

MACTLAC

MIDWESTERN ASSOCIATION OF CHEMISTRY TEACHERS IN LIBERAL ARTS COLLEGES



**2005 Annual Meeting Report
The 53rd Meeting of MACTLAC
Exploring Nanoscience from a Chemical Perspective
Lawrence University
October 28 – 29, 2005**

General Session 1- Friday Afternoon – 1:00 pm

Approximately 100 members were welcomed to the 53rd annual meeting of MACTLAC at Lawrence University campus by the meeting coordinator Karen Nordell.

The members were officially welcomed by Dr. David Burrows, Provost and Dean of the Faculty of Lawrence University. In his remarks Dr. Burrows mentioned three themes. First, science gets at the fundamental building blocks of the universe and helps us ask questions about those fundamental building blocks. Secondly, nanoscience has created exciting applications that helps us understand the world. Thirdly, there are some real interdisciplinary work that chemists, physicists, and geologists can do together in the field of nanoscience. The interdisciplinary possibilities are opening up due to nanoscience.

Karen Nordell made additional announcements related to the meeting. Computers for e-mail were available in Science Hall 128. She also mentioned the eighteen posters that would be available at the 5:15 pm poster session and vendor display. She indicated that there were seven vendors who would be represented at that display. Karen also introduced the four faculty members from Lawrence University.

Next Meeting

Saint Mary's College October 27-28, 2006

Whither Chemistry - Whether Chemistry

(full advertisement inside)

Visit the website – www.mactlac.org

Plenary Address

Integrating Nanoscience into the Chemistry Curriculum

Dr. George Lisensky
Professor of Chemistry
Beloit College

George Lisensky presented a talk in which he sought to demonstrate a number of experiments that have been developed that could be incorporated into the chemistry curriculum. These are experiments that illustrate principles in nanochemistry and can be incorporated into the curriculum an experiment at a time. George handed out demonstration samples along with the talk enabling him to illustrate his talk with examples along the way.

He started out discussing how traffic lights use nanotechnology in one dimension, and then talked about how we could use the refrigerator magnets to illustrate scanning tunneling microscopy.

Some of the items discussed in George's talk included the use of a nanoslide to illustrate x-ray diffraction, DNA optical transform kits to simulate DNA diffraction, and a discussion of recording data on hard drives.

The group previewed an experimental section of a MACTLAC lab manual for nanoscience. The lab manual included work on macroscale vs nanoscale gold. It also featured ferrofluids and some experiments that could be done with them. Some discussion of medical applications of ferrofluids ensued. Redox chemical experiments were in the manual, as well, including a nickel nanowire synthesis, the possible use of redox chemistry in optical switching, electrochromic Prussian blue redox and its use in electrochromic displays.

Other topics that were discussed included liquid crystals, light emitting diodes, MOCVD's, GaN nanowires, light emitting diodes, carbon nanotubes with kinks, giving electrical junctions, imaging with nanotubes (Samsung prototype field emission display using carbon nanotubes)

George demonstrated some of the ICE kits that are available- the Solid State Model Kit, the Polyhedral Model Kit, and the Activity Kit.

George concluded that while none of us can offer a new course in nanotechnology, we need to replace labs with things that are nano-related to produce chemists who will work on interdisciplinary teams who will do the important nanochemistry. If we have good experiments, we should keep them in the curriculum, but if we do not, why not replace them with some experiments that illustrate some good nanochemical principles?

General Session Two – Friday Evening

Health and Environmental Implications of Engineered Nanoparticles

Dr. Kevin D. Ausman,

Director of the Center for Biological and Environmental Nanotechnology
At Rice University

Engineered nanoparticles recently became commercialized in a number of consumer products, and the types that are being produced in large-scale quantities are increasing dramatically. However, the biological and ecological impacts of these nanoparticles have only begun to be explored experimentally. The public perception, public policy, regulatory, and commercialization issues surrounding this technical area were discussed. The general approach being employed to address these issues at Rice University's Center for Biological and Environmental Nanotechnology (CBEN) and its offshoot organization, the International Council on Nanotechnology (ICON) were described. Studies on the buckminsterfullerene's, a model hydrophobic nanomaterial, were used as an illustrative example.

The talk was divided into four major parts. In the first segment Kevin described the CBEN, who they were and what their major themes were including their organizing principles. In the second segment he presented a larger picture of nanotechnology including an overview of the public's acceptance of nanotechnology. In the third section, he looked at the C-60 system, the buckminsterfullerene's, their chemistry and potential uses as well as biological activity and their toxicology and mode of action. In part four, Kevin sought to draw some conclusions concerning the safety and the loss-benefit equation of nanoparticles. He emphasized that the "nano" world is not equal to the "macro" world. This has implications for risk assessment. Much is now being done to build a comprehensive nano-EHS database, so that standards may be developed.

