

# The Accelerator



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## Chairperson's Corner

As your new chair, I send greetings of the new year and look forward to serving you and this organization in 2004. Even though the last edition of *The Accelerator* contained some of my biographical information, I want to share some further information about my chemical education background. This is my third year of teaching chemistry at University High School of Indiana, a newly established independent college preparatory school in Carmel. I have been an active member of the Indiana local section for these past three years as well. Before coming to Indiana in 2001, I taught for seven years at Greens Farms Academy in Westport, Connecticut, and was actively involved in the Western Connecticut local section. There, I served as treasurer for two years and then as Education Committee Co-Chair for three years. In the latter position, I was responsible for overseeing high school programming and the administration of the National Chemistry Olympiad Exam.

I am really excited about everything that the Indiana Section will be offering to our members this year. Though I will touch on several of these here, you will find details related to specific programs and monthly meetings in other articles in *The Accelerator* and on our website at <http://membership.acs.org/i/indiana/>

The programs with which you are familiar are still in place – “Kids and Chemistry,” PROJECT SEED, National Chemistry Week activities, and excellent monthly programs that address various topics in chemistry. For example, Cathy Hood will speak on biological engineering at a joint meeting with the Indianapolis section of American Institute of Chemical Engineers in February and Dr. James O'Brien from Southwestern Missouri

State University will discuss the uses of chemistry in the Sherlock Holmes stories. Since this is an election year, we are also planning a legislative talk in the summer. However, you will also see new programming initiatives as we begin to broaden our goals and reach into our community.

One of our goals is to increase our public profile by addressing a number of the public's misconceptions about chemistry and chemicals. Thus, two of our monthly meetings – January and April – are being held in more accessible venues and cover broad topics of public awareness. The January meeting, held at Ben Davis High School, featured Dr. Scott Haraburda, Assistant Project Manager at the Newport Chemical Agent Disposal Facility. Our April meeting will be held at University High School; Dr. John Fortman will demonstrate the difference between fires and explosion.

We also want to reach out to those touching the lives of our future chemists. None of us will be here forever, thus we have a responsibility to prepare successors for our positions. So, in addition to encouraging students through our Scholarship Competition, we are also offering a teacher's workshop that same day. Dr. Michael Patrick of the University of Wisconsin-Madison will give a presentation on the uses of molecular modeling in the classroom. I had an opportunity to work with Mike for two weeks last summer and his ideas have changed the methodology I use to teach about atoms and molecules.

One of the biggest events of 2004 will occur in June. The ACS Central Regional Meeting will be held June 2-4 at University Place Conference Center on the campus of IUPUI. David Malik, general chair, and Bob Pribush, technical chair, along with a host of others have been working on this conference for more than a year. Each of you should have received a brochure about this

*(Continued on page 2)*

Indiana Section  
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The Indiana Local Section of the American Chemical Society publishes the *Accelerator* four times a year. The Section is not responsible for statements or opinions printed in this publication. The Editors are responsible for all unsigned and staff articles.

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To find up to date information about Local Section activities,  
visit our website: <http://membership.acs.org/i/indiana/>

**Chairperson's Corner** (Cont. from page 1)  
conference and the Call for Papers has also gone out. This is a great opportunity for you to learn about many of the latest advances in chemistry and chemical education. Our ACS president, Chuck Casey, will be with us throughout the day on Wednesday, June 2<sup>nd</sup>.

This is your local section, and the Executive Committee is committed to serving you. To help us meet your needs, we will conduct a local section membership survey this year. When you receive this, please take the time to respond. We really do want to be your local section.

Finally, we need many hands to help with our various activities. If you have an interest in public outreach, contact Julie O'Brien to help with National Chemistry Week; Mike Samide to help with "Kids and Chemistry;" or contact any member of the Executive Committee to see where you might be able to serve.

I look forward to meeting you at one of our local section activities or meetings.

Have a wonderful 2004 – Laura Slocum

## Kids and Chemistry is Growing!



By Michael Samide

Kids and Chemistry is a program where elementary school children learn about chemistry through fun, creative, hands-on experiments. When kids perform the Jiggle Jelly experiment, they study the different properties of polymers. Those who work through the Chemical Changes procedure study different types of chemical reactions and relate these to examples from their everyday lives.

