

CINTACS



Newsletter of the Cincinnati Section of the American Chemical Society

March, 2003
Vol. 40, No. 7

Calendar

New online registration!

Wednesday, March 12	Cincinnati Chemist at Givaudan
Wednesday, April 9	Mr. Frederick Wallace at NKU
Friday, May 16	Party Night! Robert Mondavi Montgomery Inn Banquet Center

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2003 Cincinnati Chemist of the Year

Glenn D. Boutilier
The Procter & Gamble
Company

(see page 4 for "About the
Speaker")

***"Problem Solving and
Learning with Polymers"***



Abstract

Procter & Gamble's proprietary papermaking process uses a paper molding belt (template) that is a continuous loop over 17 feet wide, 240 feet long and patterned with 400 holes per square inch. These templates are required to withstand high pressure (1000 psi) water showers, abrasion from cellulose fibers, an alkaline aqueous environment, hot air dryer temperatures between 200 - 500 F, and cyclic compressive loads up to 400 psi. This is a more demanding environment than that of a printing plate used at room temperature

(Continued on page 4)



2003 Cincinnati Research Associate of the Year

Pat Palmer majored in Chemistry at University of Cincinnati and joined P&G on July 5, 1983. Pat regards the integrity of his work and the reliability of his scientific data as central contributions to his profession, but Pat is also highly regarded for his ability to bridge organizational boundaries and for forming partnerships. Pat's experience spans upstream product exploration through final product development. He is currently the Project Analytical Leader for the Wrigley/P&G joint venture. Pat is an enthusiastic

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THE CINTACS NEWSLETTER**Vol. 40, No. 7 March, 2003**

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

CINTACS is published nine times a year (September through May) by the Cincinnati Section of the American Chemical Society. The submission deadline will be approximately March 28 for the May, 2003 issue. Electronic submission is strongly preferred, except for original photos. All materials should be sent to:

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from the Chair

The March meeting will be held at and is being generously sponsored by Givaudan. I would like especially to thank Phil Christenson for his help making all the arrangements. This is a very special meeting for me since I get to present awards to three very deserving individuals.

As you may have seen in the January 13, 2003 issue of C&E News, Linda Ford, who presently teaches chemistry at Seven Hills High School, has won the national James Bryant Conant Teaching Award. The actual award presentation will be made at the ACS National Meeting approximately two weeks after our meeting. However, we want to recognize Linda for her outstanding teaching. As a college faculty member, I am very indebted to good teachers like Linda. If they do not excite students about chemistry in high school, I never get to see them in college.

The Research Associate of the Year Award goes to Patrick C. Palmer of Procter and Gamble. To quote his nomination letter, "Pat's experience spans upstream product exploration through final product development in roles which include analyst, analytical project liaison, and formulator." I recently learned that although Pat's nomination came from P&G, it was initiated by one of his customers, due to his excellent ability in the laboratory. In addition to his duties at P&G, Pat has been a science fair judge and a mentor to a large number of students.

The Chemist of the Year Award goes to Glenn D. Boutilier of Procter and Gamble. To quote his nomination letter, "Glenn has made many significant contributions to P&G's products through his expertise in polymer chemistry." Glenn is a member of the very prestigious Victor Mills Society, an inventor on 22 patents, and an author of 19 publications. If you have never seen paper manufactured, I think you would be amazed at the size of the machines used in the process. The belts in these machines are subjected to very high temperatures and pressures. Using cutting-edge polymer chemistry, Glenn was able to develop new belts for these machines that have a four order of magnitude longer lifetime than the belts previously used. Glenn also has played a leading role in the development of the refastening tape used on disposable diapers. In addition to his technical duties at P&G, Glenn is one of the teachers of the P&G sponsored short course that discusses what chemists do in industry. If you have never attended this course, I strongly urge you to do so. I have sat in on the course twice, and know that students learn a great deal from it. Glenn will be our after-dinner speaker.

I want to congratulate all three award winners for their contributions to chemistry and chemical education.

