



ILLIANA SIGNAL

Volume XXIII Issue 5

Illiana Website www.asq-illiana.org.

January 2010

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MESSAGE FROM THE CHAIR

Hello everyone,

I hope you had a wonderful holiday.

I would like to thank our host, Tracy Sims, and the tour guides, John Houck and Tom Borkalow, for a wonderful experience at the Argonne National Laboratory in December. Information about what we saw on the tour of the Advanced Photon Source at Argonne National Laboratory is included in this newsletter.

Our next meeting is the Illiana Section Election and Business meeting at Popolano's in Lansing, Illinois on Tuesday, January 19, 2010. Please note that it is a new location than previously advertised. Make your reservations early. Don Herz, Nominating Committee Chair, is requesting names of members interested in a position on the board so they can be presented to the membership at January's meeting. There are several open positions.

Mark your calendar for Friday, January 22, 2010, for the third annual Illiana Section Quality Conference. This year's title is Quality: The View from the "Inside." Registration deadline is January 15, 2010.

Do not forget to visit the Illiana website, www.asq-illiana.org, where we post job and training opportunities that other sections and private organizations have sent to us.

I know I speak for all of the Illiana Section board members when I say that we try very hard to return value to you and make your membership rewarding. Let us know what topics interest you so we can arrange for appropriate speakers. Remember that you need to attend five general section meetings in order to qualify for the end of the year gift. If you were unable to attend previous meetings, you still have opportunity to be eligible to receive the gift.

Have a good day,

Kim Bernas
Section Chair

Mission Statement

Illiana Section 1213—ASQ is dedicated to advancing the principles and practices of quality control for the benefit of its members, the Society, local business and industry, the education sector, and the community.

**Illiana Section Committee
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**Nominating Committee
Chair**
Don Herz
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January Meeting

DATE: Tuesday, January 19, 2010

LOCATION: Popolano's Restaurant
17940 S. Torrence Avenue
Lansing, IL 60438
708-474-0425

TIME: 6:15 P.M. — Registration
6:30 P.M. — Dinner
7:30 P.M. — Meeting

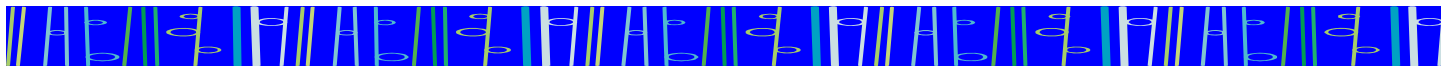
TOPIC: Section Business — Election

Don Herz is accepting nominations for Section Chair. Anyone interested in this positions should send an email requesting to be placed on the slate and include a brief biography that can be shared with the section members.

The non-elected Chief Proctor's position is also available.

Please RSVP no later than Friday, January 15, 2010.

Submit reservation online at www.asq-illiana.org/reservations or send an email to carlithe.layosa@stvinc.com.



Certification Tests

Exam List	Exam Date	Appl. Deadline
2010 CQI, CQT, CRE, CMQ/OE, CHA, CBA, CSSBB	March 6	January 15
World Conf, St. Louis, MO — All Exams	May 23	April 2
CPGP, CQE, CQA, CSQE, CQIA, CCT, CQPA, CSSGB	June 5	April 16

South Suburban Community College / Business & Career Institute in South Holland, IL has been confirmed for the March and June test site. The exam location address for the March and June exams is 58 W. 162nd Street, South Holland, Illinois (across from the Dodge dealership).

