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**ABOUT THE COLUMBUS SECTION**



The Columbus Section of the American Chemical Society comprises approximately 1,500 members who live and work in the following central Ohio counties: Delaware, Fairfield, Fayette, Franklin, Hocking, Knox, Licking, Madison, Marion, Morrow, Muskingum, Perry, Pickaway, Ross, and Union

The Mission of the American Chemical Society (ACS) is to encourage in the broadest and most liberal manner the advancement of the chemical enterprise and its practitioners. Toward that end, the ACS advances scholarly knowledge, provides professional services and support, communicates with varied audiences, and is actively involved in the science, education, and public policy arenas.

The Columbus Section of the ACS adheres to this mission and the strategic thrusts of the national organization and leadership by providing programs and networking opportunities for Chemistry professionals in Central Ohio.

We invite ACS members and scientists in the community to lend their expertise and talents to our activities in science education, government and legislative policy issues, safety in our industrial plants and in our communities, and care of our land.



## MEETING NOTICE

Columbus Section of the American Chemical Society, Inc.

<http://columbus.sites.acs.org>

**Multi-scale Characterization Studies of Aged Li-ion Batteries for Improved Performance**

Program:

***DR. SHRIKANT NAGPUR***

The Ohio State University

**High School Teacher of the Year Award:**

***SUSAN ROUCH***

Hilliard Darby High School

**Wednesday, March 21, 2012**

The Spaghetti Warehouse


[http://www.meatballs.com/location/store\\_detail\\_columbus.html](http://www.meatballs.com/location/store_detail_columbus.html)

397 West Broad Street  
Columbus, Ohio 43215

### PROGRAM DETAILS

5:30-6:15PM	<b>Executive Committee Meeting</b> – Banquet room
6:15-7 PM	<b>Social Hour</b> – Banquet room
7-7:45 PM Dinner	<b>Dinner</b> including salad & freshly baked bread. Spaghetti and Meatballs Incredible 15-Layer Lasagna Four-Cheese Manicotti Fettuccini Alfredo Grilled Chicken Caesar Salad <b>Dessert</b> is your choice of Cheesecake, Tiramisu, Brownie or Chocolate Sundae
7:45-8 PM	<b>High School Teacher of the Year Award – Susan Rouch, presented by Jeff Bracken</b>
8-8:45 PM	<b>Dr. Shrikant Ragpur</b>
Cost	\$25 per person members and non-members, \$20 for retired and unemployed members, \$5 per student. Payment will be collected at the door; cash and checks accepted. <i>Teachers will be guests of the Section, but RSVP is still required.</i> <b><i>Remember that this is a dinner order and must be paid. Please help control costs by honoring your order.</i></b>
RSVP	Please use the voice mail reservations service by calling 614-447-3600 extension 7047. Follow the template for reservations*. Alternatively, please send e-mail with the same information to The Columbus Section at the following e-mail address: <a href="mailto:acscols@earthlink.net">acscols@earthlink.net</a> or use the Meeting Reservation form on the web site <a href="http://columbus.sites.acs.org">http://columbus.sites.acs.org</a> .
*Voicemail/e-mail Reservations Template	<ul style="list-style-type: none"> <li>• First and last name: Please spell last name.</li> <li>• Membership category: member, high school teacher, non-member, retired, emeritus, unemployed, student, other.</li> <li>• Employer</li> <li>• Your entrée choice (see above)</li> <li>• Your phone number, in case we need to contact you.</li> </ul>



