

CINTACS



Newsletter of the Cincinnati Section of the American Chemical Society

February, 2012
Vol. 49 No. 5

Meeting Calendar

- Feb. 8 Chemist of the Year,
@Sharonville Convention
Center, Prof. Mike Novak,
Miami University
- Mar. 14 Joint with Dayton section
@Beckett Ridge Country
Club, Prof. Subha Das,
Carnegie Mellon
University
- Apr. 18 Education Awards Night
@NKU, John Warner,
Warner Babcock Institute
for Green Chemistry
- May Party Night , TBD

FEBRUARY MEETING Wednesday, February 8, 2012 Sharonville Convention Center

*In Honor of the Chemist of the Year and the
Research Associate of the Year*

Featured Speaker:
Professor Mike Novak, Chemist of the Year
Department of Chemistry, Miami University

Why You Should Care about Arylnitrenium and Aryloxygenium Ions

Register Online: Please register online at
<http://registration.acscincinnati.org/>. Alternatively, you may
email the webmaster at webmaster@acscincinnati.org to regis-
ter. **Registration will close at noon on Monday, February 6.**

Program:

5:30 – 7:00 pm: Registration

6:00 – 7:00 pm: Social Hour

7:00 – 8:00 pm: Dinner. (\$25.00 or \$15.00 for students, emeritus, unemployed & new members). Menu: Chicken Parmesan, Bowtie Pasta with Roasted Vegetables and Marinara, Caesar Salad, Fresh Vegetable Medley, Garlic Mashed Potatoes and Chocolate Mouse Cake.

8:00 – 9:00 pm: Speaker, Professor Mike Novak

Directions to Meeting Venue:

From the North: Take I-75 South to the Sharon Road Exit (#15). Turn right on Sharon Road. Go one block to Chester Road and turn right. The Convention Center is located ½ mile on the left.

From the South: Take I-75 North to the Sharon Road Exit (#15). Turn left on Sharon Road. Go one block to Chester Road and turn right. The Convention Center is located ½ mile on the left.

Additional directions and information about the Sharonville Convention Center can be found here: <http://sharonvilleconventioncenter.com/parking-directions/driving-directions/>

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THE CINTACS NEWSLETTER**Vol. 49, No. 5 February, 2012**Editor.....Adam Bange
Advertising.....Dan Esterline

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From The Chair

Greetings Section Members,

I hope this issue of CINTACS finds you recovering from the post-holiday and middle of winter blues. According to some pseudoscientific formula, January 23 is said to be the most depressing day of the year. Based on a somewhat complicated formula, Blue Monday, as it was referred to this year, earns this honor as a result of a variety of factors. Included amongst these is the distance from the previous holiday season, the usual bad weather that accompanies that day as well as the fact that most of us have failed at our New Year's Resolution by that day. While it's possible that this was all a part of a marketing scheme to encourage us to book vacations to exotic tropical islands, let's play along and do what we always do to lift our spirits during the month of February. No, I am not talking about Valentine's Day, but instead our February meeting which celebrates the Chemist of the Year. Nothing spells happiness like recognizing our colleagues for their outstanding achievements in the field.

Coming up on Wednesday, February 8th at the Sharonville Convention Center, we will recognize Professor Mike Novak of Miami University as the Chemist of the Year. While the award is given on a yearly basis, it often reflects work done over the course of a career. Certainly, this is the case for Mike, who since moving to Oxford in 1986, has trained over 60 undergraduate research students, approximately 25 graduate students, authored over 70 papers in peer reviewed journals while maintain high levels of monetary support, notably from the NIH. For fear of reducing ones career achievements to a series of numbers, I encourage you to read his biography contained within the newsletter. More importantly, make plans to attend the meeting in order to celebrate his achievements and also to hear his talk regarding his research on arylnitrenium and aryloxenium ions.

