

the
Catalyst

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March 2004



Please Place Photo Edgar

Fahs Smith Here

Photo will be sent by Libby

Stature of Edgar Fahs Smith on Penns's Campus

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ADVANCE NOTICE

APRIL MEETING

Undergraduate Scholastic Achievement Awards

Brandon Greenwood
Brewmaster at Nodding Head Brewery

THURSDAY, APRIL 15, 2004

Ursinus College, Collegeville, PA

See the APRIL issue of *the Catalyst* for details,
call the Section Office at (215) 382-1589, email PhilaACS@aol.com

ABSTRACT

Unfolding of a Single RNA Molecule by Force

We apply mechanical force to induce and follow the unfolding and refolding of single RNA molecules at nanometer length scales, using optical tweezers. To characterize the mechanical unfolding of major RNA structural motifs, we first unfold a simple RNA hairpin, then a related molecule containing a three-helix junction, and finally, P5abc, a domain of the *T. thermophila* ribozyme that contains the previous elements but adopts a specific tertiary structure in the presence of Mg^{2+} . The hairpin, the three-helix junction, and P5abc (the latter only in the absence of Mg^{2+}) can be mechanically unfolded at equilibrium. When kept at constant force, these molecules display bi-stability and hop between folded and unfolded states. By using different preset forces, we directly control and follow the thermodynamics and kinetics of their folding reactions. These experiments yield the force dependence of the rate constants for

folding/unfolding a single RNA molecule under these conditions, the force-dependent equilibrium constants, and the position of the transition state along the reaction coordinate.

BIOGRAPHY

DR. CARLOS BUSTAMANTE

Carlos Bustamante is a Howard Hughes Medical Institute investigator and also a Professor of Molecular and Cell Biology, Physics, and Chemistry at the University of California, Berkeley. He received his B.S. degree from Cayetano Heredia University in Lima, Peru; his masters in biochemistry from San Marcos University; and his Ph.D. degree in biophysics from UC Berkeley, where he studied with Ignacio Tinoco, Jr. As a postdoctoral fellow at the Lawrence Berkeley National Laboratory, Dr. Bustamante studied with Marc Maestre. He was a member of the chemistry department at the University of New Mexico in 1982. Before moving to Berkeley, he was an HHMI investigator and Professor at the University of Oregon.

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MARCH MEETING

The Philadelphia Section, American Chemical Society
and
The University of Pennsylvania
present the

2004 Edgar Fahs Smith Memorial Lecture

Dr. Carlos Bustamante
University of California, Berkeley

Unfolding of a Single RNA Molecule by Force

Thursday, March 18, 2004

6:00 PM

Carolyn HoffLynch Lecture Hall
Chemistry Building
The University of Pennsylvania
34th and Spruce Streets, Philadelphia

Social Hour: 5:00 - 6:00 PM

Dinner following the lecture at the White Dog Cafe
3420 Sansom Street, Philadelphia

Dinner plus social hour cost: \$35.00
Students with Reservations and College ID: \$18.00
Cost for social hour only: \$5.00; Students with ID: \$3.00

DINNER RESERVATIONS ARE LIMITED TO THE FIRST 30 PEOPLE TO SIGN UP and should be made by calling Mrs. Libby Harper at the section office, (215) 382-1589, or emailing PhilaACS@aol.com by **5:00 PM on Thursday, March 11th**. **Cancellations**, if necessary, cannot be accepted after NOON on Tuesday, March 16th. **UNCANCELLED RESERVATIONS WILL BE BILLED.**

PARKING: Parking is available for \$10 in the University of Pennsylvania Lot located at 34th and Chestnut Streets. Going south on 34th, turn right into the lot toward the end of the block past Market and just before reaching Chestnut. Metered parking on the street may also be available. **For directions see Web site www.upenn.edu.**

The Board of Directors will meet at 4:00 PM in the Makineni Conference Room, 2nd floor of the Chemistry Building.