General Session Three – Saturday Morning

Science at the Intersection of Electronics, Biotechnology, and Nanotechnology

Dr. Robert J. Hamers

Evan P. Helfaer Professor of Chemistry
University of Wisconsin-Madison

Dr. Hamers spoke of the convergence of opportunities as microelectronics, biotechnology and nanotechnology provided the opportunity to do some very interesting surface and interfacial chemistry. He spoke of the nano-bio convergence. The talk was organized into four major sections.

In the first section Robert spoke of how we make nanoscale objects and materials such as metal nanowires, silicon nanowires, carbon nanotubes, and carbon nanofibers. He elaborated upon the growing of the carbon nanofibers considerably.

In the second section of the talk Robert spoke of how we functionalize the nanoscale objects to provide biomolecular recognition capability. The question was how can we functionalize them with different biomolecules. This was addressed from the standpoint of the carbon nanotubes that had been described in part one. A number of approaches of addressability were discussed including the use of fluorescence and the use of IgG coupled with Anti-IgG tagged with Au.

In the third part of the talk Robert discussed how the components could be assembled into a useful system. In this section he sought to describe how we might manipulate the nanoscale objects to affect some sort of assembly. He used dielectrophoresis as a temporary way of directing the nanoscale objects to a specific location using a 1 MHz AC field to manipulate the nanowires.

In the last part of the talk Robert discussed the characterization of the systems that were created. He discussed using avidin on the biowire and biotin on the surface to get the nanowires to stick once they bridge the gap to make a switch. He could use mercaptoethanol to cleave the nanowires.

Robert felt that surface chemistry is the key as nanoscale materials are dominated by their surfaces.

MACTLAC General Business Meeting

1. President Chris VanOrman opened the meeting at 9:50 am with a brief announcement regarding the death of Alan Hutchcroft. Alan had served as president of MACTLAC as well as in other positions in MACTLAC and had recently been elected to honorary membership in the organization. Chris asked for the observance of a moment of silence in behalf of Alan.
2. Larry Ferren presented the secretary-treasurer report. He first reported on some of the items of business of the Friday morning executive council meeting. He mentioned that he might have made a few errors in dues statements due to the change over in secretary-treasure position and asked that members bring any perceived errors to his attention. Larry announced that two MACTLAC members had been elected to Emeritus status in the Friday morning executive council meeting, John Brodmann of Culver Stockton College in Canton, MO, and Jim Streator of Manchester College in Manchester, IN. Certificates will be mailed to them at a later date. (Note: At the Saturday executive council meeting Roger Lembke of Central Methodist University in Fayette, Mo was also elected to Emeritus status.)

Larry presented the following treasure's report that was prepared by the former secretary-treasurer Susan Klein (Thanks Susan).

2004 – 2005 Treasurer's Report

assets	9/1/2004
checking	\$1368.22
savings	\$5470.56
total assets	\$6838.78

income

dues collected	\$ 472.00
Clarke meeting	\$ 2719.00
interest	\$ 30.39
total	\$ 3221.39

expenses

postage, duplicating, website	\$ 284.00
Clarke meeting	\$ 2319.75
placement, archives	\$ 0
refunds	\$ 68.00
total	\$ 2671.75

assets	9/1/05
checking	2712.22
savings	4676.20
total assets	7388.42

increase (decrease) \$ 549.64

- Tracy Thompson gave the Archivist report. Tracy announced that the transfer of documents from Anne Sherren had been done last summer and that Tracy would be getting the documents into a format that would keep. The documents will be scanned and saved on CD's. While all documents will not be scanned initially, she will try to get the most important and most fragile ones scanned.
- Chris VanOrman announced to the MACTLAC membership a Listserv that could be used for discussion. The details follow below:
"Craig Bieler, MACTLAC's webmaster, has set up a Listserv for the members of MACTLAC to use to discuss topics of mutual interest. Anyone in MACTLAC is welcome to sign up and begin discussing immediately. Instructions for the use of the Listserv are given below.

To subscribe: Send an email to imailsrv@mactlac.org with the phrase 'subscribe mactlacinfo (your full name)' as the body of the letter. Place nothing in the subject.

To post: Send your message to mactlacinfo@mactlac.org.

To unsubscribe: Send an email to imailsrv@mactlac.org with the phrase 'unsubscribe mactlacinfo' as the body of the letter. Place nothing in the subject."