(Continued on page 4)

March Meeting Wed., March 12, 2003

Givaudan Flavors
1199 Edison Dr.
Cincinnati, Ohio

Sponsored by Givaudan Flavors

Featuring Glenn Boulitier, 2003 Chemist of the Year

Program

- 5:30 – 7:00 pm Registration and before dinner snacks: Cheese with crackers and grapes, veggies with dip, punch, lemonade, iced tea, soft drinks
- 5:30 – 6:30 pm Board Meeting, CDR#1
- 6:00 – 7:00 pm Organic Discussion Group, CDR #2 (see page 5 for details)
Professor K.C. Russell, Northern Kentucky University
“Tautomer Dependent Bergman Cyclization of Pyrimidine Eneidyne”
- 7:00 - 8:00 pm Buffet Dinner, \$20.00 (half-price for students, emeritus, unemployed and new member
House Salad, Sliced Roast Beef au jus, Chicken Dijon: parmesan crusted breast topped with artichoke hearts and mushrooms, Swiss cheese and a Dijon sauce, Baked Salmon with a Lemon Parmesan Crust, Glazed Baby Carrots, Steamed Green Beans Almondine Rice Pilaf, Scalloped Potatoes, New York Cheesecake
- 8:00 pm Meeting, Presentation of Awards, and Special Recognition of Ms. Linda Ford as the ACS National High School Teacher of the Year
Featured Speaker and Cincinnati Chemist of the Year
Dr. Glenn Boulitier
“Problem Solving and Learning with Polymers”

Reservations: New! A meeting reservation form is now online at: <http://www.che.uc.edu/acs/cinacs.html>. This is the best and easiest way to register. As a lesser alternative, you may send your reservations by email to Kim.Carey@uc.edu. If absolutely impossible to make reservations via the internet, telephone 513-556-0293. Deadline for reservations is 12:00 noon on Wednesday, March 5, 2003. Include your name, affiliation, and state if you're in one of the 1/2 price categories. As a reminder, if you decide you must miss a meeting after you have made reservations, please call to cancel. If you do not cancel, the Section will have to charge you because it will have been charged by the hotel

Directions: From I-75 North, take the Towne St. exit. Go right at the end of the exit. Turn left at the light onto Paddock Rd. **Caution: There is construction along Paddock Rd.** At the first light, turn left onto Edison Dr. and enter the TechSolve Research Park. From I-75 South, take the Paddock Rd exit and turn left at the end of the exit onto Paddock Rd. Turn right at the third stoplight onto Edison Dr. Givaudan Flavors is on the left. Continue on Edison past the visitors entrance and park in the employee parking lot which is behind the building. Use the entrance near the south end of the parking lot. The entrance will be marked.

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for less than a day to produce a newspaper. The working life of these belts is important both from the standpoint of material cost and the production time lost to installation of replacement belts.

The starting materials for these molding belts are a liquid photopolymer resin and a woven polyester fabric. The process is analogous to that of producing a black and white photographic print from a negative. The composite of woven polyester and liquid photopolymer is selectively exposed to ultraviolet light through a mask similar to a photographic negative. The exposed areas photopolymerize, the mask is removed, and the unpolymersized regions are removed in an aqueous developing step. A second exposure to ultraviolet light completes the photopolymerization.

This presentation will cover some of the measurements and properties important to developing durable materials in an industrial setting without the use of magic.

Since 1983, we have taught a one-day short course on Industrial Analytical Chemistry that emphasizes the problem solving approach. This course incorporates actual industrial problems as examples. Students' response has been very positive. Many traditional education programs do not incorporate real-world problems in the curriculum or teach the Analytical Process or Problem Solving Approach. I will briefly describe our Short Course and how it ties to the Analytical Sciences Digital Library.

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ambassador for the profession in the community. Last fall he coordinated the company's PWC (People Working Cooperatively) repair/prepare-affair service project. He is active in the Mason Schools Mentoring Program, numerous activities with King Local Schools, the Warren County Career Center, Minorities for Math, Science, and Engineering, and science fair judging.

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About the Speaker

Dr. Glenn Boutilier received the B.S. degree in chemistry from Colorado State University in 1974. He studied at the University of Florida with James D. Winefordner and received the Ph.D. in Analytical Chemistry in 1978. Post doctoral study followed at the University of Georgia, where Glenn studied with Professors L. B. Rogers and L. A. Carreira. He joined Procter & Gamble in 1980, where he is currently a Research Fellow, Victor Mills Society. Dr. Boutilier's work has focused on areas of adhesive and polymer technology, especially the development of high performance photopolymers. He is inventor or co-inventor on more than 20 patents and has made key contributions to the success of the P&G proprietary papermaking process. Dr. Boutilier promotes effective undergraduate and graduate education in the analytical sciences by offering the popular Industrial Analytical Short Course. Dr. Boutilier is a member of the American Chemical Society and the Society for Applied Spectroscopy. He has served the latter organization in many capacities, including Chairman of the Cincinnati Section. Glenn, wife Donna, and daughters Emily, Joanna, and Sara Clark are enthusiastic cyclists.