Process Safety in the Chemical Industry
*a short course for Chemical Engineers, Chemists and
Managers in the Chemical Industry*

Two Consecutive Saturdays,
March 20 & 27, 2004

Hill Seminar Room
Drexel University
Philadelphia, PA

Principal Instructor: Dr. Jerry Maffia (gjm0001@widener.edu), Professor
and Chair, Department of Chemical Engineering, Widener University

Reservations: Reserve a spot by calling Mrs. Libby Harper at the ACS
Section Office (215) 382-1589 or emailing PhilaACS@aol.com

Cost: *includes all materials*, call or email section office, information above

Web site <http://muse.widener.edu/~gjm0001/sc.htm>, pick course 2

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Philadelphia Section of the American Chemical Society

CHEMO DYNAMICS LP

CHEM143C

*From
The
Chair*

**Melissa Betz
Cichowicz**

Please
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of Melissa
Here

We are very pleased this month to welcome the 2004 Edgar Fahs Smith Memorial Lecturer, Dr. Carlos Bustamante, of the University of California, Berkeley. His presentation to us on March 18 is titled "Unfolding of a Single RNA Molecule by Force" which promises to give interesting insight into the Bustamante group's research on the molecular mechanisms involved in the folding and unfolding processes of macromolecules.

It is interesting to me, from an historical perspective, that the very first Philadelphia Section ACS-cosponsored Edgar Fahs Smith Memorial Lecture in 1946 featured Dr. The Svedberg of the University of Uppsala (Sweden), whose talk was titled "Some Remarks on Macromolecules". Who would have imagined, almost 60 years ago, that 21st century research would involve the use of optical tweezers and scanning force microscopy to manipulate single molecules, in order to gain understanding of the mechanical properties of macromolecules?

In case you are not familiar with it, the Edgar Fahs Smith Memorial Lecture was initiated in 1929, to recognize and honor the contributions of the late Edgar Fahs Smith, a long-time faculty member and chairman of the Department of Chemistry at the University of Pennsylvania. The EFS Memorial Lecture Committee has chosen an eminent list of scholars over the years, to continue the tradition of honoring not only Dr. Smith, but also the noteworthy accomplishments of the chemical profession. This memorial lectureship is recognized by ACS as the oldest series of its kind in the country, and its primary purpose has been stated to be "to give recognition to an outstanding chemist for his achievements, for a unique career, and for his service to mankind.

In so doing, we are honoring the profession and fulfilling the objectives of the Society to encourage and stimulate research and increase chemical knowledge" (excerpted from an article by Dr. Claude Deischer in the 100th Anniversary edition of *the Catalyst*). Please consider attending this month's Section meeting at the University of Pennsylvania, and I am sure you will agree that Dr. Bustamante's Lecture is a fitting addition to the list of Edgar Fahs Smith Lecturers!

On another note, I wanted to draw your attention to the fact that the Philadelphia Section ACS will be serving as the host section for this fall's ACS National Meeting on August 22-26, 2004. The Philadelphia Section has not had the opportunity to host a National meeting since 1984; I remember that meeting well, since I gave a talk on the research I was finishing up for my dissertation. My relocation to Philadelphia area had just taken place, and I remember being excited that my hometown was hosting such a large and prestigious scientific meeting. Now, as Chair of the Philadelphia Section, I am even more excited at the prospects of how we will be host to scientists, young and experienced, from across the country (and beyond). We, the members of the Philadelphia Section, can participate through our affiliation with the Society in a number of ways: some will give scientific presentations or serve as presiders at topical sessions, some will bring students to experience and perhaps present at their first major scientific meeting, some will come to participate in the National Employment Clearinghouse, and some will come to attend workshops or short courses. Because the National meeting is so comprehensive and offers such diverse programming, there will be a real need for Local Section members to volunteer their time to help make this meeting a success! **Students in particular can participate and receive payment for their services in a number of support roles; please call the Section Office at 215-382-1589 if you'd like to sign up and/or email Phillynatlmtg@AOL.com with "volunteer" in the subject line**, so that we can start to document who is available and

willing to help out. This is a great way to get involved with the Local Section, for a very specific purpose; if you are a newer member to the Section, and are looking for a way to get to know other members and engage in some professional activity, contact us! We will be happy to let you know what the opportunities are.