- Lauralee Guilbault gave the Placement report. Lauralee announced that she would be retiring after serving as Placement officer for three years. She asked any school having a position available to notify Craig Bieler at Albion College so he could place that position on the MACTLAC website. She encouraged jog seekers to check out the MACTLAC website to see if there were positions at MACTLAC schools available.

President VanOrman talked about the need of someone to replace Lauralee and asked about interest in the position. Anyone having any interest in the position is encouraged to contact either the new president or the secretary-treasurer as soon as possible.

- Michelle Applebee announced Iota Sigma Pi, the Women's Honor Society. This group is looking for (female) members and for female honor students in their junior year for the purpose of awarding scholarships. For more information you might try the website: <http://www.iotasigmapi.info/> or contact Michelle at: applebee@elmhurst.edu.
- Chris VanOrman introduced Dawn Wisner from Lake Forest College in Lake Forest Illinois as the new Illinois representative for a three year term and Kyle Backstand of Virterbo University of LaCrosse, Wisconsin as the new Wisconsin representative for a three year term. These elections represent the new apportionment in the Bylaws recently passed at the 2004 Clarke meeting. **"Election of State Representatives shall occur on a rotational basis every three years (Michigan and Indiana; the next year Minnesota, Missouri, and Iowa; then the third year Illinois and Wisconsin)"**
- John Moore, representing the Journal of Chemical education presented certificates to first year teachers and first year attendees of MACTLAC. The certificates permit the bearers to a one year free subscription to the Journal of Chemical Education. Thanks, John, for the continuation of this long-standing tradition of yours at MACTLAC. Your support is certainly appreciated.
- Phil Bays issued an invitation to the 2006 MACTLAC meeting at Saint Mary's College October 27-28, 2006 in Notre Dame, IN. The topic is Whither Chemistry- Whether Chemistry. He mentioned that in the ACS we are envisioning the "Chemical Enterprise in 2015".

In the United Kingdom, some Chemistry Departments have been dismantled and eliminated. He asked, "What implications are there for teaching chemistry in MACTLAC schools? What will we be teaching in 10 years? How will we be teaching it? Who will we be teaching? Will our campuses support our programs? Should they? What role will MACTLAC play?"

Dr. William Carroll, the current ACS president, will be with us to present his analysis of the ACS Chemistry 2015 Project which he has spearheaded. Other speakers and discussion groups will offer an opportunity for wide ranging consideration of the future of chemical education.

Phil mentioned that the Notre Dame Navy game would be an away game so we will own the town that weekend. Come and bring a colleague. We will invite the Ohio schools to that meeting.

10. Future meeting sites were announced/solicited:

2007	Viterbo University will count as West
2008	We really need a Central site- Volunteers please
2009	Hope College will be east

11. By acclamation the general membership approved sending letters of appreciation to the following:

- Chris VanOrman, outgoing President for his year of outstanding service
- To outgoing State Representatives: Michelle Applebee (Illinois) and Tracy Thompson (Wisconsin)
- To Lauralee Guilbault, outgoing Placement Officer for three outstanding years of service
- To Lawrence University for hosting the outstanding meeting (letters will be sent to Dean Burrows and Karen Nordell, Meeting Coordinator).

12. Michelle Applebee of Elmhurst College was nominated and elected as President-Elect (to serve as President 2006-2007) unopposed and by acclamation. Congratulations Michelle!!

13. The new MACTLAC president, David Oostendorp of Loras College assumed the duties of office. He commented on a survey that is being planned in February to help increase attendance. He asked each person to encourage their colleagues to fill out the survey when it arrives. David asked if there was any new business.

14. There being no further business, the motion was made, seconded, and approved unanimously to adjourn to the door prize drawings (10:20 am.)

Whither Chemistry?

Whether Chemistry?

MACTLAC 2006
Saint Mary's College
Notre Dame, IN
October 27-28, 2006

The Notre Dame / Navy game is away ☺

In the ACS we are envisioning the "Chemical Enterprise in 2015". In the United Kingdom, some Chemistry Departments have been dismantled and eliminated. What implications are there for teaching chemistry in MACTLAC schools?

What will we be teaching in 10 years?

How will we be teaching it?

Who will we be teaching?

Will our campuses support our programs? Should they?

What role will MACTLAC play?

Dr. William Carroll, current ACS president, will be with us to present his analysis of the ACS Chemistry 2015 Project which he has spearheaded. Other speakers and discussion groups will offer an opportunity for wide ranging consideration of the future of chemical education.

Come and bring a colleague!!

MACTLAC News

MACTLAC Placement

MACTLAC's Placement Officer maintains a list of faculty positions available within the MACTLAC Colleges. Our goal is to ensure that candidates are in contact with the colleges having positions available.

