CINTACS



Newsletter of the Cincinnati Section of the American Chemical Society

April, 2012 Vol. 49 No. 7

Meeting Calendar

- April 7 Reception at Lloyd Library and Museum
- Apr. 18 Education Awards Night @NKU, Al Conklin, Wilmington College
- May 25 Party Night at GABP

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APRIL MEETING Wednesday, April 18

Northern Kentucky University Student Center (SU107A)

Education Awards Night

Featured Speaker: Professor Alfred R. Conklin Wilmington University, Wilmington, OH

Chemical Demonstrations for Active Learning

Register Online: Please register online at

<u>http://registration.acscincinnati.org/</u>. Alternatively, you may email the webmaster at <u>webmaster@acscincinnati.org</u> to register. **Registration** will close at noon on Monday, April 16.

Program:

- **5:30 7:00 pm:** Registration
- 6:00 7:00 pm: Dinner. (\$25.00 or \$15.00 for students,
- emeritus, unemployed & new members). Menu: Buffet
- featuring: Garden Salad, Rolls, Beef Tips with Brown
- Gravy, Broiled Cod, Wild Rice, Vegetable Medley, Sugar Snap Peas and Apple Pie.
 - 6:45 7:00 pm: Special Presentations
 - 7:00 pm: Student Award Presentations
 - 7:15 pm: Speaker, Professor Al Conklin
 - 8:00 pm: Science Teacher Award Presentations

Directions and Parking instructions can be found on page 11

THE CINTACS NEWSLETTER

Vol. 49, No. 7 April, 2012

Editor.....Adam Bange Advertising.....Dan Esterline

CINTACS is published eight times a year (September through May) by the Cincinnati Section of the American Chemical Society. The submission deadline will be approximately April 15 for the May 2012 issue. Electronic submission is strongly preferred. All materials should be sent to:

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From The Chair

Greetings Section Members,

As most academics can attest, April is notable in that it marks the beginning of the end of the year. With that come celebrations, receptions, awards and parties. While it can keep the calendar full, it is one of the more enjoyable parts of the year as it provides multiple opportunities to catch up with old friends and meet new colleagues. Such is also the case with the end of the ACS year, albeit without the annoyance of having to proofread senior theses, grade papers and exams, nor calculate final grades. For us, beginning with the meeting in April we can simply focus on celebrating the achievements of our members as well as those of local students and educators.

While it seems I have echoed these sentiments multiple times about a variety of meetings this year, the Educational Awards night is always one of my favorite meetings. Whereas many of our meetings involve chemists talking to chemists, this meeting is the only one of the year where we get to interact with those outside our immediate sphere of influence. Attendees at this meeting often include elementary and high school students and teachers along with their parents. As such, this meeting provides a great opportunity for us to interact with future scientists to communicate the value of chemistry and to demonstrate why chemistry is an interesting and important field of study. Over the past two years, we have done that quite well whether it is a talk on global climate change or an overview of the way chemistry has been utilized in humorous comics. On Wednesday, April 18, at Northern Kentucky University this tradition will continue with Dr. Al Conklin of Wilmington University, who will be doing several interesting chemical demonstrations surely to amaze all in attendance. You can find more information within.

On a related note, the April meeting will also give us an opportunity to recognize a special group of section members, those who have been involved with the ACS for 50 or 60 years respectively. You can find the list of those members within this month's newsletter. Congratulations to those members on their extensive service to the ACS, and the field of chemistry, in general!

Also coming up early in April is a unique opportu-

nity to discover the history of the local section by perusing the archives held at the Lloyd Library and Museum. This reception, free of charge to all members and guests, will take place on Saturday, April 7th from 4 to 7 pm. I believe that collaboration between the Lloyd and our local section can be extremely valuable for both organizations and I am very hopeful that this reception will mark the beginning of a fruitful relationship. Registration will be open until April 5th, so please register as soon as possible, and encourage your colleagues to do the same.

As mentioned in a previous issue, our annual Party Night at Great American Ball Park will happen on Friday, May 25. We have reserved a Party Deck which can accommodate up to 70 members for a game featuring the Reds and Colorado Rockies. This family friendly event has been very well attended and enjoyed by all in previous years. An additional bonus this year is that there will be a fireworks show to following the game. Finally, this year's party night will be dedicated to our recently announced 2011 ACS Fellows, Bruce Ault, Joe Caruso and Diane Schmidt, three members who have contributed greatly to our science, our profession and our section. Please join us at Great American Ball Park to celebrate their achievements with us. The registration form is available at the website. Please register as quickly as possible so that we can get an accurate count of those who will attend. More information can be found within the newsletter and as always, please feel free to contact me with any questions.

