't do enough with coordination and solid state

Chang's General Chemistry

Supplement for the sophomore level class

Bring own stuff for the inorganic part

Huahee was a very good book but was last published in 1992

Missing the modern inorganic stuff

Student Concerns:

Some are worried that the math is too simple considering the prerequisites

Others are just relieved that the math is not more difficult

A lot of the beginning chemistry is already known from before

Redox is the first thing to challenge most students

#### Lab information:

Lab is best when it is included with the class because otherwise it gives students the impression that lab is optional

If a student has to repeat one they have to repeat both because typically each grade reflects the same level of understanding

One school has class and lab time together in three hour blocks for thirty days

Each day they lecture and then explore what they learned

It integrates the information better in student's brains

Makes it more enjoyable for the students

So far it hasn't caused problems scheduling

Students have to give up their lunch hour

#### Labs and projects:

Pick an element to do a project on (web or text based) focus on practical chemistry

Synthesizing complexes

Ice solid state model

Transition elements and oxidation states

Qualitative analysis of acid/base and redox reactions

Coordination chemistry

Werner complex and cobalt amines

Cluster chemistry

Have students develop their own experiment

Create a nickel complex to use in a cross coupling reaction then isolate and analyze the product

Make silly putty

Kinetics tend to not work out

Solid state labs are hard without the use of an oven and x-ray

### **Analytical/Instrumental Chemistry**

Friday, October 17<sup>th</sup>, 2009

3:00-4:00 PM

Michael Ross, College of St. Benedict, Session Leader

Meagan Ehlers, University of Dubuque Undergraduate Student, Recorder

#### Textbooks used:

Daniel Harris, 7<sup>th</sup> ed., is easy to read

Exploring Chemical Analysis (more for a 1 semester class so needs supplementing)

Skoog-West

#### Instruments:

Working around the challenges of a lack of instruments

Talk about all instruments, even those that you do not have  
Do projects with the instruments that you do have  
Do the same analysis with two different instruments to compare  
Break into groups and do different projects at a time, meaning some may get the lecture on an instrument after they have used it  
GC  
SRI, Buck Scientific, works well and cuts out the frills  
Electro Chem Apparatus does many things, has an ADD converter

#### Blackboard vs. PowerPoint:

Most use a mix  
Theory and pictures on PowerPoint  
Calculations on the blackboard, the students have trouble keeping up with PowerPoint  
Document Camera good for showing models and small objects

#### Calculations and Problem Sets:

Do calculations and examples other than just the ones in the textbook  
Take time in class (maybe the last 5 min) to work on problems to bridge the gap between class discussion and doing the problems  
Starts the process of applying material  
Break up homework sets into daily subsets so that everyone does them and they are doing them as the material is being learned and not waiting until the last minute to do them

#### POGLE:

Used in place of lecture  
Errors, but worked well  
With buffers it did not work as well  
Have students make buffers

#### When should a student take Analytical:

It is helpful to take it early on, but many biology students wait and take it later  
Earlier is good for MCAT  
If it is taken later the students really understand it (after Physical and Organic)

#### Math:

Multiple visualizations to relate to more students  
Increase problem complexity slow  
Dimensional analysis  
Writing everything down

Step-by-step explanation of how to do in words, not just numbers

Statistics

Use real lab data to show stat tests

Use 1000 Island dressing to run analysis on, generates data to run stat tests on (Q-test)

Excel (Harris has a chapter on using it), use of formulas not just inputting numbers

### **Biochemistry**

Friday, October 17<sup>th</sup>, 2009

3:00-4:00 PM

Larry Ferren, Olivet Nazarene University, Session Leader

Joey Dunnigan, University of Dubuque Undergraduate Student, Recorder

Molecular modeling software? What types are there and what would be the best one to use?

Deep view software on Google. Pretty cheap, in relation to the use of memory, and easy for students to use, but there is an issue with compatibility. Swiss DVD pro viewer is hard to use and really hard to export images. It is often more than what most students need. Another one to use is Jmol, which can be used as a web plug-in. Using software during class and the repetition of watching other molecules in relation to myoglobin can help when determining an unknown molecule and how it will behave during an exam. DVD viewers used to have a problem communicating between Mac and PC, but seems to be working better this year.