A list of available positions is kept on the website at <http://www.mactlac.org/>.

Honorary and Emeritus Members

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. 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 of request to the Secretary-Treasurer of MACTLAC.

MACTLAC Website

MACTLAC's website is located at <http://www.mactlac.org/>. Feel free to visit the site to get information on the organization and the services that it offers.

Listserv Set Up for MACTLAC Members

Craig Bieler, MACTLAC's webmaster, has set up a Listserv for the members of MACTLAC to use for discussion of topics of mutual interest.

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Experimental Breakout Sessions

Friday 2:45-3:45 p.m.

E1- Bottom-up synthesis: Making nanoparticles

Facilitators: Jerry Lokensgard, Craig Teague, Brock Spencer

Would you like to have made some red gold? In this hands-on session, participants prepared a ferrofluid, a colloidal suspension of magnetic nanoparticles as well as gold nanoparticles.

E2- Light and color in the nanoworld

Facilitators: George Lisensky, Kathleen Mandell

Ever wonder how liquid crystals change color or why the discovery of the blue LED was so important? In this hands-on session, participants explored the temperature dependent color changes of a series of liquid crystal mixtures. In addition, participants prepared an organic light emitting diode and explored the many ways of incorporating the traditional semiconducting LEDs into the curriculum.

E3- Imaging atoms with a Scanning Tunneling Microscope (STM)

Facilitator: Jeff Collett

Would you like to have seen the atoms in a surface of graphite? Participants used Lawrence's newest physics lab equipped with four Nanosurf Easyscan STM instruments to image various surfaces including graphite.

Friday 4:00 – 5:00 p.m.

E1- Bottom-up synthesis: Making nanoparticles

Facilitators: Jerry Lokensgard, Craig Teague, Brock Spencer

Same as Friday 2:45 – 3:45 pm

E2- Nanoscience and redox: Electrochemistry investigations

Facilitators: George Lisensky, Anne-Marie Nickel

Ever wanted to make a self-assembled monolayer? Participants in this hands-on session explored three nanoscience experiments all related to electrochemistry or redox reactions. The preparation of a self-assembled monolayer of alkane thiols on a silver surface produced a non-polar surface on which water beads up. Using an electrolysis reaction, nickel nanowires were grown inside the pores of an alumina filter and then the filter was removed by etching to yield magnetic nanowires. Lastly, nanometer-thick layers of electrochromic Prussian blue thin films were explored.

E3- Imaging atoms with a Scanning Tunneling Microscope (STM)

Facilitator: Jeff Collett

Same as Friday 2:45 – 3:45 pm

Saturday 10:45 -11:45 a.m.

E1- Bottom-up synthesis: Making nanoparticles

Facilitators: Jerry Lokensgard, Craig Teague, Brock Spencer

Same as Friday 2:45 – 3:45 pm

E2- Light and color in the nanoworld

Facilitators: George Lisensky, Kathleen Mandell

Same as Friday 2:45 – 3:45 pm

E3- Nanoscience and redox: Electrochemistry investigations

Facilitators: George Lisensky, Anne-Marie Nickel

Same as Friday 4:00 – 5:00 pm

Discussion Breakout Sessions

Friday 2:45-3:45 p.m.

D1- Innovative ideas for general education chemistry courses

Facilitator: Brock Spencer, Beloit College

Recorder: Andrew Greenberg, University of Wisconsin-Madison

22 people attending

I. Discussion of Types of Courses Taught by Session Participant – Categories

- A. Allied Health (Topical)
- B. Environmental (Topical)
- C. On-line Course
- D. Main-line General Chemistry Courses

II. Topical Courses- Environmental - What engages Students? Texts

- A. Chemistry in Context
- B. News articles as Application
- C. Extraordinary Chemistry of Ordinary Things
- D. Chemistry in the News

- E. Labs- Similar to EPA labs (combustion labs, instruments using sunscreens, UV-Vis, IR)

III. Health Related Classes

- A. For Allied Health Students
- B. For Nursing Students
- C. Labs Used for These Courses
Process Labs
- D. Nutrition Chemistry Course

IV. Online Course

- A. Problems with online course
- B. Lab 8 am- 6 pm worked well – Messy labs in four sets
- C. Weekly requirements and pre-counseling were necessary
- D. Altered as Traditional Semester
- E. One on One Contact Very Important
- F. Online Quizzes
- G. Local Resources
- H. Assignments to keep students on pace

