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NESACS

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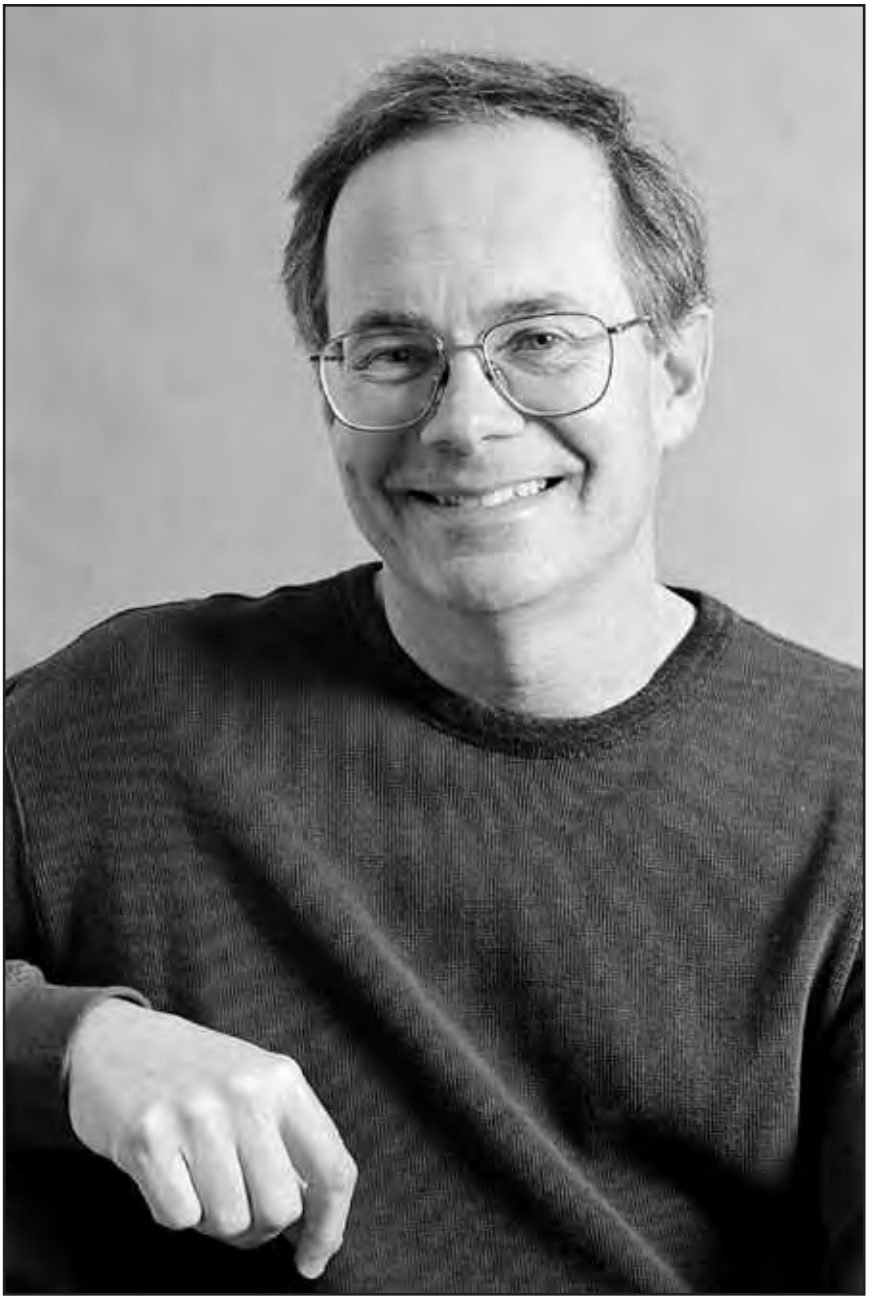

Monthly Meeting

Jointly with BAGIM
Prof. Gregory Petsko on
"Structure-Guided Drug Discovery in the Age of Genomics"

From the 2006 Chair

By Pam Mabrouk

Connections to Chemistry 2005

By Ruth Tanner

Nanotechnology Catalysts

By Martin Freier

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Deadlines: *March Issue: January 13, 2006*
April Issue: February 10, 2006

THE NUCLEUS

The Nucleus is distributed to the members of the Northeastern Section of the American Chemical Society, to the secretaries of the Local Sections, and to editors of all local A.C.S. Section publications. Forms close for advertising on the 1st of the month of the preceding issue. Text must be received by the editor six weeks before the date of issue.

