

# CINTACS



Newsletter of the Cincinnati Section of the American Chemical Society

Jan. 2006  
Vol. 43, No. 4

## Meeting Calendar

Jan. 18	Bill Dean at Netherland Plaza Hotel <i>Colloid Discussion Group</i>
Feb. 15	Chemist of the Year Procter and Gamble Co.
Mar. 15	Bill Jensen at Golden Lamb Inn Joint with Dayton Section
Apr. 19	Howard and Sally Peters Oesper H.S. Awards at Northern Kentucky U.
May	Party Night TBA

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## January Monthly Meeting

**Forensic Chemistry, *It's not just for television anymore***

**Bill Dean  
Hamilton County Coroner's  
Crime Lab**

### Abstract

Previously, forensic scientists were compared in the media and public's perception to the fictional character "Sherlock Holmes." Currently, the comparison is to the equally fictional characters in the movies and television shows such as "CSI." Unfortunately, this has generated an unrealistic expectation in the public towards the function and capabilities of the forensic laboratory. This presentation will discuss the less dramatic, but none the less important, contribution chemistry makes to the courts in determining guilt or innocence. The focus will be on the procedures scientists use in the laboratory to process evidence as opposed to those

*(Continued on page 4)*



### About the Speaker

Bill Dean grew up in Westerville, Ohio and during junior high school developed an interest in what was then called "Scientific Crime Detection" from his visits to the non-fiction section of the public library. In order to form the basic science background for a crime lab career he attended Ohio State University and graduated with a degree in Physics in 1966. After an interruption of five years as a military intelligence officer, he attended the University of Strathclyde in Glasgow, Scotland on the "GI Bill." In 1973 he completed the 2 year program and received an MSc. in Forensic

*(Continued on page 4)*

**THE CINTACS NEWSLETTER****Vol. 43, No. 4 January, 2006**

Editor.....Bruce S. Ault  
 Advertising.....Ed Hunter

CINTACS is published eight times a year (September through May) by the Cincinnati Section of the American Chemical Society. The submission deadline will be approximately January 23 for the March, 2006 issue. Electronic submission is strongly preferred. All materials should be sent to:

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**From the Chair**

Our section operates on an academic calendar, September-June whereas most sections are on a yearly calendar. Consequently, the annual reports requested by the American Chemical Society are also based on yearly calendars; making the January meeting in a sense a beginning. Have a great New Year personally and professionally.

When I did the membership survey last January, forensic chemistry was one of the areas members were most interested in. Bill Dean's name came up as the person to ask for a presentation. I am grateful that he has said yes. He is a multi-disciplinary scientist with B.S degrees in Physics and Information Processing Systems and M.S. in Forensic Science with a wealth of experience in many "suspenseful" areas...I look forward to an exciting meeting in an architecturally beautiful setting, at the Netherland Plaza Hotel. We are grateful that Givaudan is the sponsor for this meeting.

Please remember successful meetings need membership support; **"do come to the meetings and every time ask a different person, colleague, co-worker, friend or student to come with you"**.

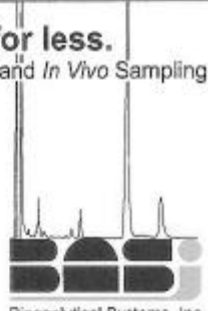
I also would like to remind you that we still have more to come, the next meeting, the Chemist of the Year, is February 15 at the P&G Mason site.

Phil Christenson, the Chair of the Nominating Committee, will soon be looking for nominees for various officer positions for the Spring elections; please consider running and contact him at phil.christenson@givaudan.com. The New Year should also make you consider becoming more involved in section activities not only as a member but also as committee chairs/committee members, as you know we currently have 40 one or more member committees.