At the February meeting, we will also be recognizing Bill Allen, recently selected as the 2012 Research Associate of the Year. Bill's work at Procter & Gamble, focused in a number of areas, has resulted in several patents

and publications in peer-reviewed journals. You can read more about Bill's accomplishments in the article within. Congratulations to both of these individuals on well-deserved awards!

Speaking of awards, the section is currently accepting nominations for Teacher of the Year and will do so until February 20. If you know a teacher who has made a difference in students' lives through excellent, innovative teaching methods, encouraging students to pursue science, and dedication to their profession, please consider nominating them. More details on the nomination process can be found in the newsletter.

While it seems like the section year has only just started, we are already looking ahead to next year, especially with regards to identifying candidates for local section officers and other Executive Committee positions. Our local section has been recognized nationally for a number of our outreach activities. Without the leadership and support of our members, we would be unable to continue building upon our previous successes. Thus, if you are interested in becoming an officer, or you know of someone that would

make an excellent leader, please consider running yourself or identifying colleagues you would support in these positions. Any of our board members would be happy to discuss the positions with you, especially Victor Arredondo, who is head of the nominating committee.

As a preview of what is to come after February, our next meeting will be held on March 14 at Beckett Ridge Country Club. This will be a joint meeting with the Dayton Section and will feature Professor Subha Das of Carnegie Mellon University who will discuss a kitchen science class he developed for non-science majors. He has recently presented this at the San Francisco meeting of the ACS. In April, John Warner of the Warner-Babcock Institute for Green Chemistry will speak at the Education Awards night at Northern Kentucky University. I look forward to seeing you at all of our future meetings.

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

WANTED: ACS Cincinnati Webmaster

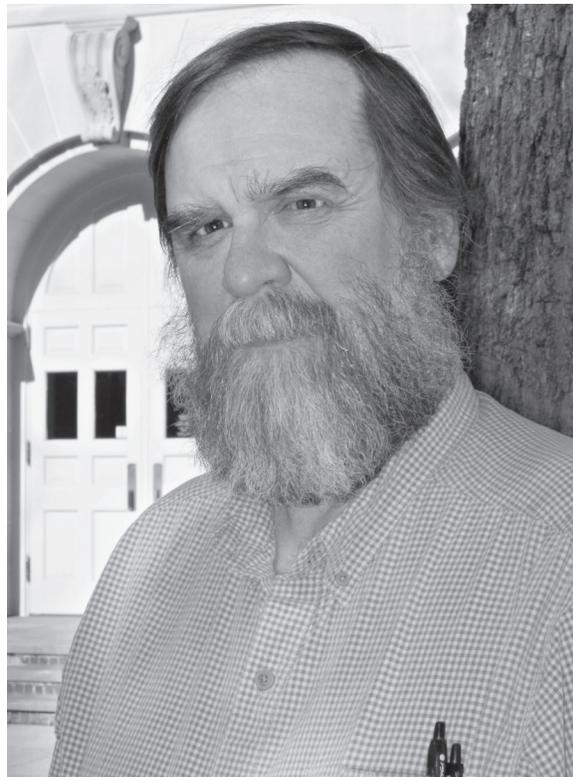
The Cincinnati local section of the American Chemical Society is looking for a volunteer who is willing to serve as webmaster for the section.

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.

Professor Michael Novak: Chemist of the Year

Our 2011 Chemist of the Year is Professor Michael Novak of Miami University, Oxford, OH. Mike grew up near Buffalo, NY and earned a BS in Chemistry from Rensselaer Polytechnic Institute in Troy, NY. He was a National Science Foundation graduate fellow at Cornell University, where he worked with G. Marc Loudon and earned his Chemistry MS and PhD. Following a National Institutes of Health (NIH) postdoctoral fellowship with Thomas C. Bruice at the University of California Santa Barbara, Mike began his independent academic career at Clark University in Worcester, MA. In Worcester, Mike met Jeanne Buccigross, his wife and Professor of Chemistry at the College of Mount Saint Joseph, OH. In 1986 Mike moved to Miami University and in 1994 he began a nine year term as Chair of the Department of Chemistry and Biochemistry. At Miami, despite administrative service which included significant instrument acquisitions and a building renovation as well as dedication to undergraduate laboratory education, Mike has established and maintained a vigorous research program that has been nearly continuously supported by the American Cancer Society and the NIH. His detailed kinetic studies of metabolites of carbocyclic arylamines and heterocyclic arylamines that generate selective arylnitrenium ions have broad application to carcinogenicity and mutagenicity. Most of his over 70 peer-reviewed papers have been pub-