V. Course Software Available

- A. Moodle
- B. Resources around the state of Wisconsin

VI. Student Engagement

- A. Student format- lab classroom mixture
- B. Class poster session- chem. In the news
- C. Students asking other students questions
- D. Department-wide poster session
- E. Structure projects around the faculty
- F. Demonstrations for NCW
- G. Personal Response questions and cooperative quizzes
- H. Peer-led team learning

VII. Class Sizes

- A. 40- 45 split into two labs
- B. 25
- C. 40-60

VIII. NSF Initiative Systematic Change in the Undergraduate Chemistry Curriculum

- A. Chemlinks coalition
- B. Modular Chemistry Consortium
- C. Molecular Science
- D. New Traditions
- E. The Workshop Project
- F. PUGIL – Grand Valley State (2nd Saturday in November)

(Note by secretary-treasurer – A second set of notes for this session were acquired and are included below for the sake of completeness)

To start out the session each person introduced himself and described the general education chemistry course taught. From these introductions the types of courses were grouped into two major categories: the General, Organic, Biological Chemistry courses and the Topical courses.

The group first considered the topical courses and looked at the Environmental topics asking what had driven them in that direction. Questions were asked about the labs of these courses as to whether they were environmental or chemical and whether special projects were required.

Questions were asked about nursing chemistry labs. Charles Ophardt from Elmhurst College described a four week lab sequence involving the analysis of Alka Seltzer and an attempt to find a replacement for it.

Some topical courses dealing with the chemistry of the brain and nutritional chemistry were discussed.

On-line courses were discussed in some detail. It was mentioned that in one program in which general chemistry is done on-line there is a 50 % failure rate as the students do not have the commitment needed to be successful. One response to the comment was that pre-counseling is necessary that one should not take on-line courses unless one is disciplined. There was a question as to whether an on-line nanotech course might be successful or not. It was felt that there would have to be regular pacing and constant contact. As in any chemistry on-line course, it could not be self paced.

One of the issues brought up was student engagement in general education courses. It was mentioned that in Hope College that to encourage student engagement they have a student poster session where the students select a topic and prepare a poster on it. Each student must go around and ask some questions on each poster, get answers, and turn them in when finished. Carol Mottley of Luther College talked about an end of the semester poster session that she is involved in. It was mentioned that at Lawrence University the Biology department requires participation in the form of a project connected to faculty research.

There was some discussion of personal response systems. There was mention of a similar set of material available from BLT Learning.

The sizes of the courses size ranged from small to large. Some representative sizes were: 40-48 at Hope College, 60 at Viterbo University, 25 at Loras College.

D2- Surviving and thriving during the first three years of a faculty position

Facilitators: Dawn Wisner, Lake Forest College

Recorder: Wanda Hartman, Beloit College

Challenges:

- Getting to know my students
- Time management *****
- How to get started on research
- Startup funding
- How to get tenure
 - Who are you trying to impress?
 - What does your school value? (Committees, service too?)
 - Know your institution –
 - What do you want to do?
 - Be true to yourself!
 - Get out of your office
 - Be known on campus

Research

- Use other institutions
 - Tailor your project
 - Scale back your project
- Collaborate especially during the summer
- RSEC programs
- ROA Programs (NSF)

Innovations in Teaching (Service in Scholarship combined)

Years	
1-2	Perfect Teaching
3-4	Try New
5-6	Coast and push teaching

What is your teaching contract?

What belongs in the sections of the tenure package?
 Scholarship
 Teaching
 Service

Time Management

- Where do you have control?
 - E.g. When to give exams,
 - Cut out internet, technology?

- Do not over do assignments.
- There are committees that one should not join.
 - Assessment
 - Tenure
 - Strategic Planning
 - Search

Resources outside the Department

- Library – Scifinder etc.
 - Double up on service, research, etc.
- Use digital cameral, video to take picture of students

There is Life after Tenure

D3- Molecular models and activities at your fingertips

Facilitator: Anne-Marie Nickel, Milwaukee School of Engineering

Recorder: Anne-Marie Nickel, Milwaukee School of Engineering

Participants worked with the NaCl kit, water kit, and amino acid kit. Discussion involved how to incorporate the models into chemistry curricula and how working with models improves special visualization skills.

Kits are available for instructors to borrow at no cost from MSOE's (Milwaukee School of Engineering's) Lending Library (www.rpc.msos.edu/lib/) or for purchase from 3D Molecular Designs (www.3dmoleculardesigns.com)

Friday 4:00-5:00 p.m.