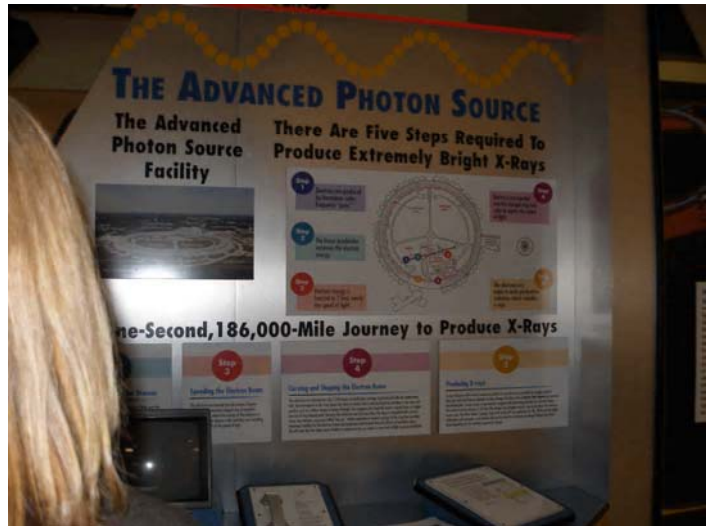
REMINDERS:

- PROVIDE ASQ WITH YOUR CURRENT EMAIL ADDRESS TO RECEIVE IMPORTANT UPDATES FROM YOUR SECTION.
- CHECK THE ILLIANA WEBSITE OFTEN FOR SECTION UPDATES.