<b>Reservation Deadline</b>	<b>Thursday, March 15, 2011 at noon.</b>
<b>Program Contact</b>	<b>Natalie Chilicki</b> , 614-961-0452; <a href="mailto:natalie.chilicki@yahoo.com">natalie.chilicki@yahoo.com</a>
<b>Directions &amp; Parking</b>	<p><u>From the North:</u> Take 71 South, to the exit 108B for US-40/Broad Street. Turn right onto US-40/Broad Street. Restaurant will be on your left.</p> <p><u>From the South:</u> Take 71 North, to exit 106A-106B on the left to merge onto OH-315 North. Take US-62/OH-3/Rich Street exit toward Town Street. Turn right onto OH-3 N/US-62 E/West Rich Street. Turn left at the 3<sup>rd</sup> cross street onto South Gift Street. Turn right onto West Broad Street/National Road Southwest. Restaurant will be on your right.</p> <p><u>From the East:</u> Take I-70 West, to exit 100B for Fourth Street (toward US-23 North). Turn right onto South 4<sup>th</sup> Street. Turn left onto East Broad Street. Restaurant will be on your left.</p> <p><u>From the West:</u> Take I-70 East, to exit 97 for US-40/West Broad Street. Turn left onto US-40/West Broad Street/National Road Southwest. Restaurant will be on your right.</p> <p>Parking is free.</p>
	<p><b>ABOUT THE SPEAKER:</b> <b>Dr. Shrikant C. Nagpure</b> received his bachelor's degree in Mechanical Engineering from University of Pune, India and MS Mechanical Engineering from Old Dominion University, VA. He recently received his PhD in Mechanical Engineering at The Ohio State University under the advising of Prof. Bhushan, Prof. Babu, and Prof. Rizzoni. Since completion of his doctorate he has continued to work at Center for Automotive Engineering at The Ohio State University. Dr. Nagpure's research is focused on developing a multi-scale characterization plan for understanding the performance and degradation of the materials used in electrical energy storage devices. Currently, his work is focused on multi-scale characterization of LiFePO<sub>4</sub> cathode in automobile Li-ion batteries for improved performance.</p>

**ABOUT THE TOPIC:** The automotive industry is actively pursuing the development of electric vehicles based on battery technology to lower emissions of greenhouse gases and reduce the US dependency on foreign oil. The recent advances in Li-ion battery technology have shown great promises over other battery chemistries and have become popular electrical energy storage devices for electric vehicles, hybrid electric vehicles (HEV) and plug-in HEVs. The cycle life of the battery is critical for success of electric vehicles.

Aging of the cells at the macroscopic or system level is quantified by the change in the internal resistance measured by impedance techniques. To understand the related loss of capacity, it is imperative to understand the degradation of the electrode materials of the battery. The degradation of the material is caused by several simultaneously occurring physicochemical processes within the batteries; which makes material characterization of the electrodes a challenging task.

In commercial batteries the electrodes are made up of nanomaterials to leverage the effects of high surface area. The commercial batteries are larger in size than the lab cells. Thus effects of scaling in the commercial battery might be overlooked while characterizing the materials from the aged lab cells.

As such a systematic multi-scale characterization plan with a scope of physical, electrical and chemical and chemical structure analysis was developed to understand the degradation mechanisms that affect the cycle life of the full-scale commercial Li-ion batteries. Various materials characterization techniques have been chosen to understand the degradation at a particular length scale and providing a direction for higher length scales. Along with certain physical and morphological characterization, techniques that characterize the electrical properties such as surface resistance and surface potential have also been included in this scheme of multi-scale techniques. Certain chemical characterization techniques are also included to understand the chemical and chemical structure changes during the life of the battery.



**2012 COLUMBUS SECTION EXECUTIVE COMMITTEE AND COMMITTEE CHAIRS**  
*From the Section Website*

Chair*	<b>Natalie Chilicki</b>	Communications:	
Chair-Elect*	<b>David Speth</b>	Coordinator	<b>Maria Rosenthal</b>
Immediate Past Chair*	<b>Karen Irving</b>	Editor, <i>The Chemical Record</i>	<b>George Greene</b>
Secretary*	<b>Michelle Schott</b>	Electronic Communications	<b>Robert Bird</b>
Treasurer*	<b>Robert Kroshefsky</b>	Reservations	<b>Maria Rosenthal</b>
Treasurer-Elect*	<b>Jennifer Mahoney</b>	Webmaster	<b>Priscilla Ratliff</b>
Councilors*	<b>Lewis Hogarth</b>	Web Features	<b>Marlin Linger</b>
	<b>Virginia Songstad</b>	High School Chemistry Teachers Group	<b>Jeff Bracken</b>
	<b>Jeff Trent</b>	Hospitality	<b>Gordon Renkes</b>
<b>Geoff Babbitt</b>			
Alternate Councilors*	<b>Ed King</b>	Kids and Chemistry	<b>Jeff Trent</b>
	<b>Donald Songstad</b>	Mentoring/Minority Affairs	<b>Open Position</b>
ACS Communications	<b>Maria Rosenthal</b>	Membership	<b>David Speth (Temporary)</b>
Archives	<b>Steven Rosenthal</b>	National Chemistry Week	<b>John Blaha</b>
Auditor	<b>Art Beach</b>	Nominations	<b>Maria Rosenthal Priscilla Ratliff</b>
Bylaws and Statutory Agent	<b>Steven Rosenthal</b>	Patterson-Crane Award	<b>Edward W. Badger</b>
			<b>Theresa A. Huston</b>
			<b>Steven Rosenthal</b>
Chemistry Olympiad	<b>Cynthia Hummel</b>	Publicity	<b>Tiffany Stegner</b>
Columbus Section Award	<b>Lewis Hogarth</b>	Silver Circle	<b>Tom Weeks Priscilla Ratliff</b>
Education	<b>Open Position</b>	State and Local Government Affairs	<b>Manfred Luttinger</b>
Fifty-Year Member Coordinator	<b>Wendy Reichenbach</b>	State Science Day Coordinator	<b>Yun Gong Wenbin Qi</b>
Finance	<b>Fred Costaschuk</b>	Tellers Committee	<b>Rudolf Brits</b>
Auditor	<b>Art Beach</b>	Younger Chemists Committee Chair	<b>Rosemary Loza</b>