D1- Read-on: Nanoscience-fiction resources for the chemistry classroom

Facilitator: Lon Porter, Wabash College

Recorder: Cindy Woodbridge, Hillsdale College

Lon Porter (Wabash College) gave a presentation on the types of resources he uses in his chemistry courses as well as for an outreach program; he uses texts, movies, and video games (Handouts were distributed.). Note: not all materials described are appropriate for all ages. He integrates these materials into his courses for science and non-science majors as a tool to spark discussion re: misconceptions about science/scientists, science and ethics, how research is done, among other topics. Use of these materials improves engagement, critical reading, and writing skills. The penultimate assignment in these courses is to write an original short story involving, for example, nanotech.

D2- Instructional Technology: Using online course management systems

Facilitator: David Hall, Lawrence University

Recorder: Larry Ferren, Olivet Nazarene University

David Hall sought to demonstrate and show the usefulness of a freeware package known as Moodle. This package is an online course management system that sits outside the firewall so students can access it. He started out by telling us how we could acquire the software package and some of the additional software that would be needed to run it. It does require scripting PHP and a data base and will run on Linus or Windows operating systems. Disciplines other than chemistry can use it as well as chemistry.

David demonstrated a number of features of the software including the Quiz management system, the Honor Code feature, how students can submit papers on-line and how the instructor can respond on line with cut and paste comments. On quizzes the instructor can give feedback on answers. With pH gradeassist, the program will create questions that have the built in ability to put in new numbers into the questions. The Journals feature can pose a question to the students and have them respond to that question. There is an on-line grade book that gives many grading option including a scaling of the grading to any scale that you wish to use.

Phil Bays from St. Mary's College posed several questions to the group. He asked if these on-line systems really save time considering all the time we spend programming them. Do they really enhance student learning? I do not believe that anyone really answered those questions.

D3 – Grants and Grant Writing

Facilitators: Dan Burden, Wheaton College and Mike Seymour, Hope College

Recorder: Kristen Mekemson, Lawrence University

- Grant writing should be career long
- 7 submitted, 7 declined
- Revise if not accepted
- Before submitting, have other people read and comment
- Have good idea & find resources
- Read other people's grants (even from other institutions)
- Office of Sponsored Research handouts
- Collaborative grants (or double dipping for research + classroom)
- Be a Co-PI to start
- Include a statement of impact on the institution
- Take advantage of people sitting on review panels
- Follow the rules of the grant program
- Use the language of the program
- Revise and take feedback to heart.
- Grant writing workshops: lh dependent colleges office, PKAL-Project Kaleidoscope, CUR grant workshop
- Talk to people to get ideas + collaborate, especially across disciplines (they may approach you)
- Be sure to polish or get other funding to sustain projects.

- You can submit to more than one agency, just keep people informed + only accept one (withdraw the others)
- Get reports done on time + stay accountable
- Institutional grants (REU) – no overhead
- Indirect cost (only for salary) – negotiate with business office

Saturday 10:45 -11:45 a.m.

D1- Creating a vibrant undergraduate summer research program

Facilitators: David Hall, Lawrence University and Lee Sharpe, Grinnell College

Recorder: None

No report was received from this group – I will include the breakout session description as its report -

“How can you attract students and faculty to an exciting and productive summer research program? Many schools in MACTLAC have long-standing, successful, and fun summer research programs for undergraduates. This session will be packed full of ideas on summer research programs including recruiting, paying and housing students, hosting a summer research symposium, getting the support of your administration and organizing fun events throughout the summer.”

D2 – Organic Chemistry Courses

Facilitator: Jerry Lokensgard, Lawrence University and Gary Spessard, St. Olaf College (?)

Recorder: ?

(The secretary-treasurer apologizes but upon finding the nicely done notes at the time of this compilation, this information is not available on the notes)

Course Management Tools

- Blackboard – communicate + post handouts
- Educator- uses for assignments – uploaded – give feedback to learn nomenclature
- Chemdraw/Chem
- Moodle – Post lab information on top of class stuff
- Using computers in lab to generate images of procedures
- Encouraged to keep grades electronically
-

Textbook

- Cost? Do we have any choice?
- Bookstores are charging very large markups
- Smith – good book with examples (U of Hawaii)
- Guided inquiry books- how and how much do you use?
-

Stereochemistry tutorial

- www.saintmarys.edu/~pbays/pubs.html

How many give five or more exams? (3)

What do you give on exams? Cribs ? – Most do not –
Look at the rest of the test as a guide?

What is the median ACT of the students?

28 or higher ---
26 or higher 3 or so
24 or higher almost all

What kind of testing?

Mechanistic vs product vs synthesis vs concept + theory?

Synthesis vs concept and theory leads to 2nd semester where you have mostly mechanism and products of synthesis

Consider a Kline book that produces a study guide conducive to how they learn

It takes biochemistry to cover the last few chapters of organic chemistry

Outcomes of the class mainly in the second semester are

Predict reaction products
Know mechanisms i.e. how does it work.
Be able to show stereo and regio chemistry

How about cumulative assessment?