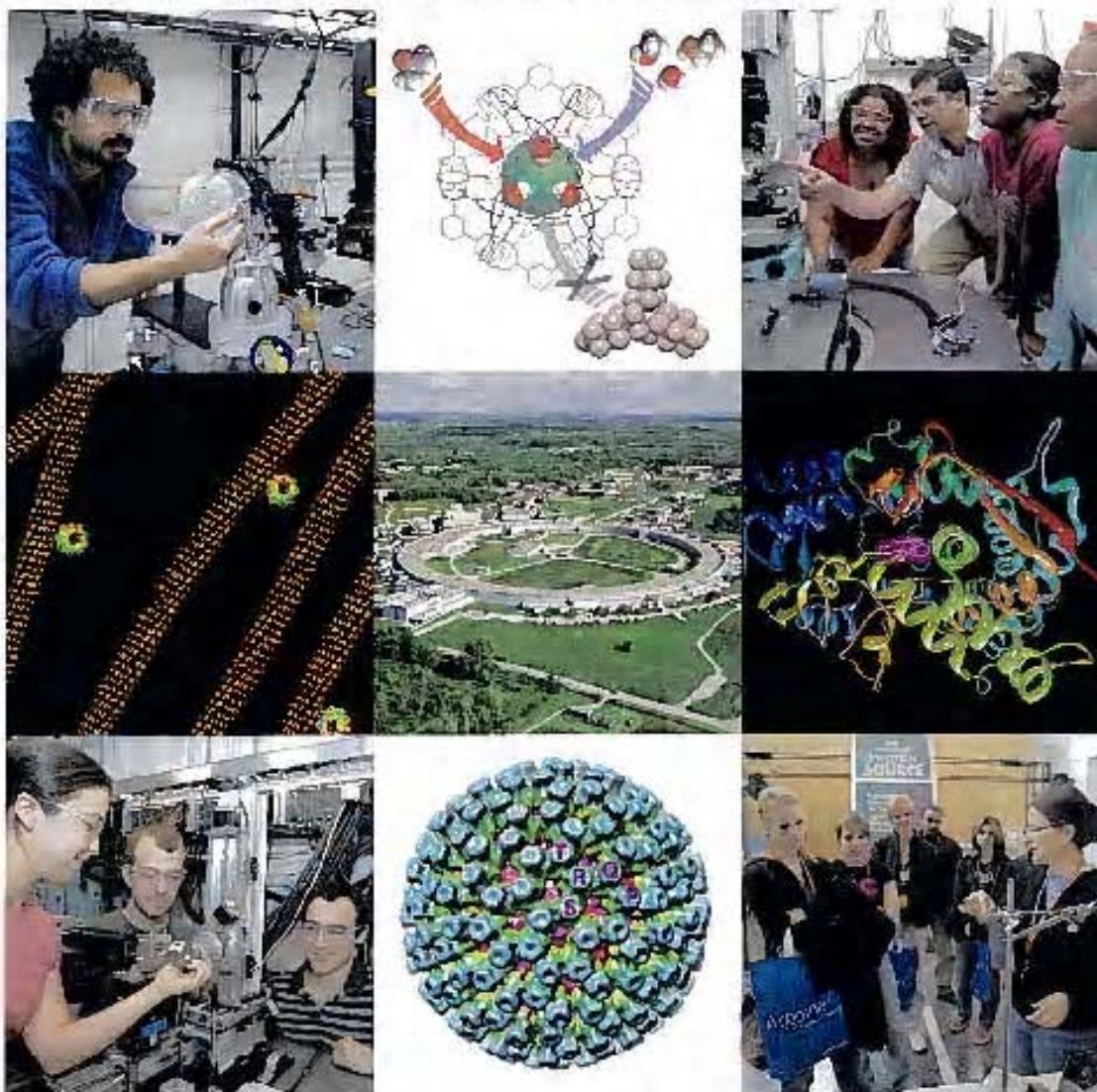
Illiana Section 1213 Tour

Argonne National Laboratory

12/08/09



ADVANCED PHOTON SOURCE



Argonne National Laboratory

Research Groups at the APS

At the Advanced Photon Source (APS), a "sector" comprises the radiation sources (insertion device and bending magnet), x-ray beamlines, research stations, and instrumentation that are associated with a particular section of the electron storage ring and a particular research group. The APS has 40 sectors, 34 of which are dedicated to user science and experimental apparatus. The 35th has limited space for instrumentation and is used primarily for accelerator-related studies. The remainder are taken up with electron storage ring equipment.

X-ray Operations and Research (XOR) sectors are those operated by the APS. The XOR section is part of the Argonne X-ray Science Division. Some XOR sectors have historic collaborative access team (CAT) origins. The sectors XOR operates are: Sector 5 (Midwest Universities/XOR), Sector 7 (XOR 7), Sector 8 (XOR 8), Sector 9 (XOR/Complex Materials Consortium), Sectors 11 and 12 (XOR/Basic Energy Sciences Synchrotron Radiation Center), Sector 20 (XOR/Pacific Northwest Consortium), Sector 26 (Center for Nanoscale Materials/XOR), operated jointly with the Argonne Center for Nanoscale Materials, Sector 30 (XOR/Inelastic X-ray Scattering), Sector 32 (XOR 32), and Sectors 33 and 34 (XOR/University-National Laboratory-Industry). Researchers using the beamlines in these sectors carry out experiments in chemical and materials science, inelastic x-ray and nuclear resonant scattering, magnetic materials, materials characterization, spectroscopy, structural science, surface scattering and non-diffraction, time-resolved research, x-ray microscopy and imaging, and the properties of nanoscale materials.

Collaborative access team sectors are operated by groups made up of scientists from universities, industry, and/or research laboratories.

SECTOR 5: THE DUPONT-NORTHWEST-DOW CAT has as its scientific thrust the study of two-dimensional or quasi-two-dimensional atomic structures (surfaces, interfaces, and thin films), and polymer science and technology. All are of immense technological importance.

SECTOR 10: THE MATERIALS RESEARCH CAT enables scientific work that is broadly materials oriented. The main emphasis is on *in situ* studies of materials by x-ray spectroscopy, scattering, and reflectivity. There are strong environmental science and catalysis components to this research in addition to furthering materials-based technologies such as photochemistry and x-ray lithography.

SECTORS 13 THROUGH 15: CENTER FOR ADVANCED RADIATION SOURCES (CARS)—GeoSoI EMBO-CARS—Sector 13—is dedicated to state-of-the-art research on Earth materials for a better understanding of our environment and planet.