\*The Executive Committee comprises the Chair, Chair-Elect, Immediate Past Chair, Secretary, Treasurer, Treasurer-Elect, Councilors (3), and Alternate Councilors (3). A quorum, required in order to transact business, constitutes seven of the committee members.

**COLUMBUS SECTION AWARD FOR 2012: CALL FOR NOMINATIONS**  
*By Professor Lewis Hogarth*

The Columbus Section Award is presented every two years to an outstanding scientist in the area of chemical sciences: chemistry, biochemistry, biomedical sciences, chemical engineering, and the use and promotion of chemical knowledge, amongst many others. The awardee is selected from a group of scientists nominated by their colleagues, and must be within the membership of the Columbus Section of the American Chemical Society...all ACS members residing in the Central Ohio area are automatically members of the Columbus Section.

The award is given in recognition of outstanding achievement in and the promotion of the chemical sciences. Nominees must have, at some time during the period for which their work is to be recognized, been full members of the Columbus Section. The types of accomplishments considered are published research, books, patents, workplace leadership and educational advancements.



The nomination package must include the following items:

- A nomination letter by a member of the Columbus Section;
- At least three letters of support from colleagues who are familiar with the nominee's career and work. The letters must be on "company letterhead" or transmitted in an appropriate format using E-mail;
- A summary of the nominee's career, which can include a résumé, a curriculum vitae, lists of publications and patents, presentations at professional meetings, and other relevant information.

Nominations must be received by **March 31, 2012** and a decision will be made by the end of April, 2012. Please submit them to ACS Columbus Section, Att: CS AWARD, PO Box 82181, Columbus, OH 43204. The award will be given at the May, 2012 meeting of the Columbus Section, at which the recipient will be expected to deliver a lecture.

Additional information about the award, including a roster of past recipients, can be found at <http://columbus.sites.acs.org/colsectionawardmore.htm>.

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## COLUMBUS SECTION ANNOUNCES HIGH SCHOOL CHEMISTRY TEACHER OF THE YEAR

*By JEFF BRACKEN, HIGH SCHOOL CHEMISTRY TEACHERS GROUP CHAIR*

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Chemistry teacher **Mrs. Susan Rouch** of Hilliard Darby High School has been named the High School Chemistry Teacher of the Year by the Columbus Section of the American Chemical Society. Mrs. Rouch will be recognized for this award at the March 21<sup>st</sup> meeting. Mrs. Rouch and her school will also receive a cash award for this prestigious honor.

Mrs. Rouch is a Nationally Board Certified science teacher at Hilliard Darby and previously taught at Hamilton Township High School. During her 25-year teaching career, Mrs. Rouch has taught a variety of science courses, including chemistry, Chemistry in the Community, Advanced Placement Biology, and Advanced Placement Chemistry.

Beyond her own classroom teaching, Mrs. Rouch has worked extensively with Kenyon College to develop a dual credit advanced placement chemistry course for her students. Mrs. Rouch has continued to seek new professional challenges by incorporating new literacy strategies and project-based learning. She has also embraced the role of technology in her classroom with the creative use of a SMARTboard and the SMART Response system (clickers).

Mrs. Rouch's colleagues and administrators refer to her as a true master teacher who constantly seeks new methods to help students learn science. Mrs. Rouch has been described by her students and peers as an inspirational leader at her school who exemplifies the absolute finest qualities of the teaching profession whose impact extends far beyond her own classroom.