lished in ACS journals, predominately the Journal of the American Chemical Society and the Journal of Organic Chemistry. Mike's research has trained over 60 undergraduate research students and approximately 25 graduate students and postdoctoral associates, but it has also impacted the daily lives of chemists and scientists familiar with his research. Colleagues have reconsidered their choice of over-the-counter pain relievers or thought twice about their barbecue technique due to his research. His award presentation is entitled "Why you should care about arylnitrenium and aryloxenium ions".

Why you should care about arylnitrenium and aryloxenium ions

In the second half of the 20th century two important and related classes of chemical carcinogens, arylamines (AAs) and heterocyclic arylamines (HAAs) became the focus of considerable research. AAs are largely products, or by-products, of industrial activity, although some of them are detected from other sources such as tobacco smoke and diesel exhaust. HAAs are generated from frying or broiling of meats. Evidence for the carcinogenicity of these compounds began accumulating in the late 19th century, but investigations into the biochemical basis for the carcinogenic activity of these compounds began in the 1960s. Both AAs and HAAs are metabolized into *N*-arylhydroxylamines, and subsequently into the ultimate carcinogenic species, the esters of the *N*-arylhydroxylamines. Our studies have shown that these esters decompose in aqueous solution into long-lived arylnitrenium ions that react selectively with 2'-deoxyguanosine to generate the same adducts detected from in vivo studies, implicating the nitrenium ion as the critical reactive intermediate involved in the initiation of carcinogenesis.

In recent years some arylamines that appear to be nitrenium ion precursors have been investigated as anti-tumor drugs. We have investigated putative metabolites of these compounds and have shown that, indeed, they do generate these cations. Our results show that the arylnitrenium ions derived from the anti-tumor drugs exhibit properties very similar to nitrenium ions derived from well-known carcinogenic AAs. It appears that the basis for the anti-tumor activity of these compounds is the same reactive intermediate that is implicated in the carcinogenic activity of AAs and HAAs.

Aryloxenium ions are the oxygen analogues of arylnitrenium ions. Evidence for their involvement in biological processes is less convincing than for arylnitrenium ions, but one of the oxidation products of α -tocopherol (Vitamin E) has been identified as an oxenium ion, and some anti-tumor drugs under current investigation may be oxenium ion precursors. Recent results from our laboratory concerning these reactive intermediates will be discussed.



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2012 Cincinnati Research Associate of the Year

The Cincinnati Section of the American Chemical Society is pleased to announce that William M. Allen, Jr. has been named as the Research Associate of the Year for 2012.



Bill Allen joined P&G in 1998 after obtaining his Master of Science degree in organic chemistry from Youngstown State University. He worked with Dr. Robert Laughlin creating pure surfactants to generate highly accurate phase diagram studies. Upon Bob's retirement, Bill began working with Dr. Isao Noda, creating new-to-the world materials. Bill's scientific capability as a chemist is indeed impressive, clearly demonstrated by his professional accomplishments of four granted patents, nine published patent applications, and seven publications in peer-reviewed journals. His contributions as a P&G intellectual leader and top technologist, his firm grasp of fundamental scientific concepts, depth of technical knowledge, drive, and intellectual curiosity, his willingness to take bold intellectual initiative, as well as his ability to utilize various state-of-the-art techniques to maximum extent in his research efforts was recognized in 2008 with one of the most prestigious internal technology awards name after John G. Smale, former Chairman and Chief Executive Officer of P&G.