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Statement from the 2006 Chair

By Pam Mabrouk

Happy New Year! I am really excited to have the opportunity to serve you this year as Chair of the Northeastern Section of the ACS (NESACS). NESACS is a large section – over 6000 members, according to National ACS. On average, about eighty members attend monthly section meetings. These meetings usually take place somewhere in the Boston area on the second Thursday of each month between September and May. In addition, the section has a vibrant Younger Chemists Committee (see URL: www.nsycc.org), a very active medicinal chemistry sub-group, and a dynamic Education Committee, which oversee a wide range of additional activities. All of this happens, not through the will or efforts of the current Chair, but through the continued goodwill of our active membership, a very talented, hardworking and vibrant group of individuals representing a wide range of interests and backgrounds in the Boston area chemical community. We are truly blessed as a section in which so many give so freely of their time, skills, and interests in service to the Section in many different capacities! To our Board and the active membership, I thank you for your outstanding past service and I look forward to working with you and learning from you this year!

While I am delighted that we have so many active members, I am eager to explore ways to involve more of you – after all more than 5900 of you are silent members – in the daily life of our section and its activities in ways that will be meaningful to you as you study, work, and live your life.

I have a feeling that some of you are not more active simply because it is not clear to you what, if any, are the benefits of a more active NESACS membership. I firmly believe we have something to offer everyone, whether you are an academic or industrial professional, student chemist, retiree, or are unemployed. May I suggest to you, based on my own past experience, that volunteering with NESACS can provide you with a way to network with other chemists, to find employment, obtain leadership training and/or leadership experience that may enhance your career in chemistry locally and at the national level, a way to give something back through service and/or mentorship, or simply a way to have fun and meet others who also enjoy chemistry.

It may also be that you simply are not currently interested or able to take a more active role due to family, career, or other constraints. Traditionally, we have had one meeting each month in our section in the greater Boston area. I realize that for many of you the monthly meeting time and Boston area location aren't logistically practical. This year, I would like to explore the possibility of holding additional meetings at other times, at other locations, and via other, perhaps less traditional, venues so that we can better serve you, the broader membership. If you would like to see a meeting in your area at a different time from the monthly section meeting, it will be important for you to find a number of other section members, identify a location, and meeting speaker. The section will then do the best it can to promote and support your proposed activity. Another way I believe we can reach out to the broader membership is by embracing new technology. The section has already taken a leadership role in this regard in obtaining an Innovative Section Grant in support of the development of the NESACS website and a supporting discussion board. (See URL: www.nesacs.org/discuss). I am eager to see more use of the electronic medium and welcome your ideas and support in this area.

I have a number of other ideas I would like to explore in terms of expanding the active membership in NESACS-related activities. We have a large number of strong colleges and universities in our Section. I would like to explore ways to expand the number of student affiliate chapters at these institutions and network them with each other. We have a strong cohort of retired chemists in our sec-

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Monthly Meeting

The 866th Meeting of the Northeastern Section of the American Chemical Society
Jointly with the Boston Area Group for Informatics and Modeling (BAGIM)

Thursday – January 26, 2006

Harvard Faculty Club,
20 Quincy St., Cambridge, MA.

5:30 pm Social Hour – Pfizer Reception

6:30 pm Dinner

8:00 pm Evening Meeting, Dr. Pam Mabrouk, Chair, presiding
Prof. Gregory Petsko, Gyula and Katica Tauber Professor of Biochemistry and Chemistry, Brandeis University:
Structure-Guided Drug Discovery in the Age of Genomics

Dinner reservations should be made no later than noon, Thursday, January 19, 2006. Please call or fax Marilou Cashman at 800-872-2054 or e-mail at Mcash0953(at)aol.com. Please specify vegetarian. Reservations not cancelled at least 24 hours in advance must be paid. Members, $28; Non-members, $30; Retirees, $15; Students, $10.