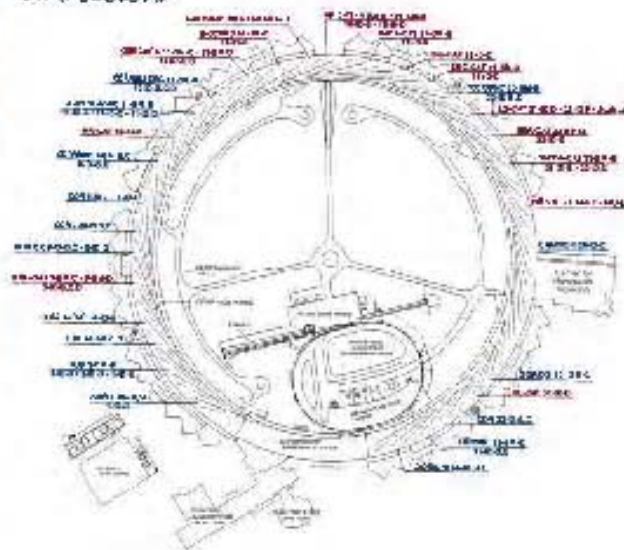
BIO-CARS—Sector 14—is dedicated to the development of resources and facilities necessary to foster frontier research in the field of time-resolved macromolecular crystallography. By watching macromolecules in action we further our understanding of how macromolecules function. This ultimately leads to advances in our knowledge of the causes, prevention, and treatment of disease.

CHEM/CARS—Sector 15—focuses on the study of surface and interfacial properties of liquids and solids as well as their bulk structure at atomic, molecular, and mesoscopic length scales with high spatial and energy resolution to advance materials and chemical science.

SECTOR 16: THE HIGH PRESSURE CAT was established to advance cutting-edge, multidisciplinary, high-pressure science and technology enabling myriad scientific breakthroughs in high-pressure physics, chemistry, materials, and the Earth and planetary sciences.

SECTOR 17: THE INDUSTRIAL MACROMOLECULAR CRYSTALLOGRAPHY ASSOCIATION CAT (a consortium of leading pharmaceutical companies) provides an outstanding support environment for macromolecular crystallography by developing and operating an efficient, reliable, high-throughput facility for the study of pharmaceutically relevant molecular proteins to further research into the causes, prevention, and treatment of disease.

APS sectors



SECTOR 18: THE BIOPHYSICS CAT develops and operates state-of-the-art facilities for studies of the structure and dynamics of biological systems under non-crystalline conditions similar to their functional states in living tissues in order to better understand human physiology.

SECTOR 19: THE STRUCTURAL BIOLOGY CENTER CAT advances and promotes scientific and technological innovation in support of the Department of Energy's mission by providing world-class scientific research and advancing scientific knowledge in biology to further research into the causes, prevention, and treatment of disease.

SECTOR 21: THE LIFE SCIENCES CAT provides macromolecular crystallography resources for those with a need to determine the structure of molecular proteins via access to state-of-the-art x-ray diffraction facilities at the APS to further research into the causes, prevention, and treatment of disease.

SECTOR 22: THE SOUTHEAST REGIONAL CAT provides third-generation x-ray capabilities to macromolecular crystallographers and structural biologists with an emphasis on new structure determinations, high-resolution structural analyses, drug design, protein engineering, site-directed mutagenesis projects, and support of the genome program to further research into the causes, prevention, and treatment of disease.

SECTOR 25: THE GENERAL MEDICINE AND CANCER INSTITUTES CAT was established to build and operate a national user facility for crystallographic structure determination of biologically important macromolecules via x-ray diffraction to further research into the causes, prevention, and treatment of disease.

SECTOR 24: THE NORTHWESTERN CAT operates synchrotron x-ray beamlines to address technically challenging problems in structural biology and provide an important resource for the national community of researchers to further research into the causes, prevention, and treatment of disease.

SECTOR 31: THE UNIV. RESEARCH LABORATORIES CAT is dedicated to the determination of protein structures and the analysis of the interactions between potential pharmaceutical compounds and a protein of interest to further research into the causes, prevention, and treatment of disease.