Fourth Annual Poster Session by Deb Kilmartin

The winners of the Fourth Annual Poster Session are: Natalie Carroll, Drexel (Karl Sohlberg, advisor)—The Rohm & Haas Award—\$250. Melissa Mertzman, Drexel (Joe P. Foley, advisor)—DuPont Award—\$100. Alpa Patel, Drexel (Yen Wei, advisor)—The William Penn Award—\$100. Alice Lurain, Penn (Patrick J. Walsh, advisor)—Phila ACS Award—\$50. Thomas English, Penn (Daniel A. Hammer, advisor)—Phila ACS Award—\$50.

Melissa Mertzman was a double winner—she also won a \$25 gift certificate to Staples, as did David Thomas, William Erb, and Yi Guo, all at Drexel!

Melissa Cichowicz, the Section Chair, gave all participants ACS luggage tags, and ACS pens to all the judges.

Please Place
2004PosterWinners Here

2004 Graduate Poster Session Winners held at Drexel University. From left to right: Thomas J. English, Alpa C. Patel, Alice E. Lurain, Melissa D. Mertzman, Natalie Carroll, and Section Chair Dr. Melissa Betz Cichowicz.

Please Place
2004RaffleWinners Here

2004 Graduate Poster Raffle Winners. From left to right: Yi Guo, David Thomas, Melissa Mertzman, and William Erb.

ACS Scholars Program

The ACS Scholars Program, now in its 10th year, launched a radio tour this week to highlight the Society's financial support effort for underrepresented minorities in the chemical sciences. African American, Hispanic/Latino, and Native American students are eligible to receive \$2,500 to \$3,000 awards based on a mix of academic achievement and financial need.

To hear a soundbite from the radio release which features ACS Assistant Secretary for Diversity Programs Yvonne Curry, go to URL (<http://www.radionewssource.com/Scripts/acsscholars.htm>). For more information about the program, go to URL (<http://www.chemistry.org/portal/a/c/s/1/acdisplay.html?DOC=minorityaffairs/scholars.html>).

Editor-in-Chief Wanted

Applications are being taken for Editor-in-Chief of *the Catalyst*. No experience necessary; training and equipment provided. If interested please contact Ms. Deborah Kilmartin at PhilCatalyst@aol.com or Mrs. Libby Harper, the Section Office, at 215-382-1589 (leave message if no answer) or email PhilaACS@aol.com.

NEWS ATOMS

Virgil Percec, P. Roy Vagelos professor of chemistry at the University of Pennsylvania, received the ACS award in Polymer Chemistry for 2004. The honor recognizes his development of novel methods of polymer synthesis.

The Winter 2004 issue of the ACS publication *Chemistry* carries news of several Philadelphia Section ACS members. **Frank Mallory**, organic chemist with Bryn Mawr College was mentioned in an article about chemists who are also musicians. He plays clarinet with the Borodin Ensemble and also chamber music at Bryn Mawr. Our past Section Chair **Sharon Haynie** was recognized for her volunteer work on behalf of ACS Project SEED. In addition to her job as a chemist for DuPont, she works with economically disadvantaged high school students to encourage them in science.

In the same issue, Wyeth's r&d president **Bob Ruffulo** and vice president of chemical and screening sciences **Magid Abou-Gharbia** were mentioned for hosting a meeting of head researchers from the pharmaceutical industry at the firm's new facility in Collegeville, PA last October. ACS then-president Elsa Reichmanis also attended. In another news item, *Chemistry* mentioned the Heroes of Chemistry program of the ACS, which honors researchers whose work insures the health and wellness of our children. Two of the four research teams so recognized last fall were from Merck Research Laboratories and Wyeth Pharmaceuticals. The team from Merck of **Robert Young, Robert Zamboni, and Marc Labelle** discovered a compound to manage chronic asthma. The research team from Wyeth that discovered a vaccine to prevent streptococcal infections consisted of **Ronald Eby, Maya Koster, Chia-Lung Hsieh** (deceased), **Velupillai Puvanesarajah, Stephen Doares, Bradley Kosiba, Dan Speelman, and Kent Murphy**.