(Continued from page 2)

To change subjects, if you would like to be an officer of the Cincinnati Section of the ACS, please contact Hank Greeb as soon as possible. He will take nomination from the floor at the March meeting; however, if you are willing to run, please contact Hank before the meeting. The ballots need to be sent to all members by early April.

I am also happy to report that Project Seed is progressing very nicely. We have three UC faculty members who have agreed to take disadvantaged high school students into their laboratories this summer. In addition, as of this writing, six high school students have been nominated for the three slots. Interviews of the students will begin shortly.

The April meeting will be the presentation of the high school award winners. The meeting will be held at Northern Kentucky University. The after-dinner speaker will discuss the chemistry of art and art restoration.

Organic Discussion Group

Tautomer Dependent Bergman Cyclization of Pyrimidine Eneidyne

Professor K.C. Russell

The Bergman Cyclization of enediynes underwent a renaissance in the mid 1980's when this reaction was found to be at the center of a number of unique anticancer antibiotics. Since that time many groups have focused their attention on the synthesis of the naturally occurring enediyne antibiotics and the how altering the distance between the triple bond termini (c-d distance) can be used to activate cyclization. Unfortunately, far less work has been done to uncover how the electronics of enediynes can be used to alter their reactivity.

One electronic effect that has been noted to alter the rate of Bergman cyclization is benzannulation. Due to the reversibility of diradical formation, when the double bond of an enediyne is incorporated in to an aromatic ring, the rate of product formation is slower than when for a double bond which is not part of an aromatic system. In order to examine if the tautomeric state of a system could be used to alter the rate of Bergman Cyclization, a series of lumazine and pyrimidine tautomers were prepared. The synthesis of these compounds and their Bergman Cyclization kinetics will be presented.

About the Discussion Group Speaker

KC Russell was born in Portland, Oregon (1962) and received BS degrees in chemistry and in biochemistry from Oregon State University in 1985. He left Oregon to attend the University of Arizona where he developed skills in asymmetric synthesis, under the guidance of Victor Hruby, and received his PhD in 1992. He developed new peptidomimetics with the construction of unusual amino acids for the incorporation into peptide hormones. The investigation of hormone receptors, wetted his appetite for designing man made systems to control molecular recognition of biologically important molecules. KC was off to France to join Jean-Marie Lehn's lab as a post-doctoral student (1992-4). New H-bonded arrays were constructed based on the complementary barbituate - triaminotriazine. These assemblies

were appended with functionalities including crown ethers, porphyrins, and amino acids for example, allowing these assemblies to be studied by mass spectrometry, and for their photophysical and chiral properties, respectively. To further develop artificial receptors, he returned to the US for a post-doctoral position with Clark Still at Columbia University. These receptors were constructed on a steroid backbone and screened against peptide libraries prepared by the a split-pool method on a solid support. KC began his own research group in 1995 at the University of Miami. The thrust of this work was to examine the reactivity of arenediynes and the development of anticancer agents based on these compounds. He has recently joined the Northern Kentucky University as an assistant professor and is continuing to explore the chemistry and reactivity of novel enediynes the dehydrobenzoannulenes.

Chemical Education Group

Fuel Cell Available to Teachers

The section has purchased a hydrogen fuel cell kit to be shared among the area's chemistry teachers. The kit comes with its own electrolyzer unit and requires only distilled water and a light source to operate. You can use either natural light or a 100-watt lamp to power the electrolyzer. The stored hydrogen flows through the fuel cell to power a fan blade. It comes with several suggested activities and is very easy to set up. Schedule your week with the kit by e-mailing Linda Ford (Linda.ford@7hills.org). The plan is to keep it moving from school to school throughout the second semester. We can then put it through a second cycle starting in September. While I have your attention, please read on!

It is time to plan next year's four meetings of the chemical educators' discussion group. Linda needs meeting sites and hosts as well as program ideas. Please step up and say YES! to hosting and WOW! Here's a hot program idea. Linda awaits your response. The good news is that Mike Geyer has invited us to Deer Park High School in the early fall to share holiday demonstration and activity ideas. Do you do something special in class for Halloween or prior to winter break? What happens in the lab on Valentine's Day? Do your flames turn green on St. Patrick's Day? Come to share and to build your repertoire.