THE PUBLIC IS INVITED

Anyone who needs special services or transportation, please call Marilou Cashman a few days in advance so that suitable arrangements can be made. Free parking in the Broadway St. Garage (3rd level or higher), enter from Cambridge Street via Felton, St.

Abstract

Structure-Guided Drug Discovery in the Age of Genomics

By Gregory A. Petsko and Dagmar Ringe
Rosenstiel Basic Medical Sciences Research Center
Brandeis University, Waltham MA 02454-9110 USA

One of the hardest things that humans have ever tried to do is to make a drug. Reasons for this include a paucity of chemical candidates, incomplete numbers of validated tar gets, and an extremely high failure rate in the later stages of the development process. Genomics is providing potential targets in abundance, but their validation is still very difficult. Combinatorial chemistry is providing a plethora of molecules, but it is uncertain how diverse chemical libraries really need to be and whether making many molecules or a selected subset is the better approach. And no one understands toxicology and pharmacokinetics well enough to solve the bottlenecks inherent in the clinical trials stage. One hope is that structure-based approaches may offer at least a partial solution to all of these problems. In this talk I will review the history and current state of drug discovery, including structure-guided methods. I will discuss ways in which genomics may be combined with combinatorial chemistry and structural biology in a more eficient manner for drug discovery. And I will offer some new methods and heretical ideas for an improved approach to structure-based pharmaceutical research. ◇

Biography

Gregory A. Petsko is currently the Gyula and Katica Tauber Professor of Biochemistry and Chemistry at Brandeis University. He was educated at Princeton University, where he majored in classical literature and chemistry. He then went to Oxford University, where he received his D. Phil. in Molecular Biophysics in 1973. Professor Petsko attended Oxford as a Rhodes Scholar, and did his dissertation work with the late Sir David C. Phillips on the three-dimensional structure of triosephosphate isomerase, an important protein in human metabolism. After a brief sojourn at the Institute de Biologie Physico-Chimique in Paris, where he worked on cryobiochemistry with Prof. Pierre Douzou, he accepted a position as Instructor at Wayne State University School of Medicine in Detroit where he was promoted to Assistant Professor in 1975. In 1979 he moved to M.I.T. as Associate Professor in the Department of Chemistry. He became full Professor of Chemistry at M.I.T. in 1985. In 1990 he moved to Brandeis as the Lucille P. Markey Professor in both the department of Chemistry and the department of Biochemistry. He was appointed to the Tauber chair in 1997, succeeding its first holder, Prof. William Jencks. Professor Petsko is also a member of the Rosenstiel Basic Medical Sciences Research Center at Brandeis, and assumed the position of Director of the Center in January of 1994, succeeding Prof. Hugh Huxley.

Professor Petsko's research interests are the determination of protein three-dimensional structure and the relationship of that structure to biological function. Most of his work has been, and continues to be, done in collaboration with his friend and Brandeis colleague Prof. Dagmar Ringe. The tools he uses include X-ray crystallography, genetic engineering, and molecular dynamics simulations. He is currently focussing on several specific problems: enzymatic catalysis of hydrogen ion transfer, the role of metal ions in bridged bimetallic enzymes and therelationship of protein flexibility to

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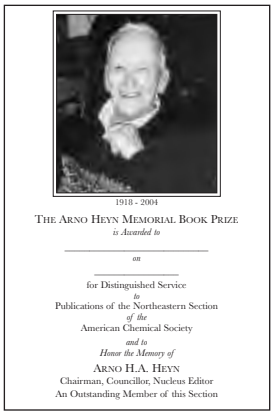
First Arno Heyn Memorial Book Prize Awards to Kounaves and Spitler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Chairman, Councillor, Nucleus Editor
An Outstanding Member of this Section

The Arno Heyn Memorial Committee has established the Arno Heyn Book Prize Award, which will be awarded periodically to NESACS members who have performed distinguished service to publications of this Section. These awards will honor the memory of our distinguished Nucleus editor, Arno Heyn, who nurtured its publication for fifteen years. During that time he improved both the appearance and the content of our newsletter, so that it has been recognized nationally as a model for other sections.