Emel Yakali

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**January Monthly Meeting**  
**January 18, 2006**  
**Hilton Netherland Plaza Hotel**  
**5<sup>th</sup> and Race Streets**

*Featured Speaker*  
**Bill Dean, Hamilton County Coroner's Crime Lab**

**Program**

- 5:30-6:30 Colloid Discussion Group (*see page 5 for details*), or  
Architectural Tour of Hotel (beginning in lobby)
- 6:30 - 7:15 Cash Bar, Foyer next to Continental Room
- 7:30 - 8:30 Dinner, Continental Room Cost \$28.00  
(Thick Pork Chop with Apple Chutney or Pesto Seared Chicken All dinner Entrees are served with your choice of Salad, Seasonal fresh vegetables, and potatoes or rice. Assortment of desserts, Coffee and tea are included.
- 8:30 - 9:15 Speaker, Bill Dean, Hamilton County Coroner's Crime Lab  
*"Forensic Chemistry, It's not just for television anymore."*

Special Parking rates at Tower Place Garage \$5.00 for entire evening

The Netherland Plaza opened in 1931 to claims that it "challenged the splendor of Solomon's Temple." The Continental Room was the original main dining room of the hotel. It reflects the French Art Deco style that defines the hotel. Dining in this room will be a special treat. High murals represent the four seasons. At the east end of the room, imposing marble urns mark the floor elevation. Beyond them are beautiful nickel-silver doors with French mirror backing.

**Dinner Reservations – Deadline is Noon, Friday January 13, 2006** The meeting reservation form is online at <http://www.che.uc.edu/acs/cinacs.html>. This is the best and easiest way to register. As a last resort, you may send your reservations by e-mail to kim.carey@uc.edu. If it is impossible to make your reservation via the internet, call 513-556-0293; leave name, affiliation, phone number, and price category, if half-price.

**Directions:** The Hilton Cincinnati Netherland Plaza is located at 35 West Fifth Street, at the Corner of Fifth and Race Streets. Valet parking is available through the doorman or the underground valet. Both are located on the Race Street side of the hotel, between 5<sup>th</sup> and 4<sup>th</sup> Streets. Self parking is available at the Tower Place Garage, corner of Fourth and Race Streets.

**From I-75/I-71 Northbound:** From I-71/I-75 Northbound from Kentucky, cross over the bridge and stay in the center lane. Follow the signs indicating River Road/Fifth Street and immediately take the Fifth Street Exit (right side). Follow Fifth Street, 3 blocks to Race Street, turn right on Race St. The hotel is on immediate left.

**From I-71 Southbound:** Take I-71 Southbound to the Third Street Exit. Follow Third Street to Elm Street and turn right on Elm Street. Elm Street to Fifth Street turn right on Fifth Street to Race Street: Hilton Netherland Plaza is on the right side corner of 5<sup>th</sup> and Race. You can access hotel from 5<sup>th</sup> Street or Race Street.

**From I-75 Southbound:** Take I-75 Southbound to Fifth Street exit, which will be on the left-hand side. Follow Fifth Street approximately 3 blocks to Race Street and turn right. Hotel is on the immediate left.

**From I-471 North:** Take I-471 North to 6<sup>th</sup> Street exit. Go down 6 Blocks and take a left on Race St. Follow Race 1 Block, hotel is on the left once you cross over 5<sup>th</sup> St.



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*(Continued from page 1)*

used by law enforcement officers to find and collect probative items. Every day lab analysts around the world use chemical analysis to identify illicit materials, compare known and questioned samples, and link suspects to incidents. Examples from biochemistry, organic analysis, and inorganic spectroscopy will illustrate how forensic examiners employ chemical analysis to serve the criminal justice system.

*(Continued from page 1)*

Science. Upon returning to the US he was employed as a drug analyst at the Hamilton County Coroner's Crime Lab. From 1976 until 1980 he also attended Evening College at the University of Cincinnati and in 1980 was awarded a BS degree in Information Processing Systems. Most of his career has been devoted to trace evidence analyses. This work initially included forensic serology and fire debris analysis in addition to the examination of paint, glass, hairs, fibers, footwear impressions, explosives and other physical evidence. Since 1991 Bill has been crime lab director and spearheaded the effort to insure the laboratory became accredited by the American Society of Crime Laboratory Di-

rectors Laboratory Accreditation Board (ASCLD/LAB). Bill is a member of several professional organizations and recently attended the triennial International Association of Forensic Sciences conference in Hong Kong. The same trip included a visit to the Forensic Institute in Beijing, China.