Mark your calendars now!**Cincinnati ACS is pleased to offer this widely acclaimed 3-day course this coming Spring...****Experimental Design for Productivity and Quality in R&D**

Stanley N. Deming, Stephen L. Morgan, Instructors

Tues through Thurs, May 13-15, 2003

Holiday Inn I-275 North**3855 Hauck Road****Cincinnati (Sharonville), Ohio 45241****The course that teaches the proper way to design experiments for improved research quality!****Who Should Attend**

Chemical scientists, engineers, R&D managers, and others who need to learn proven methods for designing quality into products and processes. The course assumes no previous knowledge of statistics and is aimed at both beginning and experienced R&D workers. Each participant should bring a hand-held calculator to the course.

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- Basic concepts of experimental design
- Strengths and limitations of popular experimental design techniques
- Applicability of common designs
- Determining which experimental designs are appropriate or inappropriate for particular situations

How You'll Benefit from This Course

- Get solutions to your experimental design problems from seasoned experts
- Learn how to significantly improve R&D quality and efficiency
- Become more efficient by learning how to save resources by eliminating unnecessary experimentation
- Learn how to match appropriate experimental designs to real-world problems
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- Understand statistical terminology and be able to communicate more easily with statisticians
- Develop a firm foundation for understanding advanced design techniques
- Receive a brief introduction to Taguchi methods
- Learn about commercial software packages for data treatment
- Improve your skills in communicating research strategies to co-workers

About the Instructors

Stanley N. Deming is Professor Emeritus of Chemistry at the University of Houston, Texas. He is also the President of Statistical Designs, a firm that offers short courses and consulting in methods development, process optimization, statistical experimental design, and the statistical analysis of laboratory data. Dr. Deming is the author or co-author of more than 90 publications in the areas of analytical chemistry and related disciplines. He is co-author (with Dr. Morgan) of the Elsevier text, *Experimental Design: A Chemometric Approach*, 2nd edition (1992).

Stephen L. Morgan is Professor of Chemistry at the University of South Carolina. His current research inter-

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ests include optimization and experimental design in chemistry, pattern recognition on chemical information, and data preprocessing strategies. Additional research in his laboratory involves the application of computers in chemistry, experimental design, and multivariate statistics. Dr. Morgan is the author of more than 100 publications in the field of analytical chemistry and analytical biochemistry. He and Dr. Deming have co-authored (with F. H. Walters and L. R. Parker, Jr.) , Sequential Simplex Optimization (CRC Press, 1991).

Fees will depend on the number of participants, **but are guaranteed to be significantly less than what you would pay at a National meeting or Pittcon (\$1,345 ACS members, \$1,445 non-members)**. Course seating will be limited, so indicate your interest now and be among the first to receive the final announcement, fees and registration details. Send an e-mail with your name, company, and telephone to white.dr.2@pg.com.

Reading someone else's copy and not an ACS member? Join ACS now (www.chemistry.org) and save \$100 off the course fee.

Laboratory Robotics Information Group (LRIG)

There will be a meeting of the Midwest LRIG in Cincinnati on March 20, 2003, 4:00 - 8:00 pm at the King's Island Conference Center. The two featured speakers and titles are: Dr. Zaslavsky from Anliza, "A Method to Characterize Protein Structure" and Dr. Matthew Sills, director of Pharmacology at Pharmacopeia "Comparison of Assay Technologies for High Throughput Screening". A buffet dinner will be served.

For further information please contact Dr. Sandra Nelson at P&G Pharmaceuticals, 513-622-3406 or nelson.sl@pg.com.

Chemical Information Update

The Public Library of Science

Edlyn Simmons

Chair, Chemical Information Discussion Group

In October, 2000, a group of research scientists who wished to create open access to the archives of scientific journals founded a coalition they called the Public Library of Science (PLOS). Their first act was to circulate an open letter calling on the publishers of journals to make their archives available on public internet sites. They have collected the electronic signatures of over 36,000, scientists from 183 countries. As evidence of their support of the concept of free journal archives, the letter states, "To encourage the publishers of our journals to support this endeavor, we pledge that, beginning in September, 2001, we will publish in, edit or review for, and personally subscribe to, only those scholarly and scientific journals that have agreed to grant unrestricted free distribution rights to any and all original research reports that they have published, through PubMed Central and similar online public resources, within 6 months of their initial publication date."