I look forward to seeing you at an upcoming meeting.

Sincerely, Rick Mullins Chair ACS Cincinnati Section mullinsr@xavier.edu

WANTED: ACS Cincinnati Webmaster

The Cincinnati local section of the American Chemical Society is looking for a volunteer who is willing to serve as webmaster for the section.

The duties of the webmaster include updating the website, administering the meeting registration system, and sending announcement emails to the section.

If you are interested in serving as the webmaster, please send an email to webmaster@acscincinnati.org.

April Speaker, Professor Alfred R. Conklin

In 1972, Alfred R. Conklin, Jr. completed his Ph.D. in Agricultural Chemistry and Soils at the University of Arizona after returning from 3 years as a Peace Corps Volunteer in the Philippines. His Ph.D. was on determination of Adenosine Triphosphate (ATP) as a measure of the microbial communities in soil. He had a Postdoctoral position at Tuskegee Institute studying *Listeria monocytogens* infectivity. During the past 35 years at Wilmington College, his teaching responsibilities have been teaching Organic Chemistry, and Chemistry and the Environment for the Chemistry Department



and the Introductory Soils course for the Agriculture Department. During this time, he has had three Fulbright Grants, two in the Philippines and one in Zimbabwe. He has published a number of articles in a variety of peer reviewed and non-peer reviewed journals on both Chemistry and Soils. Al has also published 10 books and is currently working on the second edition of his book: Introduction to Soil Chemistry Analysis and Instrumentation for Wiley Interscience. He is the co-initiator, developer and the international director of the International Undergraduate Research Symposium (IURS).

Chemical Demonstrations for Active Learning

Abstract:

Chemical Demonstrations are most frequently used to engage, excite, entertain students and others. However, chemical demonstrations can be used to create active learning. Three common chemical demonstrations, elephants toothpaste, sieves and water and drippy faucet will be used to illustrate how demonstrations can engage students and others in active learning.

American Chemical Society Recognizes Milestone Members

Congratulations are in order for the following members of the section who have reached 50 or 60 years of service to the American Chemical Society. These members will be briefly recognized at the April meeting at Northern Kentucky University. They are as follows:

Leland R. Alexander Robert R. Cain Harold A. Clements John D. Curry Rolf M. A. Hahne Stephan Menyhert Norman Milstein Dale Leon Noel Adele Gombita Salerno Edward Andrew Sedor G. Douglas Winget

50 year members

60 year members

William F. Erman Joseph B. Farrell Thomas B. Hilton Robert D. MacKenzie Wayne H. Martin Don E. McOsker John Andrew Scheben Victor Gerald Soukup Paul Ernest Wright

Congratulations once again to these members for the extensive service!



ACS Cincinnati Section High School Chemistry Teacher of the Year

Aimee Hansen Mason High School

Aimee Hansen is a highly gifted and dedicated teacher, who instills the sense of wonder about chemistry in her students at Mason High School and inspires them to strive for excellence. Aimee received her Bachelor's degree in Chemistry with a concentration in Secondary Science Education from Michigan State University and completed her Master's degree at Miami University. After four years of teaching AP and College Prep Chemistry at Huron High School in Ann Arbor, Michigan, Aimee joined the faculty at Mason in 2002, teaching Chemistry and CP & AP Chemistry courses.

Widely respected by her peers and students for her commitment and dedication to teaching, Aimee Hansen motivates struggling students and ignites their enthusiasm for learning chemistry. She has embraced the approach of making her teaching relevant to her students' world. From her famous Mole Day activities to



her Functional Group Modeling Lab to her Sodium Polyacrylate Lab, Aimee knows how to make chemistry exciting to learn. It is common to find Mrs. Hansen's students throughout the building conducting experiments, collecting data and investigating a science inquiry project. Aimee is also responsible for teaching the top science students at Mason. Her expertise in Chemistry and engaging teaching techniques has resulted in a significant increase in enrollment in AP Chemistry. Numerous students impacted by Aimee have gone on to pursue science degrees at prestigious colleges and universities.