## YOUNGER CHEMISTS COMMITTEE: Upcoming Happy Hour!

YCC will be hosting a Happy Hour with FREE FOOD AND DRINKS on Thursday, January 19 at Embers on Montgomery Road in Kenwood from 6-8 PM. Drop in whenever you can after work- we'll be hanging out in the bar area. Bring a YCC type (age 35 and under) colleague if you can- all are welcome, even non-ACS members! If you don't quite qualify for YCC any longer (read: "seasoned", not OLD), please pass the word about this event to any others that may be interested. For more information/questions and to RSVP, contact YCC Chair, Joy Henderson, 513-948-2359, [accscincinnati@yahoo.com](mailto:accscincinnati@yahoo.com).

## Outstanding Teaching Awards

Do you know a teacher who inspires his/her students? Fills them with a curiosity about the world of science and chemistry? The Cincinnati Section of the American Chemical Society is looking for these people – and honors three each year.

The *High School Chemistry Teacher of the Year* is awarded annually, to recognize accomplishments of those of us who teach chemistry at the secondary school level.

The *Middle School/Junior High School Science Teacher of the Year* is awarded annually to honor science teaching at this level.

The *Elementary School Science Teacher of the Year* is awarded for excellence in elementary teaching.

All three awards recognize teaching ability, enthusiasm, mentoring skills, and other leadership activities. Nominees need not be members of the American Chemical Society. Generally speaking, anyone teaching in these capacities within 35 mile radius of downtown Cincinnati is eligible. These awards will be given at the April Meeting.

*Deadline for the outstanding teaching nominations is January 18, 2006 (at the meeting).*

**For a nomination form contact:**

Jim Hershberger Ph 513-529-2441  
Department of Chemistry Fax 513-529-1675  
Miami University Hershbjw@muohio.edu  
Oxford, OH 45056

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## Colloid Discussion Group

### *Crystal Comets: Dewetting during Emulsion Droplet Crystallization*

Patrick T. Spicer  
Procter & Gamble Co.  
spicer.pt@pg.com

#### Abstract

Liquid oil emulsion droplets can violently dewet their own solid crystals during crystallization as a result of surfactant adsorption. The crystal shape formed is a function of the relative rates of dewetting and crystallization as controlled by surfactant adsorption, cooling rate, and lipid purity. For negligible dewetting rates, crystals nucleate and grow within the droplet. At similar crystallization and dewetting rates, the droplet is propelled around the continuous phase on a crystalline "comet tail" much larger than the original droplet. Rapid dewetting causes the ejection of small discrete crystals across the droplet's oil-water interface. I'll talk about the phenomenon, its uses and annoyances, and show numerous movies of the effect as it happens.

## Call for Nominations for Outstanding Service Award

Nominations will be accepted for the Cincinnati Section Outstanding Service Award until Thursday, April 20, 2006. The nominee should have performed an extraordinary service to the Cincinnati Section. The nominator should be a member of the Section. A complete nomination consists of a letter written by the nominator detailing the reasons the nominee is deserving of the award, and at least one supporting letter by another member of the Section. Nomination materials should be sent to: James W. Hershberger, Cincinnati ACS Awards Committee Chair, Department of Chemistry and Biochemistry, Miami University, Oxford, OH 45056. Alternatively, materials can be sent by email (hershbjw@muohio.edu) or fax (513-529-1675).

## Project SEED for High School Students

The Cincinnati Section will participate in the 2006 Project SEED Program, an ACS sponsored program that places economically disadvantaged high school students in academic, industrial, and governmental research laboratories for eight-to-ten weeks during the summer.

The program will build on its success from the past three summers, during which students from Aiken, Hamilton, Jacobs, Purcell Marian, Winton Woods, and Withrow International high schools worked with University of Cincinnati chemistry faculty. This coming summer will involve as many as five students who each will receive \$2,275 while working for 8-10 weeks in local research laboratories under the direct supervision of a mentor.

The Cincinnati Section encourages high school chemistry teachers to identify eligible students who might be interested in participation. Applicant evaluation will begin in February. Student eligibility and application information are available at <http://www.che.uc.edu/kim/SEED/description.htm>. Participating research sites are expected to contribute \$750 of the stipend for each hosted student. Prospective mentors are encouraged to consult the web site and contact Suri Iyer at the University of Cincinnati, [iyersi@email.uc.edu](mailto:iyersi@email.uc.edu), 513-556-9273.