DEATHS

Doris M. Doyle, retired chemist, December 25 at 87. She held positions with Foote Mineral, Boeing-Vertol, and Quaker Chemical from which she retired in the early 1980s. She held several patents including one for an aircraft lubricant. She was past president of the Springfield Business and Professional Women's Club and a founder and past president of the Springfield Symphony Society.

Robert Alper, retired biomedical researcher formerly with the University City Science Center, December 28 at 70. The 1957 launching of the first Sputnik inspired him to study science. He joined the science center in the early 1970s and retired in the late 1980s. He worked in the connective tissue research group on projects that included cell growth and artificial skin. He sang tenor with several music groups.

George Dahl, retired chemist formerly with Pennsalt and its successor companies, December 31 at 73. His career at Pennsalt/Pennwalt/Atofina lasted 36 years. He retired in 1996 as director of research and development in the agrochemical division. He then became a volunteer reader for the blind and dyslexic until shortly before his death.

Free Questel-Orbit Training Course

The Philadelphia Chemical Information Group of the Philadelphia Section of the ACS is proud to sponsor the following sessions on the ECLA codes which will be given in the Philadelphia area on March 15 and 16. The sessions are being hosted by Questel-Orbit. The place is to be determined. Monday, March 15 training on ELCA and Tuesday, March 16 training on EPO procedures and the PlusPat/EppatentAt.

For further information or to register for either or both sessions please contact Sandy Burcham, 610-530-6616 or Libby Harper at the Philadelphia Section Office, 215-382-1589.

CHEMICALCONSULTANTS NETWORK

Visit our web page at
www.chemconsultants.org

Date & Time: Wednesday, March 10, 2004 at the Cynwyd Club, Bala Cynwyd, PA; Mixer, 5:30 PM; Dinner, 6:30 PM; Talk and Business Session, 7:30 PM.

Speaker Topic: *Marketing 101 for Consultants*

Speakers: Joel F. Smith and Barry Meyers

Abstract: This presentation will begin by reviewing some basics that every consultant must know in order to successfully market their services. We will then move on to an often-overlooked aspect of marketing—Image Building. It's important how others view your business. These "first impressions" can impact whether your prospective clients seriously consider you for any consulting opportunities. Next, we will discuss how to get the word out about who you are and how to find perspective clients. We will conclude this part of the presentation with a question and answer period where we will ask the CCN members to contribute some of their marketing successes and "less than successes". After the marketing presentation, Joel Smith will do a presentation on the progress being made by the Innovation Philadelphia/Greater Philadelphia Chamber of Commerce Chemical Hot Team.

Biography: Joel Smith has over 30 years of experience in product and process development in the textile, paper, industrial equipment, industrial and commercial electronics, and machine design industries. Joel is currently a principal and co-founder of THE PEOPLE SOURCE GROUP (TPSG), a full-service consulting firm. Prior to founding TPSG, he was general manager of HITEK, a start-up manufacturing subsidiary of Sarnoff Corporation. He has run business units for FMC, was involved in turnaround of The Delp Corporation, and was VP of Engineering for The Synthetics Group. Joel has led, managed and coached financial, marketing, operations and technical professionals for over 20 years. He has provided outsourced

technical people to internal and external customers. Joel holds a BS ME from University of Pennsylvania. Joel is on the Small Business Board of the Philadelphia Chamber of Commerce, on the Board of Diamond State Ventures and a member of the Innovation Philadelphia Chemical Industry Convergence Center implementation team.