Being an outstanding teacher involves more that just classroom activities. In 2003, Aimee Hansen introduced the Science Olympiad to Mason High School. Her first team of 10 students placed fourth in the Cincinnati Regional competition and, since then, the program has grown to 90 students. She has coached teams which have taken first place at the Cincinnati Regional six out of eight tries and in 2007 the team placed fifth overall in the State of Ohio competition. Through activities like Science Olympiad, Aimee Hansen has expanded the opportunities for students to enrich their learning beyond the classroom establishing a legacy that will benefit future Mason students. In addition to being a mentor and model for teachers and aspiring teachers, she does an outstanding job of networking with professionals in the field of Chemistry which helps keep course content up-to-date. Melinda McCarty-Stewart, Mason High School Principal, credits Mrs, Hansen's professionalism and expertise in helping to implement the best teaching strategies in Mason, such as introducing the Process Oriented Inquiry Learning (POGIL) concepts to Mason High School teaching. If you can't find Aimee at the high school, you will likely find her recruiting future high school chemistry students with 3500 exploding ping pongs balls to create interest in science in curious young minds during the Fifth grade Math and Science night. As Melinda McCarty-Stewart says "Aimee Hansen was born to teach". During the past 10 years, Aimee has had a significant positive impact on the Science and Chemistry curriculum at Mason and is certainly a deserving recipient for the Cincinnati Section's High School Chemistry Teacher of the Year Award. Congratulations Aimee!!

ACS Cincinnati Local Section Middle School Teacher of the Year

Alison Dowd Talawanda Middle School

Did your middle school science teacher ever wear roller skates and brandish a leaf blower to demonstrate Newton's laws? The ACS Cincinnati Local Section Middle School Teacher of the year has! This is just one of the ways Alison Dowd, an 8th grade science teacher at Talawanda Middle School in Oxford, Ohio makes science come alive. Alison is a 28 year veteran teacher who uses demonstrations, activities and hands-on applications to motivate her students. She teaches her students about science by doing science.

When asked about her chosen career, Alison said, "I am so fortunate to have a job I treasure! Every day offers unique opportunities to teach students to think and learn about this world they live in and how it works."

Alison received her BS and Masters in science education from Miami University in Oxford, Ohio. Most of her career has been spent in the Talawanda district where she has taught almost every science including earth science, astronomy, physical science, anatomy and physiology and chemistry to eighth graders. Throughout her teaching career, Alison has continued to take part in professional development courses and workshops to improve her science content knowledge and teachin skills. The ultimate professional, Alison exhibits dedication to science and to her student's learning and displays exemplary desire to learn all that she can as a teacher. Her principal, Davis Baker, says, "Alison understands best practices, the importance of data, and uses her professional networks to her advantage. Perhaps the most important quality Alison has always demonstrated is her commitment and love for students, and her genuine concern to always do whatever is in their best interest."

Mr. Baker continued, "The Talawanda Community is so very excited for Alison and we could not be any prouder! She is simply an outstanding teacher and our students are so fortunate to benefit from her high energy, unlimited enthusiasm and great science knowledge".

One of her former students who admittedly hated science before taking Ms. Dowd's class wrote in a letter of recommendation, "She got excited when she taught us new things and it made us get excited about it too. I can best describe Mrs. Dowd's teaching with her favorite saying "wowsa" which roughly translates to 'better than amazing'." We couldn't agree more.

Earth Day Call for Volunteers

Dear Volunteers!!

Once again it time for Chemists to Celebrate Earth Day! For those who do not know me, my name is Donna Wiedemann; I am leading our Section's ACS Earth Day Celebration 2012 at Sawyer Point again this year. The National ACS Earth Day theme this year is "Rethinking Recycling – It's Easy to be Green," focusing on renewable materials and how they relate to green chemistry. I would like to tie it into the Greater Cincinnati Earth Coalition theme of "One Earth…..One Chance." The event this year will be on Saturday, April 21st at Sawyer Point.

Thus, I ask you to please do the following:

Let me know whether you will be volunteering to help out with Earth Day this year. I can be reached at (513) 945-0259 or 513-518-7767 (cell phone) or via email at wiedemann.dj@pg.com. I would like to have at least two people at the booth at any given time. Of course more are welcome!

I would like to have a team of people to help with developing demonstrations consistent with this year's theme. All ideas are welcome! Once I hear from those interested in participating this year I will set up a teleconference to explore demonstration ideas. I would like to have some quick experiments the public can do themselves, especially something the children can do to remind them of Earth Day beyond the event.

Thank you very much for your time and attention! I look forward to hearing from you and working together to show how chemists can work in concert with our environment.