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## Over the River and Through the Woods: Teachers Meet in January

On Thursday, January 26, the Chemical Educators' Discussion Group will meet in the classroom of Ed Kentrup at Colerain High School. Our program will center on the use of probes and sensors in the high school laboratory. Ed's lab is equipped with Measure-Net; he will demonstrate some of the applications he makes in his own curriculum. We invite all teachers to share a favorite lab activity that uses a probe or sensor at either the first year or advanced level. We will talk about how often we use the technology and how we use it in inquiry based activities. Ed also can provide a laptop with Windows XP and an LCD projector for presentations. We begin with announcements and social time from 6:30 to 7 PM and the program follows at 7 PM. We try to conclude the evening by 8:30 PM. If you plan to share, bring about 20 copies of your activity. Consider inviting a colleague to join you.

Travel west on Cross County Highway to the Colerain Avenue exit. Travel north and take a left on Joseph Lane (You will see Joseph Chevrolet and Chuckie Cheese at this intersection.) Joseph Lane will take you directly west to Cheviot Road and the main entrance to the school. The school address is 8801 Cheviot Road. Drive up the entranceway and park near the very front of the building. Ed will place signs directing you to Room 323. If you are traveling west on I275, take the Colerain exit and travel south to Joseph Lane. Take a left to head toward the school.

The group is planning to have a Halloween Party in February. Several teachers have requested that we have a sharing night centered on Halloween demonstrations. What better way to plan ahead and get all the necessary props to begin or improve your own ghoulish extravaganza! Details will be coming in the next *CINTACS*.

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## Section Membership Vote on Proposed Amendments to the Bylaws

The Board of Directors is seeking approval from the membership for a number of changes to the Section's bylaws. A vote of the Section membership will take place at the January meeting.

There are a significant number of amendments. First, mention of the Technical and Scientific Societies Council of Cincinnati has been struck from Bylaws II and V since it no longer exists. Second, wording has been changed in Bylaws V and VI to eliminate the strict requirement for elections to be held using paper ballots so that electronic voting can be held in the future. This is consistent with changes recently made to the National Bylaws. Third, wording has been changed in Bylaw VI to allow single candidates to run for any particular office provided the voting process allows for write-in candidates. Further changes in this bylaw have been made to specify the method for resolving tie votes and for removing councilors/alternate councilors from office in the event the Section's allotment decreases. Third, changes to Bylaw VIII have been made to more accurately reflect current practices with respect to the responsibilities of the Trustees. Fourth, a change to Bylaw X has been made to permit any three members of the Executive Committee to call a meeting of the Section or the Executive Committee. Fifth, Bylaw XIII which governs procedures for making student loans has been eliminated since the Section discontinued making student loans several years ago. Sixth, Bylaw XIV has been renumbered as Bylaw XIII and rewritten to include procedures for nominating and selecting recipients of other awards that the Section bestows – chemist of the year, research assistant of the year, service award, teaching awards, the Oesper award, and the Oesper student awards.

In addition to the proposed changes above, a number of minor terminology changes have been made throughout the Bylaws at the request of the National Committee on Constitution and Bylaws such as replacing the term "National Affiliates" with "Society Affiliates", deleting the use of "he/she", using the term "Society" in place of "American

Chemical Society" where appropriate, and deleting internal bylaw references.

*The complete set of amended Bylaws are available for review by all members of the Section on the Section's website at <http://www.che.uc.edu/acs/cinacs.html>. All changes are in blue text; deletions are in blue text with strike-through while additions are in blue without strike-through. Questions concerning the proposed changes may be directed to Ray D'Alonzo, Chair of the Bylaws Committee at [dalonzo.rp@pg.com](mailto:dalonzo.rp@pg.com) or 513-622-1977.*

To change the Bylaws, a two-thirds vote of the membership at a regular monthly meeting is first required (25 members is considered a quorum for a regular monthly meeting). A vote on the proposed changes to the Bylaws is planned for the January regular monthly meeting of the Section. Approved changes by the membership do not go into effect until their approval by the National Committee on Constitution and Bylaws.