Currently, the program operates out of The Children's Museum of Indianapolis and has the ability to reach a maximum of six hundred 3<sup>rd</sup>, 4<sup>th</sup>, and 5<sup>th</sup> graders. We'd like to see that number grow! This is where you come in!

This year, in addition to our programs at the museum, we are making available the kits, procedures, and supplies to any local section member who might want to share their love of chemistry at one of their local elementary schools. Simply make arrangements with the school, check out the kit, and teach the class. It's that simple! Plus it's very rewarding to watch the kids' faces as they pick up and play with their Jiggle Jelly for the first time!

If you're interested in teaching a class (either Jiggle Jelly or Chemical Changes) to a group of elementary school kids,

please contact Mike Samide (940-9973 or [msamide@butler.edu](mailto:msamide@butler.edu)) for further information and to check-out a kit.

## VX Nerve Agent Presentation at Ben Davis High School

by Wendy Hager

Scott Haraburda, PhD, PE gave a very interesting talk on the VX Nerve Agent being stored at the Newport Chemical Facility. Fifty-one people attended and six of these were from the general public, not the chemical community. Apparently, the nerve agent is like an ultra powerful insecticide and is an organophosphate compound as are many insecticides. It breaks down the nerve pathways and chemical communications in the body.

Luckily there are ways to counteract its effects and anyone working with or near the agent has three sets of chemical inject "pens". The one opens the nerve pathways and the second restores the communication chemicals. Also, the agent is non-volatile and easily destroyed with sodium hydroxide (NaOH). The NaOH will destroy both the VX nerve agent and its precursor. It certainly made me feel a little more comfortable knowing that the agent is non-volatile and that the facility has quadruple containment for the processing area. The nerve agent is being stored deep underground and accounts for only 4% of what was originally made. Most of the nerve agent was stored on an atoll near the Hawaiian Islands and has already been burned.

The talk was followed by a question and answer period and refreshments. Part of the reason it has taken so long to get the agent destroyed was due to the government stipulation that a concentration of <15ppb be obtained in the waste. Analytical techniques and technology had to advance to the point where it was possible to test for such a minute trace.

We certainly want to thank both Scott and his assistant for the presentation.

## Research Opportunity for High School Students

By Karlett Parra-Belky

The Department of Chemistry of Ball State University offers research-training opportunities for High School students (seniors/juniors) who show talent for science (biology and/or chemistry). Participants must be a member of a

minority group in science. Hispanic or other minority (Native-American and African-American) High School students are strongly encouraged to apply. Students whose parents are not college graduates would be preferentially chosen. Students will get training in biochemistry and molecular biology performing research with Dr. Karlett Parra-Belky and senior chemistry students in her lab. They will study proteins and DNA working six weeks during the summer of 2004. The six weeks chosen are flexible and will be arranged between June and July. Student participation will be rewarded with stipends (\$1,500.00), and participants will be encouraged to become involved in research activities and pursue a college education in the sciences. Our goal is to increase diversity in science careers by involving students of underrepresented groups in research activities. This project is funded by a CAREER Award from the National Science Foundation. For more information contact Dr. Parra-Belky at [kparrabelky@bsu.edu](mailto:kparrabelky@bsu.edu). Candidates should email a statement of interest including their name, the high school they are attending, and a short statement indicating why they would like to participate in our Undergraduate Summer Research Program.

## Activities at the 227<sup>th</sup> ACS National Meeting in Anaheim!

**FORE!**

**The Inaugural WCC (Women Chemists Committee) Benefit Golf Classic**

**Wednesday, March 31, 2004**

Coyote Hills Golf Course - Anaheim, CA

\* Golfer registration final deadline is March 15, 2004.