What biomolecules make for good labs?

Lysozyme and beta-galactosidase are good enzymes for labs. The kinetics of beef liver catalyase can be easily monitored at 220 nm using hydrogen peroxide as the substrate.

All agreed that using different isolation techniques during labs is good so that students get a grasp of different methods. Carbohydrates are hard to work with.

How are your lecture exams structured?

Tie the length of the exam with the amount of material covered. Most used 4 exams with one final exam, but one used just three exams. This person found that the first test was too long for a one hour period. Lots of structure drawing vs. concepts.

What are the issues that are facing biochemistry teachers?

Students not remember information taught in general chemistry. Textbook expansion makes it difficult to keep things within. How other courses interact with Biochemistry. Coordination with the other departments since biochemistry is often taken by biology majors. Whether to give open book exams due to the amount of material being tested. How to get students to read their textbooks. How to get students to conceptualize the information and how to adapt it.

### **Liberal Arts Chemistry**

Friday, October 17<sup>th</sup>, 2009

3:00-4:00 PM

David Oostendrop, Loras College, Session Leader

Heidi Lower, University of Dubuque Undergraduate Student, Recorder

The major question that was brought up during this break out session was how to teach general chemistry, organic chemistry, and biochemistry is non-science majors. A discussion arose about classes such as The Chemistry of Art, Caveman Chemistry, and Women in Science. The Chemistry of Art, which is paired with an Art major, discusses the chemical make up of paints, crayons, fresco, and then integrate making these things into lab. Caveman Chemistry, which is clustered with a history class, discusses the chemistry in history from fire, to ceramics, to bronze, to glass, and then aspirin. Global warming, for political science majors, goes more in depth on the green effect and the chemistry behind it. These classes are appropriate for J-Term, or possibly regular semesters. Other smaller topics included using clickers to get students engaged, using Digital Drop box for homework, using customized books particularly for these J-Term classes.

### **Meet the Speakers, Drs. Lisensky and Viswanathan**

Friday, October 17<sup>th</sup>, 2009

3:00-4:00 PM

Oliver deSilva, University of Dubuque Undergraduate Student, Recorder

This session centered on hand-on use of the GeoWall system.

### **General Chemistry**

Friday, October 17<sup>th</sup>, 2009

4:15-5:15 PM

Kenton Renkema, University of Evansville, Session Leader

Kelly Busch, University of Dubuque Undergraduate Student, Recorder

New Guidelines:

Easier to achieve

Dual major

Encourages Liberal Arts

One Semester General Chemistry

Teaches equilibrium, kinetics, and basic information

Lacks depth- students learn about metals, cations and such in inorganic

Organic chemistry is still two semesters

Some require one year of physical chemistry to maintain accreditations

Schools are not required to change

Some schools do inorganic research + thesis and not inorganic at all

The guidelines separate class 50:50

50% have seen the general chemistry information before and it is easier for them  
50% have never had general chemistry before and don't know what is going on

Why do we teach General Chemistry?

Can we live with out general chemistry for majors

Some students take only to fulfill science requirement with lab

As a result of some colleges not offering chemistry for nonmajors, some majors jump right into inorganic chemistry

Some freshman that jump right into organic are "c" students because the study skills are not there

Some freshman are good but they lack in the laboratory

How do transfer students compare to those who jumped right into organic

Some colleges offer Advanced Chemical Principals (an honor's course)

Fit two semesters of general chemistry into one semester

Analytical Chemistry would be taken the second semester

How to advise students what to take?

ACT math scores above 25 and two semesters of chemistry in high school would put the student right into inorganic chemistry

A "C" student in high school with a weak math background would take general chemistry

This is not fool proof still inorganic may still be too overwhelming for a freshman

What new things are people trying in the lab?

A lab asked to determine how much water is in a hydrate

Recently tried using  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$

4  $\text{H}_2\text{O}$  comes out of crystal easily and the fifth water is harder to get out

Molar ratio shows 4  $\text{H}_2\text{O}$  to 1  $\text{CuSO}_4$

This lab is used to make students think analytically.