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## Chemical Information Update – The NIST Data Gateway

Edlyn S. Simmons

Chair, Chemical Information Discussion Group

NIST, the National Institute of Standards and Technology, is an agency under the U.S. Department of Commerce tasked with U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology. One of its major activity is disseminating information, and it does this by creating free and low cost databases. The NIST Data Gateway, at <http://srdata.nist.gov/gateway/>, gives easy access to scientific and technical data on a broad range of substances and properties from many different scientific disciplines. Free databases range from A (AnthroKids - Anthropometric Data of Children; Atomic Spectra Database (ASD) ) to X (X-ray Photoelectron Spectroscopy Database; XCOM: Photon Cross Sections Database).

Among the databases is the NIST Chemistry WebBook, a chemical substance registry that provides thermochemical, thermophysical, and ion energetics data compiled by NIST under the Standard Reference Data Program. The Standard Reference Data program compiles well-documented numeric data to scientists and engineers for use in technical problem-solving, research, and development. These recommended values are based on data that have been extracted from the world's literature by scientists at NIST and in university data centers, assessed for reliability, and then evaluated to select the preferred values. Compounds can be searched by name and formula, and with the proper software you can input a chemicals structure to be searched. Other databases compile other physical properties, spectra, reaction kinetics data, and a host of other properties. If you are not sure what database you need, you can search or browse by keyword or property to see where you might find you information.

### Acknowledgement:

Thanks to Marilynn Dunker of P&G for bringing this source to my attention

### Footnote:

This year, the Chemical Information Discussion Group is offering hints and updates on chemical information resources available to most chemists and techniques for using them. Feedback, contributions, and requests for information you'd like to see in future columns are welcome. If you have any comments, suggestions, or contributions, please email them to [simmons.es@pg.com](mailto:simmons.es@pg.com)

## Section Meeting Sponsors, 2005-6 Program Year

Four local industries and two universities have generously agreed to sponsor one each of our Section meetings in this year. This leaves only one meeting (Party Night, May) without a sponsor, but we expect a volunteer to come forward shortly.

Recall that Sponsorship entails a contribution of at least \$1000 cash or an "in kind" contribution of the same amount of goods and services required to deliver the many aspects of a monthly meeting.. Meeting expenses include Social Hour, meeting room, audio/visual equipment, student and guest meals, and miscellaneous speaker expenses. The sponsors' contributions turn loose funds that we can use to provide better speakers, which leads to better attendance and more value to meeting attendees.

The Section and its members appreciate the generosity of these organizations and thank each one for their support.

September 18	No Sponsor Solicited
October 14	UC Chemistry department
November	No Meeting
December 7	Xavier University
January 18	Givaudan Flavors
February 15	The Procter and Gamble Company
March 15	Advanced Testing Laboratory
April 19	Girindus America Inc.
May	Seeking Sponsor

Who will come forward to sponsor the May Meeting and give us full sponsorship for the 2005-6 program year?

Ted J. Logan, Chair  
Sponsorship & Solicitation Committee



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- Advances in Methodology
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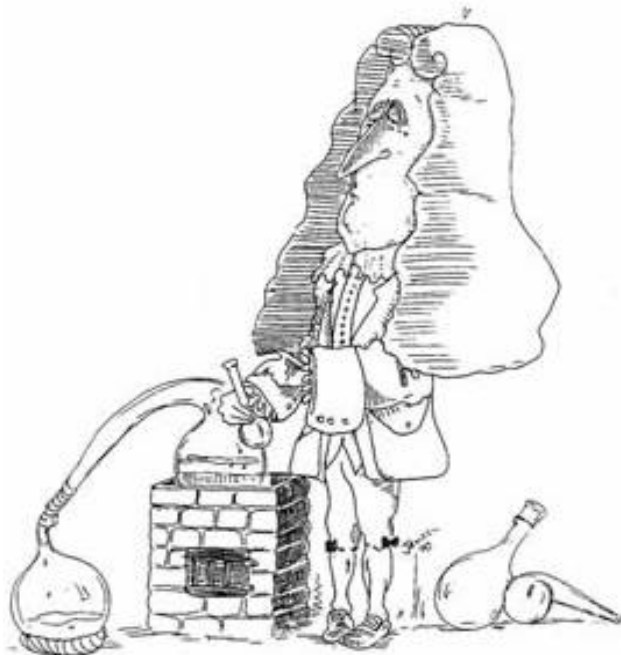
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## Profiles in Chemistry