\* Registration forms are on the WCC website at <http://membership.acs.org/W/WCC/WCCGolfFlyer2004Rev0.pdf>

\* Additional details at <http://membership.acs.org/W/WCC> and specifically at <http://membership.acs.org/W/WCC/golf.html>

**Third annual YCC Fun Run/Walk**  
(5K run / 1.5 mile walk)

Join fellow chemists under the Southern California sun

**Monday, March 29th, at 6:30 a.m.**

To register and for more information, visit the YCC website at [chemistry.org/ycc](http://chemistry.org/ycc) or <http://chemistry.org/meetings/anaheim2004> (click on social & special events).

You can also send an E-mail to [yccfunrunwalk@acs.org](mailto:yccfunrunwalk@acs.org).



# 36<sup>th</sup> Central Regional Meeting returns to Indianapolis!

June 2-4, 2004  
IUPUI Campus

Mark your calendars now for what promises to be an outstanding technical and professional meeting...yet close to home! More than thirty symposia have been planned, featuring such diverse topics as the chemistry of auto racing, proteomics, nanotechnology, pharmaceuticals, forensic chemistry, and high school chemistry. In addition, papers are solicited from all general areas of chemistry. Special events will include a CRM Opening ceremony, Presidential Dinner with Chuck Casey, Younger Chemists and Women Chemists Luncheons, and Awards Ceremony Dinner. Check out the meeting website at <http://membership.acs.org/c/cerm2004/> to find out more details, submit an abstract (now through April 9), or register (starting March 1)!

## Thank You Letters / Reports from Undergraduate Travel Grant Awardees

To Whom It May Concern:

Over the past year, I have been privileged to conduct research with Dr. Geoffrey Hoops and Dr. Meng-Chih Su, of Butler University. In addition, collaboration has been established with the Institute of Atomic and Molecular Sciences (Taiwan), in order to gain insight into how a certain protein unfolds in a pseudo natural setting and an environment typical of a laboratory. This protein, Cytochrome C, is very crucial in the production ATP, the basic energy unit of the cell, hence the importance of gaining a greater understanding. Thank you very much for the financial assistance, enabling my research group and myself to travel to New York City for the national American Chemical Society meeting. Overall the meeting went very well. Our group managed to attend a number of presentations, most in the field of biochemistry or physical chemistry. In addition, we were able to demonstrate the depth of our research, between the two poster presentations. This provided ample opportunities to establish connections with professors and students of other universities, in hopes of future collaboration. Truly this was a wonderfully, unique experience providing an incredible amount insight into the scientific community. Our group was able to bond over the duration of the trip, by passing time in a combination of both the scientific arena and exploring the sights of lower Manhattan. In all candor, I appreciate the opportunity your committee has given us and would like to express the utmost gratitude for the opportunity to further my education.

Sincerely,

*Scott A. Hocker*  
*Butler University*

## Surface Induced Conformational Changes of Cytochrome c 226<sup>th</sup> National Meeting of the American Chemical Society

New York, NY • September 7- 11, 2003  
Indiana Local ACS Travel Grant Report

*Keith M. Gligorich • Butler University*

The main focus of my research work at Butler University has been to investigate the surface induced conformational changes of the protein cytochrome c. This research utilizes UV/VIS absorbance spectroscopy with a fused silica prism in a single pass attenuated total internal reflection geometry. The positively charged protein will adsorb itself upon the negatively charge prism and only a single monolayer of protein molecules are observed. The conformational changes of cytochrome c adsorbed on the surface can be monitored by the observed shift in absorbance.

I presented a poster in the physical chemistry division poster session of the 226<sup>th</sup> National Meeting of the American Chemical Society. The session went extremely well and my presentation was well received. I was busy explaining my research the entire three hours and I received many suggestions from other scientists. This was a great learning experience because it forced me to teach others the details and science of my research. I have gained a whole new perspective as a direct result of attending the conference.

The physical chemistry division was a professional presentation and I was one of the only undergraduates presenting. Many scientists were impressed by the fact that I am an undergraduate conducting this research. I plan to attend graduate school next year in chemistry and the meeting provided an opportunity to network with potential graduate school advisors. I want to thank the Indiana Local Section of the ACS for their generous support that made my trip to New York a rewarding experience.