Bill is also a graduate of Xavier University's MBA program and an avid marathon runner. Bill and his wife Toni, who also works at P&G, live in Liberty Township and enjoy spending time with their children, Bradley and Audrey.



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Overview of the Patent Process: Drafting the Application

So you've invented something that is the best thing since sliced bread! Now what? It is time to draft a patent application. Last month I introduced four stages of the patent process: the act of inventing, drafting the application, filing the application, and prosecution. This article will cover the second stage: drafting the application.

Last month I mentioned it was important to be aware of what has been done in the past (prior art) so you don't invent something that was already known. This awareness of the prior art is also important when drafting the application. The differences between your invention and the prior art are what may make your invention patentable. But the differences should be important. A widget of a different color does not make it patentable. These differences should show up in the claims and be highlighted in the text of the application.

There are various approaches to actually drafting the patent application document. Some start with the description of the invention, but I like to start with the claims. The claims are the most important part of the application; they define what will be protected. Whatever the claims describe is covered by them. If a claim requires something but a competitor's product does not have that something, then the product does not infringe the claim. For example, a claim to a three legged chair covers all chairs with three legs; but also chairs with three or more legs. A four legged chair has three legs (three legs plus an extra one). As you would expect, this claim does not cover a two legged chair. The claims are also the main part of the application that will be evaluated by the examiner.

The claims should contain all the necessary parts of the invention and nothing else. They should be general enough to cover your invention and variations on it, but not so broad as to

cover the prior art. If the prior art is a two legged chair; then a claim for a three legged chair will not be patentable. But a claim for a three legged chair with a back may be patentable. If one part of your invention can have a number of variations, then you should describe each variation explicitly, or with a general description. An invention that uses a bolt to hold something together could instead use a screw, nail, or glue. The claim should include a bolt, screw, nail, or glue as options, or could simply require a fastener. The choice will depend upon the details of the invention. Your patent attorney should help or do the actual drafting of the claims.

The last part of drafting the application is writing the specification. The specification contains background information about the invention, a detailed explanation of the invention, and often times examples. The detailed explanation and examples should explain the intricacies of what the invention is and its variations. It should provide enough detail for an experienced person to repeat the work without extensive research, but does not need to include extensive experimental details. It may be beneficial to include information or examples that compare the invention to the prior art to help show that the invention is deserving of a patent and is not merely a variation on the prior art.

This explanation will give you a flavor of what drafting a patent is all about, but is by no means a complete primer. Your patent attorney should draft or help guide you through the process of drafting an application.

Scott Conley, PhD, JD, is a patent attorney at Frost Brown Todd in Cincinnati. He is an inventor on 10 U.S. patents and numerous applications. Scott can be reached at srconley@fbtlaw.com or (513) 651-6818.

Call for Nominations: Teacher of the Year Awards

Each year the Cincinnati section of the American Chemical Society (ACS) recognizes outstanding area educators by giving awards in the following categories:

High School Chemistry Teacher of the Year

Middle School/Junior High School Science Teacher of the Year

Elementary School Science Teacher of the year.

Nominations should include the teacher's CV and at least one letter of nomination (ideally from the school principal), indicating why the individual exemplifies excellence in Chemistry Education (for High School) or Science for Middle or Elementary School.

If you know a teacher who has made a difference in students' lives through excellent, innovative teaching methods, encouraging students to pursue science, and dedication to their profession, please encourage them to apply. You can also help to find good candidates by forwarding this information to the principal of your children's school and encouraging them to nominate one of their teachers. Nominations are **due by Monday, February 20, 2012**.