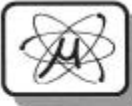
### "The Sceptical Chymist"

Robert Boyle (1627-1691). Irish chemist and natural philosopher. As a son of the Earl of Cork, Boyle was independently wealthy and so was able to live the life of an independent scientific "virtuoso." Best known for his advocacy of a mechanical corpuscular or particulate approach to physics and chemistry, as opposed to the older hylomorphic doctrines of Aristotle and Paracelsus, Boyle authored numerous books, of which his most famous was perhaps *The Sceptical Chymist*, first published in 1661. He is known to students of introductory chemistry largely through his discovery of Boyle's law (1662), which states that the volume of a gas varies inversely with applied pressure at constant temperature.

Courtesy of Professor William Jensen, Oesper Chair of the History of Chemistry and Chemical Education, University of Cincinnati and MeasureNet Technology Ltd. For more information, e-mail [noteablechemists@measurenet-tech.com](mailto:noteablechemists@measurenet-tech.com)

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## Scenes from National Chemistry Week



Left: Senior, Lily Yan, enjoys the motion of a diver with varying buoyancy



Left: A young chemist explores pressure and density with a cartesian diver



Right: A grandfather and granddaughter decide on a pattern of colors for radial chromatography

Right: Senior, Amy Sherman, demonstrates radial chromatography



## More Scenes from National Chemistry Week



Left: Junior, Vidya Kumar, creates crosslink polymers with the children

Right: Senior, Lauren Moser, explains chemiluminescence to children wearing their "light" bracelets



Thanks to Linda Ford for the the NCW photos on pages 12 and 13!

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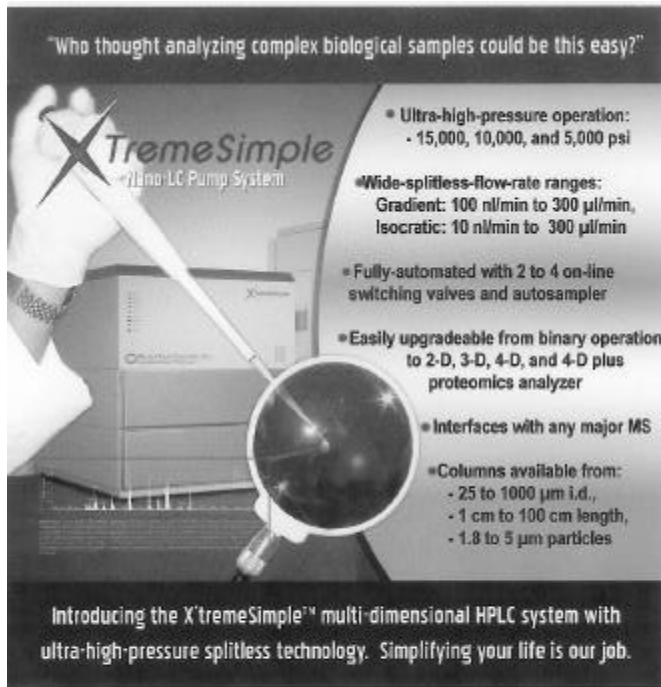
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## WCC Travel Award Available

The Eli Lilly & Company is once again sponsoring a program to provide funding for undergraduate, graduate, and postdoctoral women chemists to travel to scientific meetings in 2006 to present the results of their research. Grants may be applied only for registration, travel, and accommodations, and are restricted to travel to meetings within the United States. Grant funds are limited, but there are some funds set aside for undergraduates. Only U. S. citizens and permanent residents are eligible. Applications should be limited to one per research group. Awards will be given with preference to the following order: (1) any applicant who will be making her first presentation (regardless of format) at a national or major meeting, (2) graduate or postdoctoral applicants who have not presented at a national or major meeting since leaving undergraduate school. Women who have received a prior award under this program are ineligible.

**The deadline is February 1, 2006 for receipt of applications for meetings between July 1 and December 31, 2006.** For application and more information visit the WCC Web site <http://membership.acs.org/W/WCC/> or write [wcc@acs.org](mailto:wcc@acs.org).



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