Some Research Highlights from the APS



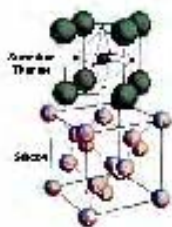
Metal-organic framework (MOF) materials have a wide range of possible applications, from filtering, capturing, or detecting molecules such as carbon dioxide, to storing large amounts of hydrogen in a very small space for use in fuel cells for cars. A better understanding of how MOFs react to real-world conditions outside of the laboratory is needed before practical uses can be fully realized. Research at the U.S. Department of Energy's Advanced Photon Source (APS) has important implications for the ways MOFs might be utilized. More: <http://lsqd/1tk6>

Liquid jets and sprays are encountered when we turn on a faucet or squeeze a spray bottle. These examples occur at relatively low speeds. The same phenomena at much higher speeds occur in other places, such as the engine of your car. Researchers used the APS to aid in developing a new way of probing the dynamic structure and velocities of dense liquid sprays with a spatial and temporal resolution never before achieved. This ability to see the previously unseeable will aid in the design of better fuel injection systems and other industrial tools, and find application in physiology, meteorology, and even geology. More: <http://lsqd/1kbUN>



Flexible filamentous viruses make up a large fraction of known plant viruses and are responsible for more than half the viral damage to crop plants throughout the world. New images of the viruses' structures have been revealed by scientists using an x-ray beamline at the APS. The findings could lead to new ways of protecting crop plants from these viruses. More: <http://lsqd/1cer>

Research at the APS has produced the first detailed molecular snapshots of a deadly gastrointestinal virus caught in the grasp of an immune system molecule with the capacity to inactivate it. This could help scientists design a more effective vaccine against rotavirus, which kills more than 500,000 children worldwide each year. More: <http://lsqd/1cbf>



The technology for storing electronic information has been a major force in the electronics industry for decades. Improving this technology to keep up with new requirements and trends has been an economic driver for as long as the technology has been around. Now, low-power, high-efficiency electronic memory could be the result of research at the APS. More: <http://lsqd/1ckk8>



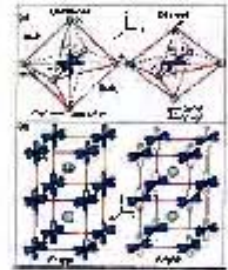
Power plants using turbine engines burning natural gas are a key component of future energy grids in the U.S. and other nations. They will supply clean, increasingly fuel-efficient, and relatively low-cost energy. The efficiency of the engines can be increased by reducing the turbine weight, increasing operating temperature, or increasing component lifetime. There is an ever-growing demand for higher temperature, higher performance materials for these turbines. Research at the APS is looking at ways of using new materials for this promising energy source. More: <http://lsqd/1ebgY>

Like watchmakers prying open a complicated timepiece, researchers are using x-ray beams from the APS and the Cornell High Energy Synchrotron Source, to peer into the molecular works of an enzyme that has long defied investigation. What they are discovering may one day make it possible to design safer, more effective cancer-fighting drugs. More: <http://lsqd/1cbIP>



Sodium might appear to be an unassuming member of the Periodic Table of Elements, but scientists using the APS have discovered that sodium displays a unique property by turning transparent when pressure is applied. This result has important implications for understanding high compressed matter, in particular inside stars and giant planets. More: <http://lsqd/1cbv6>

"Giant" and "colossal" aren't the words that come to mind when thinking about MP3 players or laptops. But we can store and access ever-increasing amounts of data on ever-smaller devices because of giant magnetoresistance (GMR). Now researchers using the APS are delving into colossal magnetoresistance, which is up to a thousand times more powerful than GMR and could trigger another revolution in computing technology. More: <http://lsqd/1cb6D>



A snapshot of the elegant dance performed by viral proteins as they create the infectious structure that causes all manner of misery and disease has been captured by scientists using the APS. Their work may help drug developers pinpoint attack sites for pharmaceuticals, and could have an impact on the emerging field of medical nanotechnology. More: <http://lsqd/1cbq3>

More APS research and engineering highlights can be found in the issues of APS Science downloadable in .pdf format from www.aps.anl.gov/Science/Reports/

The Advanced Photon Source at Argonne National Laboratory is supported by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences. Argonne is managed by Chicago Argonne, LLC for the U.S. Department of Energy's Office of Science.