Barry Meyers has over 30 years of experience in information technology in textiles, paper, printing, newspaper, apparel, manufacturing and distribution. Barry is currently a principal and co-founder of TPSG. He has held director and manager positions for small to medium sized companies and management positions for start-ups and a Fortune 500 company. He was a consultant and partner in a computer service organization that provided part-time consulting and operational support for diverse small business clients. He has managed and directed technical professionals for over 25 years. Prior to founding TPSG, Barry was the Director of Corporate Information Services for a mid sized Apparel manufacturer. Barry holds a BS AE from Penn State University, and a MBA in Computer Systems from American University. Barry was an Officer in the US Army Corps of Engineers and is a Vietnam veteran.

Location: The Cynwyd Club, 332 Trevor Lane, Bala Cynwyd, PA 19004.

Reservations: To make or cancel a dinner reservation, e-mail CCNReservations@aol.com or call the ACS office at 215-382-1589 (leave message on voice mail if necessary).

For directions or information about the dinner fee email CCNReservations@aol.com.

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The Board of Directors of the Philadelphia Section extends its thanks to the Rohm and Haas Company for providing duplicating services to the Liaison Committee for 2002-2004.

**555th Board of Directors' Meeting
Thursday, October 16, 2003
Room 2000, Vagelos Laboratories
University of Pennsylvania Chemistry
Complex
34th and Spruce Streets
Philadelphia, PA**

These minutes have been edited. A full copy of the minutes can be obtained in the Section Office.

Board Members Present: M.B. Cichowicz, C.J. Bruner, D.E. Kilmartin, A.S. DeMasi, R.R. Acchione, C. Bentzley, E.L. Davis, G.J. Maffia, T.S. Straub, K. Thrush, and V. Tortorelli.

Also: E. Harper.

Absent: S. L. Haynie, B. Baker, C. Barbour, D.H. Cook, F. Goodson, J. Nikelly, G.F. Palladino, and E.J. Williamsen.

Past Chair DeMasi called the meeting to order at 4:20 PM.

A motion to approve the minutes of the September meeting as amended passed unanimously.

Officers' Reports

A. Chair (M.B. Cichowicz for S. Haynie)

Annual reports for all committees and topical groups are due in the Section Office no later than December 19th.

All 2004 funding requests should be sent to Finance, Budget, and Audit Chair G. Cowperthwaite no later than one week prior to the November section meeting. Funding requests should be accompanied by an outline of what the funds are to be used for.

B. Chair-Elect (M.B. Cichowicz)

Chair-elect Cichowicz reported on the second leadership conference in St. Louis. Only one leadership conference will be held next year. The purpose is to build relationships between divisions and sections.

C. Secretary (D. Kilmartin)

Nothing to report.

D. Treasurer (C.J. Bruner)

A motion to approve the Treasurer's report was passed unanimously.

COMMITTEES:

A. National Chemistry Week (NCW) Committee

Student Poster Contest (T. Straub): Response to the poster contest was low compared to previous years. There were no submittals at St. Joseph University or Delaware Valley College, but 72 posters were dropped off at Ursinus. Use of a new postcard format instead of the usual flyers may be the cause. Voting on the posters will take place after the Board meeting.

Graduate School Night Program (A. DeMasi for J.D. Burke): This program will take place on November 5th. Everything is in place for a successful program.

B. Publications (D. Kilmartin):

Chair Kilmartin presented the Publications Committee recommendations of Marge Matthews as Editor-in-Chief, George Cowperthwaite as Business Manager, and herself as Committee Chair. A motion to accept these candidates passed unanimously.

Chair Kilmartin asked for help from the Board in locating a permanent Editor-in-Chief; Marge Matthews has only agreed to serve until the end of 2004. Suggestions included asking the Chemical Consultants Network and the Chemical Information Group for interested volunteers.

C. Tellers Committee (T. Straub):

The results of the 2003 election were distributed to the Board. Catherine Bentzley would have the one-year Director's slot to fill the remainin year of Melissa's term as director in the 2001 election.

A motion to accept the results of the 2003 elections passed unanimously.