Each year since 1965, the Columbus Section of the American Chemical Society has awarded the High School Chemistry Teacher of the Year Award to a chemistry teacher in Central Ohio.

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## STATE SCIENCE DAY 2012

*By Bob Kroshefsky*

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On Saturday, May 5<sup>th</sup>, State Science Day 2012 will be hosted by The Ohio State University at the French Field House in Columbus – just up the road from the 'Shoe. Since 1998, as part of its commitment to chemical education at all levels, the Columbus Section has sponsored awards for outstanding projects in the chemical sciences. The objective is to acknowledge and reward those students who have not only understood the scientific method, but also have exhibited creative thought.

Clearly, these students are some of the best that Ohio has to offer and already are showing an interest in chemistry. What better way to encourage these youngsters and expose them to the human face of the chemical enterprise? Professors and employers, it might also be a good way to do early recruiting for future students and interns.

**WE NEED YOUR HELP!!!**

COLUMBUS SECTION OF THE AMERICAN CHEMICAL SOCIETY, INC. — PO BOX 82181 — COLUMBUS, OH 43202





As you can imagine, the number of projects is large (~140) and we need around 30 judges to evaluate them and decide on the winners. A general knowledge of some branch of chemistry is desirable, but being a chemist or ACS member is not required. But even limited knowledge in one area can be supplemented and effectively utilized through interactions with judges having complementary skills.

Judging is scheduled to run from 9:00 a.m. to noon. Refreshments and orientation will occur from 7:00 to 8:30 a.m., and you really need not be there much before 8:00 a.m. in order to get a clear idea of what will be happening that morning. You will be well-informed in advance. All of the judges in the past few years have thoroughly enjoyed the experience.

Please consider taking one morning out of the entire year to offer encouragement and advice to someone who could be taking the first steps in an illustrious career. If you would enjoy the opportunity to meet the next generation of chemical scientists, e-mail me at [bobkro@embarqmail.com](mailto:bobkro@embarqmail.com) or call me at 937-707-9276.

In 2013, these duties will be turned over fully to Dr. Yun Gong of CAS and her husband, Dr. Wenbin Qi, a recently-minted OSU Ph.D. biochemist. They are learning the ropes this year and will be ready to go then.

Refer to The Ohio Academy of Science Web site <http://www.ohiosci.org/ssd.htm> for more details.

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### WELCOME NEW MEMBERS!

*By DAVID SPETH, CHAIR-ELECT AND MEMBERSHIP CHAIR*

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Please join us in welcoming the following new members who have joined the Section recently: The Columbus Section cordially invites new members to our monthly meetings. The Section will pay for new members' meals the first time they attend a meeting.

**BRIAN BARNES**  
**HOLLY CROWSON**  
**RYAN DAVIS**  
**ALLISON KREINBERG**

**MATTHEW NOERPEL**  
**KELSEY PEER-BOSTIC**  
**ABIGAIL SIGMAN**

**LEONARD SPIALTER**  
**MENGLING STUCKMAN**  
**MICHELLE WANG**  
**LAURA WICKERHAM**

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### CERMACS 2012: COME CELEBRATE 100 YEARS OF CHEMISTRY IN DETROIT!

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43rd Central Regional Meeting  
Hosted by the Detroit Local Section  
June 5-9, 2012  
The Henry Hotel  
Dearborn, Michigan



The Historic Henry Hotel (formerly the Ritz Carlton) is host to the 43rd Central Regional Meeting and Detroit Centennial Chemistry Celebration. Symposia will highlight Advanced Battery Chemistry, Analytical Chemistry, Automotive Materials, Biochemistry, Chemical Education, Online Chemistry Education, and *Detroit 100 – A Celebration of 100 Years of Chemistry in Detroit*.

Join us for an exciting undergraduate program and an informative and interactive high school teachers' workshop. Other events not to be missed include the Women Chemists Committee Luncheon with an exciting speaker, Younger Chemists Committee Luncheon, and an Ice Cream Social with the ACS Governance.