How does theoretical show 5  $\text{H}_2\text{O}$  and experimental show 4 $\text{H}_2\text{O}$

This lab is using the students as researches to see if this experiment works

It has not been disproven yet in the six months of research thus far

How to incorporate computers in the lab?

Use for quizzes

Use excel for data analysis

Submit spreadsheet in Moodle

As for standard deviation, the equation is there and they try to have the students understand the spread and the data, not the long hand deviation

CAPA from Michigan State University web based program

Library of questions are given

Can make own library  
No cost  
Web Assign (www.webassign.net)  
Write own quizzes  
Allows students to try assignment two or three times-makes them try again  
Student requires to buy access code card-this card will also work for physics  
Wiley Plus-publishing company  
Like Web Assign  
Make textbook and homework on-line  
\$50/ student  
The electronic homework does have some logistical errors

ACS Standard Exam (75% of professors in the room use):

Easy to grade  
Constant year to year  
Makes professor feel good when above average  
Can compare year to year in the chance of a curriculum change  
Use to look back when writing a letter of reference for a student  
Breaks down questions, shows areas of weakness  
Methods of holding students accountable  
Have to score in 15th percentile or grade drops one letter  
Makes students study harder and try all year around  
Scores increase in test and homework because the students know it is coming and they study hard all along  
Motivates the students

### **Organic Chemistry**

Friday, October 17<sup>th</sup>, 2009

4:15-5:15 PM

Olga Rinco, Luther College, Session Leader

Mariah Husheena, University of Dubuque Undergraduate Student, Recorder

Does anyone still do diachronic lab?

No, got rid of it years ago. Dream is to do collaborative experiments, get students interested in what others do. Change and do something more, build on the previous experiments and publish results. Good idea to look at the results of different institutions. Network and work with each other. Pick an article and work the kinks of it. Dehydration reaction-figure out the percentages-everyone got different results. Look at the results of others and see the difference.

How many people are using on-line homework system?

Tried for one semester. Did poorly on the questions, had to go back and spend more time on fixing it. Multiple questions. Avoided answering the 3D questions. Dealt with server crashing and students not turning the homework on time. Took a long time to learn the system. The nice thing, if they don't get it right there is an explanation, however, some systems give more than one explanation but not a complete one. Have a really good answer key and problems. Get points for getting homework done, not a fan of answer key-no point if students just copy the answers. Students have the option to buy the book or the software system (Smith). Questions in the book worked better. Pay 20 dollars and have a year membership with the certain book.

Most use published book?

Students love it. Lab manuals were free with the textbook, saved money. Pearson-go on-line pick which appendix and lab you want (pull labs from other text books) saves money. Stop using manuals and use technique books, use MIT digital organic lab manual (YouTube). Watch video clips and take a 10-point quiz after watching the clip. Post links for pre-lab for students to look at.

How many of you allow 24 students in the lab?

18-19 common, max is 20.

### **Physical Chemistry**

Friday, October 17<sup>th</sup>, 2009

4:15-5:15 PM

Session Leader is not known

Meagan Ehlers, University of Dubuque Undergraduate Student, Recorder

Teaching:

Thermo, kinetics and quantum mechanics

1st semester brief

2nd semester more in-depth

Start with quantum and then build throughout the semester

Lack of Calculus a problem

Textbooks:

McQuerry

Peter Atkins not so much liked

Physical Chem companion, good for a reference book

Chang

Separate books for each (thermo, kinetics and quantum)

Levels different  
Hard to blend  
Hard to focus in (core vs. special topics)  
Not enough interest, so variety does not exist  
Lack of a choice in labs  
Piecing together your own lab manual from multiple books within one publisher

Homework:

Webassign  
Blackboard (on-line)  
Problem: can only see the answer, not the steps the student took

Formality of Lab Reports:

Mostly shorter, less formal  
Memo or extended abstract (maximum of 5 pages)  
1 report per group, encouraging collaboration and reduces stress  
Integrate labs together and give a report at the end to the class (using PowerPoint)  
Excel for graphs

Lecture vs. Active learning:

Hard to not lecture  
Randomly calling on the students  
Keeps them alert  
Discussion section  
If there are no questions give a quiz  
Spread homework set out  
Some everyday so they do not wait until the end to do it  
Group homework

**Inorganic Chemistry**

Friday, October 17<sup>th</sup>, 2009

4:15-5:15 PM

Jim Goll, Edgewood College, Session Leader

Tiara Waltz, University of Dubuque Undergraduate Student, Recorder

Curriculum:

Augustana

Intro to Inorganic, Inorganic Chemistry with a trimester set-up.  
Both included with Labs.