The Advanced Photon Source

Scientists from the U.S. and countries worldwide use the U.S. Department of Energy's (DOE) Advanced Photon Source (APS) at Argonne to gain knowledge that supports advances in energy and other technologies; broadens our understanding of the materials, both natural and man-made, that make up our world; and improve our environment and economic and physical well-being.

The APS Mission

The APS is a national research facility funded by the Office of Basic Energy Sciences in the DOE Office of Science. The mission of the APS is to deliver world-class science and technology by operating an outstanding synchrotron radiation research facility accessible to a broad spectrum of researchers. The goals of the APS are to:

- Operate a highly reliable third-generation synchrotron x-ray source;
- Foster a productive environment for conducting research;
- Enhance the capabilities available to users of the APS facility;
- Assure the safety of the facility's users and staff and the environment;
- Maintain an organization that provides a rewarding environment that fosters professional growth; and
- Optimize the scientific and technological contribution to the DOE and society from research carried out at the APS.

A few examples of knowledge gained from experiments at the APS are:

- Better materials for lithium-ion batteries and other energy-related technologies;
- The path to more efficient designs for fuel-injection systems;
- Clues to the cause and treatment of a multitude of diseases, including AIDS, and toxic threats such as anthrax;
- Ways of eliminating and remediating environmental degradation;
- Insights about conditions at the center of the Earth (and into the causes of earthquakes and volcanoes) and the composition of cosmic dust;
- A greater understanding of human physiology;
- And a nearly endless array of new information on materials that can lead to the development of such practical applications as advanced digital storage media, more efficient lighting, environmentally friendly refrigerants, methods for protecting the durability of man-made structures, and the characterization of nanostructures whose sizes are measured in atoms, to name but a few.

Facts about the APS program

- Director of the Advanced Photon Source: Dr. J. Murray Gibson
- Location: 80-acre site of Argonne National Laboratory in Illinois
- Facility construction starts: spring 1990
- Research starts: fall 1996
- Total APS construction and project cost at completion: \$812 million
- Annual operating budget (fiscal year (FY) 2008): \$112.29 million
- Number of employees at any one time: ~450
- Scientific disciplines investigated by APS researchers: Materials science; biological science; pharmaceutical research; chemical science; agricultural science; environmental science; planetary science; geoscience; atomic, molecular, and optical physics
- Number of universities participating in research at the APS in FY08: 576
- Number of industries (FY08): 231
- Number of research laboratories (U.S. and other, FY08): 232
- Number of researchers doing experiments in FY08: 3,608
- Number of experiments carried out at the APS in FY08: 2,962
- Number of scientific publications from APS research in FY08: 1,044

Facts about the APS facility

- There are more than 2,000 conventional electromagnets & 16 pulsed electromagnets in the APS electron accelerators
- ~1,400 magnet power supplies deliver up to 10 kilowatts of DC power to each magnet for electron-beam focusing & steering
- Voltages reach 10's of kilovolts; currents reach several thousand amperes
- Over 700 beam-position monitors, 600 corrector magnets, & 80 computer systems monitor & correct the electron orbit, steering x-ray beams onto experiment samples to micro tolerances
- More than 120 computers monitoring more than 25,000 signals comprise radiation interlock systems protecting personnel & equipment
- APS beam diagnostics control multiple x-ray beams simultaneously utilizing >500 ultrahigh-resolution beam-position monitors, each resolving beam motion that is a fraction of the size of the period at the end of a sentence; nearly 100 remote computers collect data from the 500 monitors & re-steer x-rays 1,300 times per second
- The APS beam control system comprises 80 workstations, 227 distributed input/output computers (IOCs), more than 7,000 replaceable hardware components, & over 100,000 I/O points monitoring or controlling over 450,000 technical parameters
- The storage ring radio frequency (rf) systems contribute to a combined accelerating voltage equivalent to a 16-million-volt power supply
- APS rf systems produce more rf power than the combined output of every radio & television station in the city of Chicago
- Operating the APS requires ~7.8 megawatts of electrical power (equal to ~11,000 average homes)
- Cooling the APS accelerator/storage ring equipment requires ~10,000 gallons of deionized water per minute
- Number of 3-bedroom homes that could be cooled by the APS chilled-water system: 3,500
- The 64,000,000-BTU-capacity heating system could warm 2,000 average-size homes
- The outer diameter of the APS experiment hall is 1,225 feet, slightly less than the height of the Willis (Sears) Tower in Chicago (1,454 feet)
- Experiment hall construction required 56,000 cubic yards of concrete (equal to a football-field-sized block 30 feet high); 5,000 tons of structural steel (enough for 3,500 mid-size cars); 2,000,000 linear feet (380 miles) of electrical wire; & 190,000 feet of pipe for water, steam, drainage, & HVAC
- Total floor space of all APS buildings is 86,310 square meters (959,000 square feet)