Nomination materials should be sent to:

Lynn Hogue
HogueLM@muohio.edu

or

Lynn Hogue
9076 Arrowhead Ct.
Cincinnati, OH 45231

Electronic submission is strongly encouraged



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2012 SEE: Judges Wanted

Dear Colleagues:

The University of Cincinnati is planning for the Eighth Annual Southwest Ohio District Science & Engineering Expo (SEE) on **March 10, 2012**. The competition at UC is open to students in grades 6-12 in Butler, Clermont, Hamilton, Preble, and Warren counties. **We are inviting you to join us in judging the student research projects.** A training session will be held for all judges on the morning of the event. Breakfast, lunch, and complimentary parking will be provided.

We are searching for individuals with a bachelors degree (or higher) in a science or engineering related field (or with equivalent experience employed in a science or engineering related field) to donate their time as a judge for this year's science fair. We are also looking for those in the education field who have experience working with students in math and science. Judges have the opportunity to indicate which categories of projects they prefer to evaluate. Category choices include: Behavioral Sciences, Biochemistry, Botany, Chemistry, Computer Science, Earth and Space Sciences, Engineering, Environmental, Mathematics, Medicine & Health, Microbiology, Physics, and Zoology.

The judging process usually runs from 8:00 AM until 12:30 PM. During lunch, a raffle for the judges with some great prizes and gift certificates will take place. Judges and their families are also cordially invited to stay and visit our numerous exhibits and demonstrations. All of the exhibits and demonstrations are free and are sure to delight. Our keynote speaker this year is Margaret K. Hostetter, MD from Cincinnati's Children's Hospital Medical Center where she is Director of the Infectious Diseases Division. Please check our website (www.uc.edu/sciencefair) for more information on the SEE.

We're hoping you can join us for this experience that recognizes the creativity and discovery of the region's young scientists. For the past five years the EXPO has provided more than \$50,000 in prizes and scholarships to student participants. Help us to reward these individuals and encourage them to pursue careers in science and engineering. If your organization would like to join many who now support this event, we welcome your interest and encourage you to donate to an award or scholarship, or contribute to the operating costs to continue this event.

To become a judge, please complete the online registration form at <https://www.uc.edu/ScienceFair/registration/JudgeRegistration.aspx>. Materials will be mailed to you prior to March 10th, and will also be available online. Check out our website at www.uc.edu/sciencefair for more information. If you have any questions or comments, please contact Emily Stimpert or Keara Sherman at 513-556-4267 or Emily at emily.stimpert@uc.edu. Thank you for your time and consideration. We look forward to welcoming you to the Eighth Annual University of Cincinnati Science & Engineering Expo (SEE) on March 10, 2012!

Sincerely,

Emily Stimpert and Keara Sherman
2012 SEE Judging Co-Coordinator
Emily.stimpert@uc.edu
Keara.sherman@uc.edu
513-556-4267

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 mullinsr@xavier.edu 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 (<http://www.ascincinnati.org>) for major announcements, including upcoming meetings.



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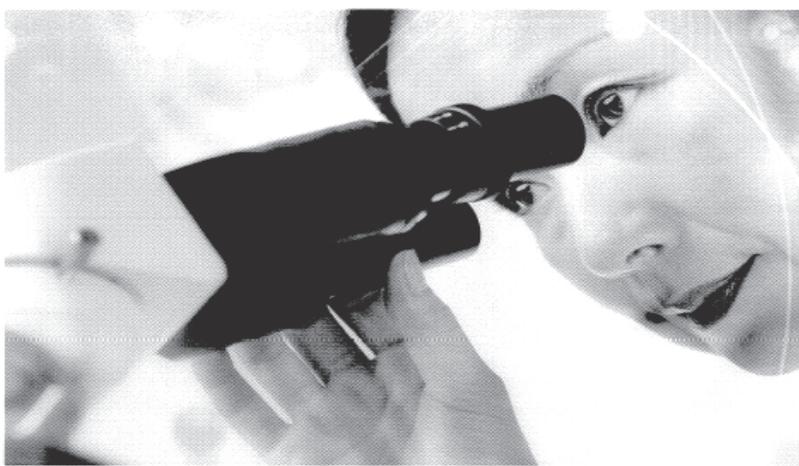
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