Can only take 40 credits with the designated major of Chemistry.  
Works with bonding-ionic and covalent bonding.  
Coordination and symmetry chemistry.  
Refresh of quantum mechanics.  
Encourage students to read lab manuals on-line.  
Interested in making labs worth more in the whole of the class.  
    Students concentrate on them more.  
Catalytic reactions in lab.  
    In one lab of no hydride is needed.  
    All done at ambient pressure.

#### Loras

Semester (15-week) Lecture, 3 hours of Lab of Inorganic per week.  
Professor doesn't feel it is enough time to cover the topic.  
PChem is sometimes taken with inorganic.  
Refresh of quantum mechanics.

#### Edgewood

2 credits straight lecture of Inorganic.  
Does descriptive chemistry, acid-base chemistry, coordination chemistry.  
    All majors and minors.  
Goes through general chemistry book cover to cover.  
A second 2 credit course moves further and more in-depth.  
Small quizzes and homework assignments.

#### Viterbo

Begin with atomic structure and quantum mechanics.  
Coordination Chemistry.  
Solid State.  
Students build 3-dimensional molecules in Gen Chemistry.  
    Students retain this information better.  
Kinetics and Catalysis in the lab.  
    Catalysis lab discussion  
    One from Georgia Tech University works as a good reaction.  
    Wilkinson's Catalysis that has been published doesn't seem to work.

#### All

Talk about solid states as a strong point.  
Talked about chemistry being a competitive major for medical school.  
    Most applicants were biology majors.

Makes chemistry applicants stand out.  
Make some sort of quizzes to keep students engaged.  
“Commercial Breaks”

### **Analytical/Instrumental Chemistry**

Friday, October 17<sup>th</sup>, 2009

4:15-5:15 PM

Mark Sinton, University of Dubuque, Session Leader

Kate VanLandschoot, University of Dubuque Undergraduate Student, Recorder

After introductions, this group first discussed the types of methods used in their class. Examples were fluorescence, computer based simulations, Internet problems. In one example, a concentration lab was described using over-the-counter cold remedy. Another example used HPLC to distinguish between ortho, meta, and para xylenes. One participant described disabling instruments and letting students diagnose the problem and fix it. Most used lab materials generated by others due to financial and/or time constraints. Discussion then moved to differences in labs: more shorter labs vs. longer labs, for instance, or whether lecture is part of lab or separate from the lab. An offshoot of this discussion centered on student's ability to thinking linearly and apathy towards writing things down. This brought the group to describe how each uses lab books in their lab and the format for the book that is required. One of the major issues that all had experience with is student resistance and/or inexperience with spreadsheet software, as well as understanding of calculated results. Does your partner have the same calculated answer, or do you believe your calculated result, for instance? Lastly, the group briefly discussed labs with environmental emphasis.

### **Biochemistry**

Friday, October 17<sup>th</sup>, 2009

4:15-5:15 PM

David Speckhard, Loras College, Session Leader

Amy Stutzman, University of Dubuque Undergraduate Student, Recorder

Visualizations in Biochemistry:

How do you know that the use is effective, how to test effectiveness?

Programs:

RasMol, Protein Explorer, Jmol

Internet connection required

Free molecule databases

Textbooks that provide visualization programs?

Nelson and Cox-Lehninger

Very readable

Newer version has more figures, but makes it choppy

Most texts are too difficult for students to comprehend

Need to provide other options to learn material

Test by asking questions

During the second term, students select a protein and write tutorial

How to use, what to know (build buttons using scripts)

Survey the students, ask what they have learned

Maybe need departmental changes

What do we want students to gain from visualizations?

Show conformational changes, physical properties of structures (collagen)

Is student knowledge able to understand visualization techniques?