For more information about the APS: www.aps.anl.gov
or send questions to apsinfo@aps.anl.gov

For information about Argonne: www.ornl.gov

To learn more about x-ray light sources worldwide,
go to www.lightsources.org

More info on the Web

Advanced Photon Source photographs: is.gd/1mBV

Photographs from other light sources: lightsources.org/imagebank/

What is a Light Source? lightsources.org/cms/?pid=1000166

How X-rays Work: tealthhowstuffworks.com/x-ray1.htm

What is Materials Science? strangeratneresh3bit.com/what.html

Synchrotron Light—A Primer: www.srlslac.stanford.edu/primer.pdf

Videos about light sources: lightsources.org/cms/?pid=1000606



Illiana Section 1213

Meeting Agenda for 2009/2010

<u>Date</u>	<u>ASQ Contact</u>	<u>Topic</u>	<u>Location</u>	<u>Speaker</u>
1/19/2010	Carlithe Layosa Submit reservation online	Section Elections & Business Meeting	Popolano's Restaurant 17940 S. Torrence Avenue Lansing, IL 60438	Kim Bernas
2/16/2010	Carlithe Layosa Submit reservation online	Value Stream Mapping for Service	Chef Klaus Bier Stube 679 LaGrange Rd. Frankfort, IL 60423	Anthony Manos
3/23/2010	Carlithe Layosa Submit reservation online	Ethics 101	Charlie's Alehouse 8940 Calumet Ave. Munster, IN 46321	Suj Shah
4/20/2010	Carlithe Layosa Submit reservation online	Employee Recognition Part II	Dixie Kitchen & Bait Shop 2352 East 172nd Street Lansing, IL 60438	Dr. Manu Vora
5/18/2010	Carlithe Layosa Submit reservation online	The New Theme to the DOE Process	Burgundy Bistro 3462 Vollmer Road Olympia Fields, IL 60461	Bill Hooper

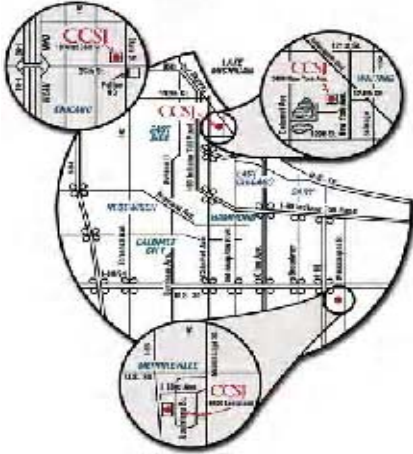
Did You Know...

- That any one interested in being on the executive board should contact Don Herz? His contact information is on page two.
- That the next Board Meeting for Illiana Section 1213 is scheduled for January 5, 2009? Contact any board member if you are interested in volunteering.
- That the third annual one-day conference, Quality: The View from the "Inside," is scheduled for Friday, January 22, 2010?
- That any member who attends five or more meetings will receive a gift from the Section at the April or May meeting?
- That any member who holds an ASQ certification can earn 0.5 credits for proctoring a certification exam? Contact Larry Sprengel if interested.
- That the fee for the first section meeting is waived for new members?
- That the cost for the dinner meeting will be waived for members who are unemployed? When registering, add a note in the comment section that you are transitioning between jobs.