Give ten time to figure out all the parts of the course
If the final is better than the average, drop the lowest test
ACS test- Do you use it?
A lot say yes
Some say “Yes” , but not as “final”
Some say “No”

How do you get the students to study for the final exam?

Steak Dinners
Student goal – finish fast- they have other things to do – They need to spend more time.
Keep study logs- How much time?

Green Chemistry: New Labs

Reduction of solvents (distillation- not waste)
Natural products
WUN green chemistry → seminar/vertical chats
st.olaf website

<http://fusion.stolaf.edu/gca>

This will do calculations for stoichiometry telling you the efficiency and toxicity from the green point of view. It also contains safety information.

D3 – Inorganic Chemistry Courses

Facilitator: Chris VanOrman, Hillsdale College

Recorder: Claude Mertenich, Luther College

Attendees:

jwmoore@chem.wisc.edu - John Moore, UW-Madison
charleso@elmhurst.edu - Charles Ophardt, Elmhurst College
mriehl@blc.edu - Matthew Riehl, Bethany Lutheran College
fhadley@rockford.edu - Fred Hadley, Rockford College
bm8@evansville.edu - Bill Morrison, University of Evansville
nutbrown@chem.wisc.edu - Diane Nutbrown, UW-Madison
burnsw@elmhurst.edu - Wendy L. Burns, Elmhurst College
cvanorman@hillsdale.edu - Chris VanOrman, Hillsdale College
mertzecl@luther.edu - Claude Mertenich, Luther College

The recorder has returned to Decorah, Iowa, and is listening to Jimmy Buffett (Salty Piece of Land Tour) live from Las Vegas (<http://www.radiomargaritaville.com/>) as he puts together these notes. Big thanks for Karen Nordell et al for a great meeting!

Proposal: Each of us should submit an inorganic experiment (or more) to Chris for inclusion on the MACTLAC website. Send experiments in whatever form to Chris.

Text use:

--for advanced inorganic chemistry

Miessler & Tarr: 7

Shrive: 1

Cotton: 1

--for sophomore inorganic

1 Rogers

Lab activities:

- preparation
- characterization
- modeling (CACHE)
- incorporate research
- Schlenk/glovebox
- electrochemistry
- x-ray diffraction (wingx)
- ICE models
- KINEMAGE

How to handle descriptive chem in lecture?:

- demos
- descriptive chapters as homework and not lecture
- redox as unifying theme

Access to journals was discussed--depends on institution

D4- Physical and Analytical Chemistry Course

Facilitator: Mary Blackwell, Lawrence University

Recorder: Cindy Woodbridge, Hillsdale College

This was the first time many of us remembered these two sessions being combined. Nevertheless, the group decided not to break apart into two smaller sessions and held a joint discussion. Topics of interest included:

- Course management software; those who use it use Blackboard, Moodle, or Educator.
- How computers are used in courses; applications range from molecular visualization software, data acquisition (LabWorks), Gaussian calculations.
- Use of PowerPoint for lectures vs. the more traditional lecture/discussion methods.
- What should be taught in Physical Chemistry given that many students avoid this course wherever possible. Options currently being explored for increasing enrollment were renaming the course, emphasizing connections to real-world applications, reducing pre-requisites, focusing the material on what practicing chemists really use. Some questions that were raised were: the amount of time we should spend on derivations vs. applications and what is missed by allowing students to work with computers to (for example) draw a graph versus having to do it by hand once or twice.
- How much students actually read before they come to lecture.
- What is the future of textbooks – will they be replaced by electronic media / the Internet?

2006 MACTLAC POSTERS

Authors (presenter underlined): Amanda Nienow

School: University of Minnesota

Title: Oxidation Kinetics of Size-Selected Soot Nanoparticles

Authors (presenter underlined): Richard Narske, Kenneth Klabunde; et. al.

School: Augustana College

Title: Solvent Effects on the Adsorption and Reactions of (2-Chloroethyl) Ethyl Sulfide on Nanocrystalline Magnesium Oxide

Authors (presenter underlined): James G. Goll

School: Edgewood College

Title: Green Chemistry-A Human Issues Project at Edgewood College

Authors (presenter underlined): Tom L. Neal

School: UW-Baraboo/Sauk Co.