Want to make sure that the students remember what the 2D drawing mean

3D help to show what the "board" drawings really mean in reality

Students seem to grasp concept when able to watch in video

Can't find visualizations that show reactions at molecular level

Any freeware available?

Google, YouTube (stereochemical animations), Protein Explorer

Can help to learn the abstract meaning of what they are learning

Visualizations can at least help someone in the classroom

Copy issues

Gale Rhodes as source

If accessible on line, if not downloaded onto the computer

Showed from the on-line source-no problem

If you have the book with the password-no problem

Issues with having to teach students how to use computers or write tutorial

When do you move from teaching chemistry into teaching technology?

Follow simple tutorials that are prewritten, step by step

What to teach in the first and second semester courses-how to divide the information?

Enzyme kinetics in the second semester

Metabolism in the first semester

Differences in classes when some students have had biology and others haven't?

How to address the issue that some have the background and others don't?

Survey what the students know at the beginning of the year

Teach more biology if necessary

Drop photosynthesis and nucleic acids, have to take time to review previous material

Create flow charts of metabolism

Issues with having to review information:

Smaller colleges are nice due to who teaches follow up courses

No prerequisites for biochemistry

Needed to learn vocabulary over

Terms unique to biochemistry

Students don't think that they are expected to remember terms and concepts from one class to another

Labs:

Enzyme kinetics

Lysozyme (deactivate), acid phosphatases

Handouts in labs, manuals, textbooks

Permission from JCE to get articles for background for labs, put on reserve in the library

McGraw Hill offers manuals with technique sections

Carbohydrate lab?

### **Liberal Arts Chemistry**

Friday, October 17<sup>th</sup>, 2009

4:15-5:15 PM

Adam Hoffman, University of Dubuque, Session Leader

Dante Price, University of Dubuque Undergraduate Student, Recorder

There are no notes for this session as no one attended the session.

### **Meet the Speaker, Dr. Moore**

Friday, October 17<sup>th</sup>, 2009

4:15-5:15 PM

Heidi Lower, University of Dubuque Undergraduate Student, Recorder

Topics included how to get students to better understand polarity, how to get students more engaged, and how to understand which method of teaching, such as models, computer models, text, or just lecturing, works better, and so much needs to be taught in one semester how do you know what to teach and what not to.

### **Using GeoWall in the Classroom**

Saturday, October 18<sup>th</sup>, 2009

11:00-12:00 AM

George Lisensky and Rama Viswanathan, Beloit College, Session Leaders

Tiara Waltz, University of Dubuque Undergraduate Student, Recorder

Using GeoWall:

Lots of 2D stuff can be included.

Students look on a monitor and play with visualizations.

At the 3D level, it can be pulled onto a big screen as a recruiting tool.

Can use for one day in a certain lecture to show off a molecule and the bonds and bends.

“Oh WOW!” Factor.

Is it ready to be used as a teaching tool yet?

Several modes of presentation are possible.

Uses ball and stick models as a good representation in the program to help visualize the separate molecules.

Can also show in letter format.

Fat molecule format.

Labels can be of different sizes as well as the atoms.

A chalkboard cannot show the third dimension in an accurate representation.

Seems to be most used in biochemistry classes.

Otterbein Symmetry Gallery (run live on the web)

Can look at symmetry of molecules along a certain axis ( $C_4$ ,  $C_2$ , etc).

You can also reflect through certain planes in the molecule.

Students can understand molecules and their chemistry better.

One problem is that various web pages need to be used.

Others see this as a pro because they don't like PowerPoint.

Run presentations through web pages anyway.

RasMol is a similar program but doesn't work on the web or on MAC computers.

Jmol is the best program running at the moment according to the session leaders.

Good for diamond, graphite, fullerenes, and nanotubes.

Molecules can be spun and redrawn from scratch.

Can be done by students who have Internet access.

What kind of analysis can be used with GeoWall?

Having built a physical model, the computer models make more sense.

More can be seen in less time on the computer and understood.

What story are you trying to tell?

GeoWall is used as a tool to answer questions.

It is used as an aid in those stories.

Colors can be used to show different relationships.

Can differentiate different types of molecules and elements in the molecule.