Contact Information

General information:

Daniel Lowery, Ph.D.
 Vice President of Academic Affairs at
 Calumet College of St. Joseph
 Education Chair for ASQ Section 1213
 (219)473-4307
dlowery@ccsj.edu
<http://www.ccsj.edu/>



ASQ Illiana Information:

Section Chair
 Kim Bernas
 (708) 519-0394
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<http://www.asq-illiana.org>



Quality: The View from the "Inside"

Sponsored by:



Date:

January 22, 2010

Time:

8:00am - 4:00pm

Location:

Calumet College of St. Joseph
 2400 New York Avenue
 Whiting, Indiana 46394



Dear Member or Friend of ASQ:

On Friday, January 22, the Illiana Section of ASQ will host its third annual conference, entitled "Quality: The View from the Inside." The conference will be held at Calumet College of St. Joseph, which is located at 2400 New York Avenue in Whiting, Indiana. Registration will begin at 8:00 a.m., and the program is scheduled to start at 8:30 a.m. The conference will conclude at 4:00 p.m.

We've again assembled a distinguished set of speakers. In turn, three plenary sessions will address:

- Business Strategy and Quality;
- Leadership and Quality; and
- Quality and Outsourcing.

Two sets of breakout sessions will address case studies pertaining to various steps in the business value chain.

We hope you'll be able to join us. Mark your calendar and register now for ASQ Section 1213's third annual conference which will take place on Friday, January 22, 2010!

Kim Bernas

Kim Bernas
 Section Chair

**1.0 RU points
 awarded**

Conference Program

8:00	Registration	
8:30	Welcome and Overview	Kim Bernas, Section Chair
8:45	Business Strategy and Quality	Daniel Lowery, CCSJ
9:45	Break	
10:00	Breakout Session 1	
	▪ Quality in Supply Chain Management	Pam Hole, ArcelorMittal
	▪ Quality in Operations	Bill Keith, SunRise Solar, Inc.
	▪ Quality in Sales and Marketing	Guy Azamus, NIPSCO
11:30	Sponsored Luncheon	
12:15	Leadership and Quality	Desha Rosetti, Moderator, CCSJ
		Ian McFadden, Methodist Hospitals
		Dennis Rittenmeyer, CCSJ
		Stephen C. Rogers, Elkay Manufacturing
1:00	Breakout Session 2	
	▪ Quality in Service	Michele Beck, Methodist Hospitals
	▪ Quality and R&D	Barbara Banek, ArcelorMittal
	▪ Quality and Teams	TBA, IN Kole, LLP
2:30	Break	
2:45	Quality and Outsourcing	William Schultz, Baxter Healthcare
3:45	Closing Remarks	Kim Bernas, Section Chair
4:00	Close	

Registration Form

Name: _____

Company/Organization: _____

Current Position: _____

Address: _____

City: _____

State: _____

Zip Code: _____

Telephone No.: (_____) _____

E-mail: _____

ASQ Member: Yes (Section _____) No

Space will be limited. We encourage you to register early.

Registrations without payment will not be accepted. A registration confirmation will be sent. (Please allow 1-2 weeks for processing.) Walk-in registrations will be accepted if space is available. Those who fail to register by the deadline are encouraged to contact Diane Bailey at 219.473.4305 or e-mail Ms. Bailey at d Bailey@ccsj.edu to determine if walk-in registrations will be accepted on the day of the conference.

Mail form to:

CALUMET COLLEGE OF ST. JOSEPH
 ATTN: Diane Bailey
 2400 New York Avenue
 Whiting, IN 46394

Registration Deadline: January 15, 2010
 Registration Fee: \$20.00 (non-refundable)
 Payable to: ASQ Illiana Section 1213