Title: Using Student Assessment to Improve Teaching and Learning

Authors (presenter underlined): Brock Spencer

School: Beloit College

Title: Chem Connections Topical Modules

Authors (presenter underlined): A. Kitayama, A.C. Drennan, T. Rajh, D.M. Tiede, and K.E. Mandell

School: Beloit College

Title: Design of a Protein Switched Nanowire

Authors (presenter underlined): Joseph J. Piatt, Michael D. Schuder

School: Carroll College

Title: Integrating Fluorescence Spectroscopy into the Undergraduate Curriculum

Authors (presenter underlined): Christopher Dunlap

School: Saint Mary's College

Title: Implementing a Technology-Rich Discovery Based Laboratory in First-Year Chemistry

Authors (presenter underlined): Amy Anschutz, R. Lee Penn

School: University of Minnesota

Title: Reactivity of crystalline iron (III) oxyhydroxides: Influence of phase and particle size

Authors (presenter underlined): Lee Sharpe, Ryan Lee, Paul Tjossem

School: Grinnell College

Title: Build a CE Instrument from Things You Already Have (or your Physics Department has)

Authors (presenter underlined): Phil Bear¹, Solomon Gould¹, Claude Mertzenich¹, Leonard MacGillivray²

School: ¹Luther College and ²University of Iowa

Title: Nanosized Cavities Prepared Using Green Chemistry

Authors (presenter underlined): Gary L. Trammell¹, Harshavardhan Bapat¹, Keenan E. Dungey¹, Wayne Gade¹, Eric J. Voss², Michael J. Shaw², Masangu Shabangi², Eric G. Malina², and Susan D. Wiediger²

School: ¹University of Illinois at Springfield and ²Southern Illinois University Edwardsville

Title: Project Gemini XRD; Powder X-ray Diffraction in Undergraduate Courses

Authors (presenter underlined): Dan Burden

School: Wheaton College

Title: Single-Molecule Nanoscience at Wheaton College

Authors (presenter underlined): Brad Glorvigen

School: University of St. Thomas

Title: Nucleophilic Substitution of Azomethine Nitrogen

Authors (presenter underlined): Steven Girard, Doug Ogrin, Andrew Barron

School: Lawrence University (Rice University, Summer REU program)

Title: Functionalization of a metallic nanocluster

Authors (presenter underlined): Steven Girard, Mike Zaworotko, Julie Harmon

School: Lawrence University (University of South Florida, Nanoscience summer REU program)

Title: Matrix interactions of polymer composites: Incorporating hydroxylated particles into PMMA

Authors (presenter underlined): Martin D. Rudd, Deanna L. Pahl and Cindy Hofkens

School: University of Wisconsin – Fox Valley

Title: Reactions of Dinaphthyl Ditelluride with Various Thioureas Under Oxidizing Conditions with Bromine

Authors (presenters underlined): J.M. Brunette, R.A. Fischer, F. M. Chen

School: University of Wisconsin – Green Bay

Title: Investigating the sonochemical effects on solutions of CdSe quantum Dots in an organic solvent

Authors (presenters underlined): Melanie Ufkin, David Hall, Karen Nordell and William Perrault

School: Lawrence University

Title: Assessing the hazards of nanoparticles

Authors (presenters underlined): Alex Dogaru, Karen Nordell

School: Lawrence University

Title: Perpendicular recording: a new era of magnetic data storage

MACTLAC Weather Report

It has become somewhat of a tradition to mention something of the weather surrounding the MACTLAC meeting. The weather at this meeting was superb. Friday was characterized as a clear, cool, cloudless, fall day. It started with a little frost in the morning, got up into the 60's by mid day, and fell into the 40's by the end of the evening talk. It was a perfect day for a MACTLAC meeting. Saturday was pretty much a repeat of Friday. It was another beautiful crisp fall day. The fall colors were delayed enough this year to give us a very nice color show even at the late date in October.

VENDORS

Thanks to the vendors, sponsors and their representatives for coming to this year's MACTLAC meeting.

ACS- Northeast Wisconsin Local Section

ACS – DivCHED Exams Institute

Anasazi Instruments

Institute for Chemical Education

Journal of Chemical Education

Thermo Electron

MACTLAC Officers for 2005 -2006

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President	David Oostendorp	Loras College
President Elect	Michelle Applebee	Elmhurst College
Secretary/Treasurer	Larry Ferren	Olivet Nazarene University
Placement Officer	Position Available	
Archivist	Tracy Thompson	Alverno College

State Representatives for 2005 – 2006

Illinois	Dawn Wisner	Lake Forest College
Indiana	Kristy Miller	University of Evansville
Iowa	Mark Sinton	University of Dubuque
Michigan	Cindy Woodbridge	Hillsdale College
Minnesota	Matthew Riehl	Bethany Lutheran College
Missouri	Bernhard Hansert	Westminster College
Wisconsin	Kyle Backstrand	Viterbo University