Tetrahedral holes and octahedral holes can be shown (such as in Geology).

Complex proteins can be looked up on the web for students who want to see it visualized.

You can see the geometry.

Metals.

What amino acids are working as ligands.

Where the histidines are located, etc.

Solid state structures.

How can we build the physical models? GeoWall!

## **New Building Workshop**

Saturday, October 18<sup>th</sup>, 2009

11:00-12:00 AM

Dale Easley, University of Dubuque, Session Leader

Ryan O'Hara, University of Dubuque Undergraduate Student, Recorder

### Office and labs:

Dream big and scale back, see what happens from there.

Have faculty offices near research area to be able to overlook students researching.

Having labs away from research areas to allow more meeting among others.

Issues of costs influence where offices are and how much space.

Build for needs, needs vary from school to school.

Clustering to be closer, and cheaper.

T-bar design separate buildings, but still connected.

Open/social space is a plus.

Biologist and chemist wants vary, make sure to talk to as many people as possible.

Even include custodial, office staff, student clubs wants/needs.

Computer lab replaces need for chemistry library, did not use books as often.

### Chemical/waste storage:

A matter of scale: underground basement big enough to store biology and chemistry needs.

Cabinets for flammables/corrosives, inorganic separated from organics, no spark lights, meet all requirements.

Full time staff person for safety/hygiene (only one person had full time), the rest had designated people in charge---still an issue for some.

Used hot plates to evaporate ether, only two students burned.

Safety training sessions, person to handle biohazard is there.

Course reduction to be lab manager, capital with the word safety.

Don't crimp and crop on storage space, it goes away too soon.

Safety catches people's attention.

Central storage rooms compared to stock rooms, central storage is more common than to have stock rooms.

### Hoods:

Limited hood space/area for Bunsen burners, does every organic student need to work underneath a hood?

Some simple labs require a hood, and it helps with health.

Keeping hood out of the back of rooms, allowing professor to be able to overlook the students.

Cuts to make new building under budget:

Natural gas was left out of a few labs, and are going back to try to get. All hot plates?

Renovating to make more space/lab with classroom.

One example was not leaving enough room for physics.

Having limited class space in a large building, math classes in chemistry lab.

Different classes could be used for specific needs of classes.

Tutoring room, conference tables and computers to make multiple needs for students.

Students love small conference rooms, study carols, places for students to gather.

Access cards for students are becoming more and more popular, shows comfortable spaces for students.

Atriums show community students are doing something, making visible progress.

Bulletin boards.

Digital photo frame to advertise for classes, transmitting information.

Flat screens in the hallway, valued engineering.

Ideas for new buildings:

Community research labs, rather than individual research labs-gives nice flexibility.

Individual labs, with a senior project lab to have room for potential overflow, doesn't isolate students doing research.

Having wireless, with some hard wiring available, wireless projector allows everyone to project from computer-saves wiring.

Think about cost in the long run, environmental questions and recovery to help administration get involved.

### **Molecular Visualizations Resources**

Saturday, October 18<sup>th</sup>, 2009

11:00-12:00 AM

Sunil Malapati, Clarke College, Session Leader

Adrienne Broshous, University of Dubuque Undergraduate Student, Recorder

Currently used programs:

HyperChem

The majority use hyper-chem

ChemDraw

Not too fond of BiochemDraw

Was not impressed for the price

Spartan

Most agreed that Spartan is one of the best programs but is very expensive

ChemSketch

Free!

Not bad for small inorganic molecules

Protein Data Base  
Molecular Modeling kits  
Chem 4D Draw  
Jmol  
CD's that come with textbooks

Concerns:

Finding programs for inorganic  
Outdated software  
Expensive programs

3D Modeling:

Deep View  
Menu driven  
Gets students constantly thinking in 3D  
On-line tutorial is free  
Steep learning curve at first  
Can change residues  
Allows you to superimpose  
Strictly GUI  
Download is a small program

Physical Models:

Solid state models are well liked  
Keep models in labs for student use  
Students buy Darling kits through bookstore and use in class (organic)  
Gigantic modeling kit used for big lectures  
    Good for showing lattices  
Water molecule model (3D modeling) made of magnets  
    Couldn't remember the company that makes them  
Styrofoam balls spray painted (laughter but agreed it works)  
Any pre-made glucose molecules?