The Public Library of Science website states that the organization is committed to open access to the scientific literature via the Internet, acknowledging only the copyright of the author as a limitation to the circulation and use of the information. This concept is at odds with the economics of scholarly publishing. At present, most scholarly information is distributed by a publisher, either a commercial organization like Elsevier Science or a professional society like the ACS. The publisher hires an editorial staff, creates print and electronic embodiments of journals, markets the journals, sells subscriptions, distributes materials to subscribers, and collects copyright royalties. Authors and peer reviewers generally contribute their time and expertise without pay, and authors sometimes pay page charges when their articles are published. Open access journals have begun to appear on the Internet. BioMed Central has been publishing open access journals in biology and medicine since 1999. Electronic preprint or Eprint servers are a growing alternative to commercial publishing. The most successful Eprint

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server is ArXiv, hosted by Cornell University and partially funded by the National Science Foundation. ArXiv covers mathematics and physical sciences other than chemistry. Although free and unrestricted access to journals is an attractive idea, publishing a journal cannot be done without support and financing. In addition to authors and reviewers, a free server needs hardware, software, and peopleware, which must be financed by contributions or income of some kind. ArXiv is supported by contributions from non-profit organizations. BioMed Central is supported by the Scholarly Publishing and Academic Resources Coalition (SPARC), the Open Society Institute, a number of institutional members, and a \$500 processing fee for accepted articles.

The Public Library of Science announced on December 17, 2002, that it has acquired funding, and will begin publishing its first open access journals. A \$9,000,000 grant was received from the Gordon and Betty Moore Foundation, and editorial boards are being recruited for PLoS Biology and PLoS Medicine, which will begin publication in the second half of 2003. Additional journals, including PLoS Chemistry, will have to wait until the first journals are well established.

Whether or not the first journals will be successful is an open question. The PLoS has announced that authors will be charged a processing fee of about \$1500 per published paper "to maintain an outstanding editorial staff, coordinate peer-review, and produce polished finished works." It appears that PLoS has discovered that "there ain't no free lunch."

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. Contributions from any ACS member are welcome, and so are requests for information you'd like to see in a future column. If you have any comments, suggestions, or contributions, please email them to simmons.es@pg.com

¹ <http://www.publiclibraryofscience.org/openletter.shtml>

² <http://www.publiclibraryofscience.org/>

³ <http://www.biomedcentral.com/>

⁴ <http://www.arxiv.org/>

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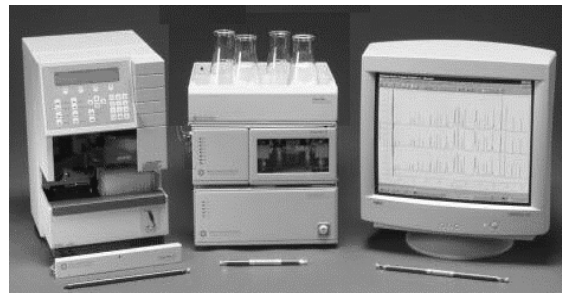


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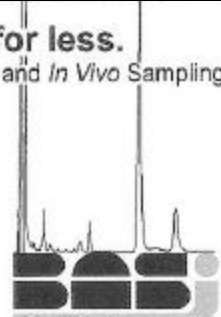
  

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NCW 2003: Earth's Atmosphere and Beyond!

NCW 2003 is not that far away (October 19 - 26, 2003). I'm inviting all interested members to join the volunteer team. We provide "demonstrations" at the Cincinnati Museum Center, local libraries and schools. If you aren't comfortable on stage, consider joining as a "roadie" or be a member of the planning committee. Fresh ideas are always welcome. The team would really appreciate ideas for chemistry demos (targeted to 4-6th grade level) about atmospheric studies - pollution, weather, etc.. Contact Gloria Story, NCW chair, at story.gm@pg.com, or snail mail: Gloria Story (box 29), Miami Valley Labs, PO Box 538707, Cincinnati, OH 45253-8707. THANK YOU!!

Scientists Needed!

Ms. Linda Sand from the Loveland City Schools is looking for area scientists to visit her school to present a scientific program. The scientists will be located in the classrooms and the students rotate to new programs. Last year for grades 1-4, there were 54 programs. This event received excellent coverage from C&E News (see <http://pubs.acs.org/cen/education/8020/8020education.html>.)

This year the program is going to target grades 5-6, approx. 750 students. These students are older and there is the opportunity to go more in depth into science. Presenters are asked to put together a program that would last for one hour. The event will be April 11, 2003 from 9:00 am until 2:00 pm, at the Loveland Primary School. Area scientists who might be interested in participating should contact Ms. Sand at LSAND@CINCI.RR.COM.

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<http://www.che.uc.edu/acs>

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