D. Nominations Committee (A. DeMasi):

On the Investment Board of Trustees, the terms have expired for W. Mendelson and W. Golton. Committee Chair DeMasi has not yet heard if they are interested in serving again. There are several vacancies on the Section Award Committee. A representative for physical chemistry (2004) and Chemical Education (also 2004) are needed. Medical Biochemistry will be filled by Marjam Behar (2006). Someone is needed to take Janet Gagnon's place for Organic Chemistry (2006). If you have any suggestions for these positions, please email Chair DeMasi before the next Board meeting. On the Middle Atlantic Regional Meeting Steering Committee, G. Cowperthwaite has agreed to serve as the Philadelphia Section's Member.

Other Business:

Mrs. Harper reported that 2003 election ballots returned from a McNeil facility because "non-profit mail is not accepted there." Hopefully this will be resolved by the next Board meeting.

There being no other business, the meeting was adjourned at 5:15 PM.

Respectfully submitted,
Deborah Kilmartin,
Secretary

FREE
REGISTRATION TO
ACS NATIONAL MEETING

Would you like to attend the Fall National Meeting here in Philadelphia (August 22-26, 2004) for free? Just volunteer to staff the Philadelphia Section's Hospitality booth for a few hours and you can have free registration to the meeting. Just email Phillynatlmtg@AOL.com with "Volunteer" in the subject line, leave your name and contact information and we'll be in touch. Or call Mrs. Libby Harper at the Philadelphia Section Office at 215-382-1589. Next planning meeting date sometime in April 2004.

Want to become active in the Section and don't know how? Have a skill or talent and want to make use of it? Willing to participate or take care of just one project? This is the perfect opportunity to get involved and help yourself to the powerful networking opportunities provided by a local National Meeting!

**STUDENTS AND STUDENT
AFFILIATES—GET PAID FOR YOUR**

EFFORTS. LIGHT DUTIES RUNNING ERRANDS DURING THE MEETING. GOOD HOURLY WAGE. CONTACT ABOVE PEOPLE TO VOLUNTEER. GREAT OPPORTUNITY TO MEET YOUR FUTURE EMPLOYER OR GRADUATE ADVISOR!

Errata

In the Board of Directors list in the February issue of *the Catalyst*:

1. Donald Voet, not Donald C. Voet.
2. Catherine Bentzley is a director instead of Felix Goodson.

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PHILADELPHIA SECTION, ACS 2004 CALENDAR OF EVENTS

March 2	Del. Valley Mass Spectral Topics Discussion Grp - Catherine Fenselau <i>LC/MS and Other Methods for Comparative Proteomics</i>	science.widener.edu/svb/ msdg
March 10	<i>Marketing 101 for Consultants</i> Joel F. Smith and Barry Meyers Chemical Consultants Network	Cynwyd Club Bala Cynwyd, PA chemconsultants.org
March 11	Society of Plastics Engineers Plant Trip - Negri Bossi	Newark, DE phillyspe.plastics.com
March 18	Edgar Fahs Smith Lecture Carlos Bustamante	University of Pennsylvania Philadelphia www.upenn.edu
April 14	A Consulting Success Story David Armbruster Chemical Consultants Network	Cynwyd Club Bala Cynwyd, PA chemconsultants.org
April 15	Undergraduate Student Awards Brandon Greenwood	Ursinus College Collegeville, PA
May 12	Chemical Consultants Network	Cynwyd Club Bala Cynwyd, PA chemconsultants.org
May 20	2nd Merck Undergraduate Teaching Award and 13th Pre-College Teaching Award	To Be Announced
June 17	50 Year Member Awards	Morris Arboretum Philadelphia, PA business-services.upenn. edu/arboretum/ To Be Announced
September 16	Section Monthly Meeting To Be Announced	To Be Announced
October 21	Philadelphia Section Award	To Be Announced
November 18	Ullyot Public Affairs Lecture	Chemical Heritage Foundation chemheritage.org/events/ event-nav2-ullyot.html
December 11	Herb Bassow Memorial Chemical Demonstration Program	West Chester University West Chester

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