**Key dates to remember:** April 16 - Abstract submission closes    May 22 - Advance registration closes    June 5-9 – CeRMACS 2012  
COLUMBUS SECTION OF THE AMERICAN CHEMICAL SOCIETY, INC. — PO BOX 82181 — COLUMBUS, OH 43202



For more information, please visit <http://2012cerm.sites.acs.org>

UPCOMING ACS WEBINARS  
<http://acswebinars.org/>

[More Advanced Beer and Brewing –Tips, Tricks, and Tidbits You Wish You Knew](#)

EVENT DATE: Thursday March 15, 2012. Learn the chemistry behind one of mankind's favorite alcoholic beverages, just in time for St. Patrick's Day!  
[Read More...](#)

[Designer Babies](#)



EVENT DATE: Thursday March 22, 2012. "Do you want a boy or a girl?" Darren Griffin will discuss the pros and cons of genetic engineering.  
[Read More...](#)

[2012 Chemical Entrepreneurship Series](#)

"Nothing can stop the man with the right mental attitude from achieving his goal..." But, what does it really take to build a successful company from scratch? What should you know beforehand? Join our speakers to learn the A-to-Z of being an entrepreneur. Are you ready?

[Read More...](#)

COLUMBUS SECTION ACS CALENDAR OF EVENTS

Year	Month	Date	Day	Location	Comments
2012	March	15	Thu		Noon: Deadline for reservations for March, 2012 Section meeting.
2012	March	21	Wed	The Spaghetti Warehouse	Monthly Section Meeting: <i>Multi-scale Characterization Studies of Aged Li-ion Batteries for Improved Performance</i> , <b>Dr. Shrikant Nagpur</b> . See details elsewhere in this issue of <i>The Chemical Record</i> .
2012	March	11-15	Sun-Thu	Orlando	Pittcon Conference and Expo <a href="http://www.pittcon.org">www.pittcon.org</a>
2012	March	25-29	Sun-Thu	San Diego	243 <sup>rd</sup> ACS National Meeting and Exposition
2012	April	25		TBA	Monthly Section meeting. Mark your calendars!
2012	June	5-9	Tue-Sat	Dearborn, MI	 43 <sup>rd</sup> ACS Central Regional Meeting. This is the first time the Central Regional Meeting has been held in Metro Detroit since 1974. See announcement elsewhere in this issue of <i>The Chemical Record</i> .
2012	August	19-23	Sun-Thu	Philadelphia	244 <sup>th</sup> ACS National Meeting and Exposition
2012	October	21-27	Sun-Sat	Here, There, Everywhere	 National Chemistry Week (NCW). Stay tuned for information on Columbus Section activities and volunteer opportunities!
2012	October	27	Sat	Columbus Metropolitan Library Main Branch, 96 South Grant Avenue	NCW chemistry demonstrations for children of all ages. Volunteers are needed; contact Professor John Blaha ( <a href="mailto:Jblaha@csc.edu">Jblaha@csc.edu</a> ) for more information.

ABOUT THE CHEMICAL RECORD

*The Chemical Record*, official newsletter of the Columbus Section of the American Chemical Society, Inc., is published monthly, February-May and September-December (eight issues per year.) Opinions expressed by editors or contributors do not necessarily represent the official position of the Columbus Section or of the editorial staff. We welcome your contributions to your *Chemical Record*. Please submit them via postal or electronic mail to **George Greene**, PO Box 360941, Columbus, Ohio 43236-0941, [george.greene@abbott.com](mailto:george.greene@abbott.com). Electronic mail contributions should be in MS Word file attachments (preferred) or plain-text messages. *Thank you very much!*



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#### CHANGE OF ADDRESS

Changes in postal or e-mail address should be reported to the Membership Chair, **David Speth**, 614-688-5162, [drspeth@sbcglobal.net](mailto:drspeth@sbcglobal.net). David will forward the change-of-address information to ACS Headquarters.

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#### ADVERTISING RATES

Advertising rates for *The Chemical Record* are as follows (per single insertion): Full Page, \$250; Half page, \$150; Quarter Page, \$120; Eighth Page: \$60; Business Card, \$50. Discounts: 5% for four insertions or 10% for eight insertions during a calendar year. There is no charge for "help wanted" ads.

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#### PLEASE SUPPORT OUR SPONSOR...

*The Chemical Record* is brought to you by the Columbus Section of the American Chemical Society and our fine sponsor, *Hogarth Chemical Consulting*:



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**Fax 603.308.8133**  
email: [westwood@infinet.com](mailto:westwood@infinet.com)

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Laboratory Design & Safety

Lewis Hogarth, Ph.D.

Voice 614.268.8534

FAX 603.308.8133

email: [westwood@infinet.com](mailto:westwood@infinet.com)