# Chemistry in the Sherlock Holmes Stories

Wednesday, March 24, 2004  
University of Indianapolis • Presentation at 7:15 PM

*Dr. James F. O'Brien*  
*Southwest Missouri State University*  
*Department of Chemistry*



"Madam, you must stop painting your child's crib." These were the first words spoken by Sir Arthur Conan Doyle to a woman who had brought her listless infant daughter to the Edinburgh Medical School in 1912. Doyle, like his creation Sherlock Holmes, had acute deductive powers. His diagnosis of lead poisoning proved to be correct. Conan Doyle's first published medical article, in the British Medical Journal in 1879, dealt with poisons. His interest in chemistry is apparent in his fictional writings as well. Poisons, for example, are mentioned in 22 of the 60 Holmes tales. Numerous other chemicals are mentioned as well. Sherlock Holmes had a chemical "table" in his Baker Street quarters. Here he would relax by doing chemical analyses or syntheses. There is, in fact, so much chemistry in the Sherlock Holmes stories that practically every story has some, whether it be poisons, gems, brandy, acids, or even the famous 7% solution of cocaine. This lecture will discuss the scientific Holmes with quotes from the master himself as well as a few cartoons to illustrate that Asimov's assessment of Holmes as a "blundering chemist" is incorrect.

#### Biographical Information

Born in Philadelphia, PA, Dr. O'Brien received a B.S. in chemistry from Villanova University and a Ph.D. in chemistry from the University of Minnesota. Following postdoctoral work at the Los Alamos Scientific Laboratory in New Mexico, he joined the faculty at Southwest Missouri State University, where he is now a Professor Emeritus. In 1992, Dr. O'Brien received the Southwest Missouri State University Excellence in Teaching Award; in 1994, he received the university's Excellence in Research Award; and in 1996, the university named him Distinguished Scholar. His recent interests have centered on molecular orbital calculations of the properties of organometallic and inorganic species. He also devotes time to studying the history of chemistry.

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## Demonstrating the Difference Between Fires and Explosions

Tuesday, April 13, 2004  
University High School of Indiana

*Dr. John Fortman*  
*Wright State University*  
*Department of Chemistry*

In order to produce combustion one needs a fuel, a source of oxygen, and an initiator. This is presented in a surprising manner. Carbon dioxide and oxygen gases are produced to illustrate the difference between gases that do or do not support combustion. The vapor nature of burning is illustrated with a demonstration that dates back to Michael Faraday and his lectures on the candle. This open burning of fuel vapor, which occurs when the fuel and oxygen come from different sources and burn at the interface of mixing, is contrasted to explosions which occur when fuel and oxygen gases are pre-mixed. The need for an exhaust stroke in the internal combustion engine to replenish oxygen is demonstrated. A visual illustration is presented comparing a rapid rough explosion and a slower smooth explosion, as well as the difference related to octane rating of fuels. Videos of spectacular fires and explosions in demonstration bloopers and historic disasters will be shown.

#### Biographical Information

John Fortman is Professor Emeritus of Chemistry at Wright State University where he retired in 2001 after 36 years of teaching freshman and inorganic chemistry. In 1998 he was appointed the Robert J. Kegerreis Distinguished Professor of Teaching and won seven different teaching awards over the years at Wright State. In 1998 he received the CMA Catalyst Award for Outstanding Teaching of College Chemistry. Dr. Fortman received his B.S. from the University of Dayton in 1961 and his Ph.D. in physical inorganic chemistry from the University of Notre Dame in 1965. He has published over 50 papers in chemical education in addition to his research publications. With Ruben Battino he has produced three sets of videotapes that contain over ten hours of chemical demonstrations for use at middle school through college levels. For over 25 years he has done chemistry demo outreach shows for middle and high school students in the Dayton area and continues to inspire and fascinate over 7500 students each year with at least 15 shows. He has done workshops on teaching and demonstrations around the country. He has designed alternative courses for general chemistry, elementary chemistry and chemistry for elementary education majors. His course for non-science students was cited as a model in the 1990 AAAS report on "The Liberal Art of Science: Agenda for Action". The alternative general chemistry course was developed while he was a member of the General Chemistry Task Force of the ACS Division of Chemical Education and starts with organic and biochemistry moving through materials and finishing with energy while emphasizing applications and bringing in only those principles that are needed as they are necessary. The course has been characterized as being taught inside-out, upside-down, and backwards. His interests in addition to demonstrations, course content and organization include the use of analogies and videotaped material. John has been an ACS member since 1962 and is currently Councilor for the Dayton section and member of the Committee on Constitution & Bylaws after serving for five years on the Local Section Activities Committee. As an ACS Tour Speaker he has given over 200 talks over the past ten years, visiting 150 of the 189 different local sections and doing each of the 28 speaking tours at least once. He has presented in 49 of the 50 states.