What's the hardest for students to visualize?

Orbital's  
Metal reactions  
Hybridization  
Transitioning from planar to tetrahedral  
Stereochemistry during reactions  
    www.chemtube3d.com useful tool for showing reactions

**Visualizations in ARIS: On-line Homework System**

Saturday, October 18<sup>th</sup>, 2009

11:00-12:00 AM

Chris Loewenberg, Senior Sales Representative for McGraw-Hill, Session Leader

Christina Walker, University of Dubuque Undergraduate Student, Recorder

**ARIS:**

Course management system developed specifically for chemistry homework

E-Book reference, so textbook not necessary

Homework program

Good system for homework; time saver for professors and provides immediate feedback for students

**Prospective Teacher Workshop**

Saturday, October 18<sup>th</sup>, 2009

11:00-12:00 AM

Raskia Mudalige, University of Dubuque, Session Leader

Oliver deSilva, University of Dubuque Undergraduate Student, Recorder

**Secondary science teaching:**

Looking beyond the pay

**Keep records of what you do:**

Review at the end of year, or at semesters end

**Advice:**

Make yourself known

Have colleagues outside the sciences

**Tenure:**

Needs spelled out, lack of communication on guidelines

Resources-people outside departments, other faculty that have gone through it

Handbook can be vague, don't assume that it represents the requirements

3<sup>rd</sup> year may be most important

Summers are important with research and other stuff, so be sure to get organized

## Research:

To publish or not to publish...

Depends on teacher schedule and the particular school

## Sabbaticals:

Collaborate with people at research institutions

## Transitions-grad to teaching:

Apply learning to the classroom

Balance teaching and research

Be flexible with yourself

Time management is important

Winging it can be OK, takes some time to get used too

Instincts can help you through

Makes lectures more fun and dynamic

Let students learn on their own and present to you

Let the students know who you are, make connections

## Mentoring:

Peer reviews-take initiative and ask peers to do so

Use peers outside of your department

Friends and department heads ask to check up

Feedback from tutors, department secretaries, students

Get advocates

Tape record yourself for self-evaluation

## Labs:

Be flexible

Let the results tell if it was right or not, but allow for variation

If it doesn't work don't punish students

Objectives for labs

Fun labs

Learning concepts

Learning investigations

Learning procedures

Lab manuals

Cost for students

Can design your own

Students love demonstrations

## **Linux vs. Windows: Can You Switch?**

Saturday, October 18<sup>th</sup>, 2009

11:00-12:00 AM

Mark Sinton, University of Dubuque, Session Leader

Lisa LaBudde, University of Dubuque Undergraduate Student, Recorder

How did you get started?

Dr. Sinton began describing how he came to use Linux. He started by playing around with it 3 years ago at home as he wanted to get away from proprietary software. (MAC is a Linux-based machine (just a different flavor of open source). Open source means that it is not owned by a private company but by a community.) Really, it's a philosophical reasoning behind using open source since you can use any software you like and make it your own. He now uses it exclusively at work.

Is there a compatibility issue?

IT at UD are afraid of the support issue since they are under budgeted and understaffed. Open Office (open source) has pretty good compatibility with Microsoft Office: conversions between the 2 are normally OK, but not always. Can generate PDF file using free tools in Linux and then will email students that file. For other faculty members: save it as Office 03 format and then send it. UD does use Moodle (open source) for their course management software.

What are the advantages of using Linux?

Stability: Linux was built to multi-task and its operating system prevents it from crashing without you having to intervene. Windows crashes too much because it was never designed to run more than one program at once. Security: Linux "flies under the radar of viruses", so there are fewer virus/spam issues and he rarely runs virus scans (doesn't really need to).

What chemistry-based applications do you use?

Had to reboot Windows often while using ChemDraw, which caused him to start looking for different software to use. Mostly he gets chemistry content from the web

Which Linux distribution do you use?

Dr. Sinton uses Red Hat Enterprise Linux 5 (\$60 per year for updates). Can try anyone's distribution for free.

How is each Linux distribution different?