Donna Wiedemann

ACS SPECIAL AWARD WINNERS 2012 EXPO SCIENCE FAIR at UC MARCH 10, 2012

Adams, David Grade 7 All Saints Elementary

Vegetable Oil as Fuel

Earth has become dangerously dependent on fossil fuels. These fuels, primarily gasoline and diesel, are available in limited supply and are non-renewable. Burning these fuels also produces emissions that are dangerous to human health and the environment. Concerned, scientists are seeking alternative fuels and energy sources. Used vegetable oil, recovered from restaurant fryers, is being researched as a replacement for diesel fuel. In an effort to explore this concept, experiments were designed to compare the burn qualities of vegetable oil and diesel. Research revealed the concept of biodiesel blends, so a fuel made up of a 50-50 mix of vegetable oil and diesel was added to the test. The first experiment measured the burn time of the fuels. Long burning fuel is called "high grade" and is preferred because it produces even power. The second experiment compared the energy content of the fuels by heating water using the fuel energy. In addition, observations were made about the cleanliness of the burn process. It was hypothesized that the vegetable oil would produce results similar to the diesel, but that diesel would be more efficient. The results contradicted this hypothesis since the diesel placed last in the burn time test, second in the heat output test, and produced the most smoke and residue. The mix appeared to be the best fuel alternative, showing positive qualities of each ingredient. Clearly, vegetable oil has possibilities as a replacement fuel and should be further explored as a solution to the world's energy crisis.

Racadio, Maria

Grade 8 St Gertrude Elementary

How Does Exercise Affect Carbon Dioxide Output?

This project will determine the effect of exercise on carbon dioxide output. When the body inhales oxygen, it turns it into energy and carbon dioxide through cellular respiration. It was hypothesized that during exercise, since the body needs more energy, cellular respiration would speed up to produce more energy. When cellular respiration increases, carbon dioxide production also increases. Since carbon dioxide is acidic, the amount being exhaled can be tested with pH testing solution. To test the hypothesis, a subject breathed through a tube into a jar of diluted pH aquarium drops. The number of respirations and the time needed to change the color of the solution to a specific ending point color was recorded. The subject then ran on a treadmill for a certain time, speed, and incline. Immediately after running, the subject breathed into a fresh jar of solution and the same information was recorded. This experiment was repeated ten times, and each trial showed that the color change was much faster after exercise than at rest. This was not solely because of breathing faster, as there was little change in the number of respirations. The experiment showed that more carbon dioxide was being produced during exercise. The hypothesis was proven correct. This information will be helpful for people with health problems that make exhaling difficult. They need to know to take frequent breaks during exercise to allow the cellular respiration rate to return to normal, so that carbon dioxide will not build up in their bodies.

Norman, Natalie Grade 10 Walnut Hills High

Do Digitalis-like factors exist within relatives of plant species?

Digitalis is a class of compounds extracted from Digitalis (Foxglove), a member of the Figwort family, that inhibits the sodium-potassium ATPase enzyme (Na+,K+ATPase) and are clinically important in the treatment of congestive heart failure. Unfortunately, digitalis-like compounds have a low therapeutic index. Identifying alternative digitalis-like factors may provide drugs with an expanded therapeutic index. The goal of this study was to test the hypothesis that plants related to the Figwort family contain digitalis-like factors. Water-soluble Digitalis-like factors were extracted from the tissues of Thai Jasmine, African Violet, Digitalis Grandifolria and Trumpet creeper. Digitalis Grandifloria, a member of the Figwort family, contains digitalis-like factors and served as a positive control for the extraction procedure. Oubain was used as a quantitative positive control for the enzyme activity assay. The concentration of digitalis-like factors in each plant extract was measured by their ability to inhibit porcine kidney Na+,K+ATPase activity in vitro. This assay measures the rate of ATP hydrolysis by the formation of ADP (adenosine diphosphate). This is reflected by the formation of NADH+ (protonated nicotinamide adenine dinucleotide) measured spectophotometrically and quantified by a comparison to oubain's standard curve.

Honoring our 2011 ACS Fellows – Party Night with the Reds

From the ACS website, "The ACS Fellows Program was created by the ACS Board of Directors in December 2008 'to recognize members of ACS for outstanding achievements in and contributions to Science, the Profession, and the Society." In 2011, our section saw three active members receive this honor. They are Diane Schmidt (Procter & Gamble), Bruce Ault (University of Cincinnati) and Joe Caruso (University of Cincinnati). This year, the Executive Board has decided to dedicate the annual Party Night event to these members. As such, on Friday. May 25, the section will celebrate their dedication to the field of chemistry and the section itself, while taking in a Reds game from Party Deck A at Great American Ball Park. This game. against the Colorado Rockies, will feature a fireworks show following the game. The cost of the event is \$35 for members and non-members alike. The cost entitles you to a ticket to the game. "all-you-can-eat" ballpark food and two beers. You are encouraged to bring spouses and children, for whom the two beers can be replaced with ice cream. While the cost is somewhat higher than a usual meeting, the section is covering around half of the expense of all members and guests who attend. In order to ensure that as many members as possible can join us, you are asked to sign up as soon as possible. Look for an email announcement about registration details in the near future. Feel free to email mullinsr@xavier.edu with any questions regarding the event.