## Please welcome the new Membership Chair – Marshall Parker from Dow AgroSciences!

Marshall Parker received his Bachelor of Science degree in Chemistry (ACS Certified) from Furman University in 1986. He went on to earn a doctorate in Organic Chemistry from the University of Wisconsin-Madison. Marshall joined Dow AgroSciences in 1991 as a Research Chemist in the Crop Disease Management Group. His work principally focused on ligand-based design and synthesis of analogs for targeted pathogen receptors and traditional synthetic exploitation of lead molecules. In 1997 he joined the Lead Discovery & Transfer Group with a charter to develop and build a combinatorial chemistry infrastructure at Dow AgroSciences. This work included evaluation and implementation of external technologies, design and synthesis of internal libraries, and the evaluation and oversight of external collaborations. Marshall went on to lead this group until 2001 when he took on a new role as a Weed Management product goal leader. He assumed his current role as a Six-Sigma Black Belt in 2002.

## Please welcome the new Industrial Chemists Chair – Scott Holmstrom from Eli Lilly and Company!

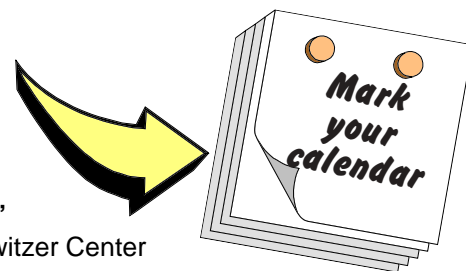
Scott Holmstrom received a B.S. in Chemistry at the University of Wisconsin-Superior in 1996. He then went on to do graduate research (Ph.D.) with James A. Cox at Miami University (Oxford, Ohio) using silica sol gels as encapsulation hosts and solid-state electrolytes as platforms for electrochemical interrogation. Scott joined Eli Lilly and Company (Elanco Animal Health) in 2000 as a senior analytical chemist in analytical development. He transitioned to the ADME (adsorption distribution metabolism elimination) group in 2001.

To find up to date information about Local Section activities, visit our website:  
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## Indiana Section Executive Committee 2004

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Industrial Chemists	Scott Holmstrom	Eli Lilly	433-7499	<a href="mailto:holmstrom_scott_d@lilly.com">holmstrom_scott_d@lilly.com</a>

# Upcoming Events



## Wednesday, March 24

James O'Brien will speak about "**Chemistry in Sherlock Holmes Stories,**"  
University of Indianapolis Dinner 6-7 PM in the Trustees Dining Room, Schwitzer Center  
Presentation 7:15 PM in Schwitzer 010  
Cost \$10/person Student Discount is available  
Contact Kathy Stickney for info [kstickney@uindy.edu](mailto:kstickney@uindy.edu) (317) 788-3552  
RSVP to Kathy Stickney by Friday, March 19, 2004  
Campus map available at <http://www.uindy.edu/maps/>

## Tuesday, April 13

John Fortman will speak about "**Differences between Fires & Explosions,**" University High School of Indiana

## Saturday, April 17

Indiana Section Sponsored High School Chemistry Scholarship Exam Competition for up to \$1000 in scholarship money - University of Indianapolis - Contact Kathy Stickney for info [kstickney@uindy.edu](mailto:kstickney@uindy.edu) (317) 788-3552

## Tuesday, May 4

Indiana Section Awards Night, Butler University

## June 2-4

36<sup>th</sup> Central Regional Meeting, IUPUI Campus

*The Accelerator* Newsletter

American Chemical Society

Indiana Section

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