Different people manage them within the open source community. Different distributions will come with different packages (the Linux term for programs). Some are easier to install than others. Some offer more customization possibilities than others.

What is the protocol for using open-source? Who is the arbiter?

Self-organized community with a clear structure. Someone volunteers to be the maintainer and then a group of people support him/her. There are rarely community problems.

Is there Linux proprietary software?

There is starting to be some proprietary software. The most notable is CrossOver Office, which allows you to run most Windows programs under Linux. Its open source offshoot is wine.

What basic steps do you take to set up Linux?

Get distribution (download a program for free)  
Install it and partition format the drive (you can keep Windows or not on your drive)  
Tell it what packages (programs) to install  
Begin to play around with it

### **Meet the Speaker, Dr. Bernstein**

Saturday, October 18<sup>th</sup>, 2009

11:00-12:00 AM

Cheryl Westphal, University of Dubuque Undergraduate Student, Recorder

Participants in this session learned more about various molecular graphics scripting language difference.

### **Vendors and Sponsors**

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

Anasazi Instruments  
Griffin Analytical Technologies  
Institute for Chemical Education  
Journal of Chemical Education  
McGraw-Hill  
Measurement Technology  
Micro Lab  
Midwest Technical Sales  
Pine Research Instrumentation

## **MACTLAC Officers and Representatives for 2009-2010**

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## **MACTLAC Weather Report**

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

### **Friday's Weather**

Friday saw a typical fall day in Dubuque, IA. The temperature ranged from a low of 34 °F (1.1 °C) to a high of 51 °F (11 °C). The sky remained sunny all day, with a light wind (5 mph or 9 kph) out of the south south-west. The barometric pressure also remained steady all day around 30.26 inHg (768.6 mmHg). No precipitation was recorded for the day.

### **Saturday's Weather**

Saturday saw a temperature range of 33°F (0.56°C) for the low to 59°F (15°C) for the high. The sky was sunny all day, with little wind in the morning and an 11 mph (20 kph) wind in the afternoon out of the south south-west. The barometric pressure again remained steady all day around 30.29 inHg (769.4 mmHg). As on Friday, no precipitation was recorded for the 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 Larry Ferren (lferren@olivet.edu), the current Placement Officer. A copy of the list of available positions can also be found at [www.mactlac.org](http://www.mactlac.org).

### **Website**

The address for the Association's website is [www.mactlac.org](http://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.

### **Listserv**

Craig Bieler, the MACTLAC webmaster, has set up a Listserv for the member of MACTLAC to use for discussion of topics of mutual interest. To subscribe to the listserv, send an e-mail to [imailsrv@mactlac.org](mailto:imailsrv@mactlac.org) with the phrase 'subscribe mactlacinfo (your full name)' in the body of the message. Place nothing in the subject line of your subscription message. To post comments to the listserv, send your message to [mactlacinfo@mactlac.org](mailto:mactlacinfo@mactlac.org). To unsubscribe from the listserv, send an e-mail to [imailsrv@mactlac.org](mailto:imailsrv@mactlac.org) with the phrase 'unsubscribe mactlacinfo' in the body of the message. Do not place anything in the subject line of your unsubscription message.

### **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.

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.

## **2009 Meeting**

Our 2009 annual meeting will be held at Hope College in Holland, Michigan, on October 16<sup>th</sup> and 17<sup>th</sup>. The theme for the meeting is "Classroom Undergraduate Research Experiences, Development of Inter-Institutional Research Collaborations, and Research Methods as a Means to Improve Science Teaching and Learning". Some topics to be presented are classroom undergraduate research experiences (CURE)-a project through the Hope Howard Hughes Medical Institute program; development of inter-institutional research collaborations; and research methods as a means to improve science teaching and learning. Please refer to the meeting web site ([www.hope.edu/resources/mactlac/index.html](http://www.hope.edu/resources/mactlac/index.html)) for more information about the meeting program, accommodations, registration, travel, and tourism opportunities. See you in Holland!

### **Note of Thanks to Larry Ferren**

I would like to express my appreciation for Larry Ferren for agreeing to remain the Secretary-Treasurer while I organized the Dubuque annual meeting. Thank you Larry for going the extra mile!