Directions to Meeting Venue Northern Kentucky University

From downtown Cincinnati:

• Go east on U.S. Highway 50 (Columbia Parkway) and take Exit 1J, I-471 South, Newport, Kentucky.

Go south on I-471 to the traffic light at the intersection of I-471 and U.S. Highway 27. Continue straight and turn right at the next traffic light onto Nunn Drive.

Turn right at the roundabout (University Drive) and then left at the traffic light (Kenton Drive).

Park in the Kenton Drive Parking Garage.

From the East on I-275 (use these directions if coming from the Greater Cincinnati / Northern Kentucky Airport):

- Take Exit 76, "Three Mile Road/Northern Kentucky University."
- Turn right.
- Turn right at the traffic light (Kenton Drive).

Park in the Kenton Drive Parking Garage.

From the West on I-275:

- Take Exit 74A, toward Alexandria, leading to I-471 south.
- Go to the traffic light at the intersection of I-471 and U.S. Highway 27. Continue straight and turn right at the next traffic light onto Nunn Drive.

Turn right at the roundabout (University Drive) and then left at the traffic light (Kenton Drive).

Park in the Kenton Drive Parking Garage.

Parking:

Guests have to park in The Kenton Drive Parking Garage and <u>NOT</u> in the surface lots to avoid ticketing. We cannot reimburse you for parking tickets. The Kenton Drive Parking Garage is across the street from the Student Union, where the meeting will take place. The parking fee of \$3.00 can be waived if you bring your ticket for validation to the registration desk. A campus map showing the Kenton Drive Garage and the Student Union can be found at: http://admissions.nku.edu/visit/campusmaps.php

Invitation to Lloyd Library Reception

YOU'RE INVITED...

...to join your colleagues at the Lloyd Library and Museum (LLM) on Saturday, April 7, 4–7 pm. for an hors d'oeuvres and wine reception celebrating the opening of the Cincinnati Chapter of the American Chemical Society (ACS) archives. From 4:30–5pm., there will be welcoming and introductory remarks by Rick Mullins and LLM staff members. After five o'clock there will be opportunities to take tours of the library, including an opportunity to see your collection of archives shelved on LLM's newly installed compact shelving, view LLM's exhibits, and network with your colleagues, as well as the LLM staff. The current book and art exhibit is Turning Up the Heat this Winter: Peppers in Image and Word, which features many books and information on the medicinal value of peppers, as well as artwork on loan from renowned pepper expert, W. Hardy Eshbaugh, Professor Emeritus, Department of Botany, Miami University. There are also permanent exhibits on the Lloyd Brothers as well as George Rieveschl, Jr. from his archival collection held by LLM. In addition. LLM will have a small display available of selections from the ACS collection

Bring friends and family to LLM's celebration of ACS; and, don't forget to tell your colleagues who may be interested. We hope to see a "full house" at the Lloyd on **Saturday**, **April 7**, **4–7 pm**.



Important Online Voting Information

This year the section will conduct election of officers online at <u>https://www.acsvoting.com/</u>. Members who are eligible to vote will receive an email with instructions and a Personal Identification Number(PIN) which will allow you to vote online.

Please add the email address <u>info@acsvoting.com</u> to your address book to help ensure you receive the voting information. You may also send an email to <u>info@acsvoting.com</u> if you have any questions or difficulty voting online.



Cincinnati Section is on Facebook

The new Facebook page for the Cincinnati Section of the ACS is up and running. As mentioned in the previous issue, this site will be used for sharing accomplishments and networking amongst the membership. For example, you can check out pictures from recent meetings on the site. If you are already on Facebook, find the section page, "like" us and recommend us to your colleagues and friends. If you have something you would like to share (a recent publication, funded grant, promotion, birth, wedding, etc...), email the section chair, Rick Mullins, at <u>mullinsr@xavier.edu</u> and this page will be used to share these important happenings in the lives of section members. Additionally, you can follow us on Twitter for similar announcements (@Cincinnati_ACS). The section will continue to maintain the website (<u>http://www.acscincinnati.org</u>) for major announcements, including upcoming meetings.



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American Chemical Society – Cincinnati Section

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