Each recipient of an Arno Heyn Memorial Book Prize is asked to identify a book that he or she will treasure over many years, and the chosen book, identified by a beautifully inscribed memorial book plate, is presented at a meeting of the section members.

The first two awardees were recently honored at the 864th meeting of the Northeastern Section on November 17, 2005. The recipients are Mark Spitler, who succeeded Arno as Editor of *The Nucleus*, and Samuel Kounaves, who served as the NESACS Webmaster for a number of years. Both Mark and Sam have contributed greatly to the success of our publications, and the Arno Heyn Memorial Committee is pleased to honor them. ◇

Grants-in-Aid Awarded to Undergraduates

The Education Committee has awarded Grants-in-Aid of $250 each to four undergraduates at colleges and universities within the Northeastern Section to enable them to attend the ACS National Meeting in Atlanta, Georgia to present a paper at the Undergraduate Research Poster Session in the Division of Chemical Education on Monday, March 27, 2006. Matching funds have been committed by the institutions to support the students' travel. The recipients are also required to participate in the Northeast Student Chemistry Research Conference (NSCRC) in April 2006.

The awardees, their research supervisors, and the titles of the papers are as follows:

Jessica DeMott, Brandeis University, (Prof. Oleg Ozerov) *Hypercoordinate Main Gr oup PNP Pincer Complexes*

Jessica Falco, Stonehill College (Prof. Louis Liotta) *The Synthesis of Vinyl Pyrrolidine and Subsequent Synthesis of Polyhydroxylated Pyrrolidines from Commercially Available Sugars*

Tania Cabrera, Simmons College (Prof. Richard Gurney) *Controlling the Size, Orientation, Density, and Nucleation of Calcium Oxalate Monohydrate Crystals Using Self-Assembled Monolayers*

James Hummel, Stonehill College, (Prof. Louis Liotta) *The Synthesis of Vinyl and Polyhydroxylated Pyrrolidines and Subsequent Purification Using High Performance Liquid Chromatography*

Applications for the travel stipend are accepted from students majoring in chemistry, biochemistry, chemical engineering, or molecular biology majors who are in good standing with at least junior status, and are currently engaged in undergraduate research. ◇

Connections to Chemistry 2005

By Ruth Tanner

photos by Morton Z. Hoffman

The sixth *Connections to Chemistry* program was held at Burlington (MA) High School on Wednesday, October 19th. This program is designed to connect high school chemistry teachers with the numerous education resources that are available from the American Chemical Society. We again had an exceptionally good response to the program and closed the registration at 150 registrants. The 2005 President of the ACS, Dr. William Carroll, was at the opening session to welcome the participants to the program, and to encourage them to utilize the ACS resources and to consider affiliate membership in the Division of Chemical Education via the new Chemistry Teacher Connection (CTC) program.

In addition to the welcome, Dr. Carroll also presented one of the workshops for the program *Why Don't You Just Make All the Plastic Alike?* In addition to this workshop, four other workshops were given: *Toying with Chemistry,* the National Chemistry Week workshop (John Mauch, Chemistry teacher, Belmont High School), *It's a Small, Small World*, a nanotechnology workshop (Arthur Watterson, UMASS Lowell), *Seeing the Unseeable*, a technology workshop for enhancing demonstrations (Walter Rohr, Eastchester High School, NY), and *Power from the Nucleus*, a workshop on nuclear power and radioactive sources, (Gilbert Brown, UMASS Lowell; and David Barr, Seabrook Power Station).

The keynote address *Do We Have a Future, or What? Wild Guesses What Chemical Education Will Be Like in*

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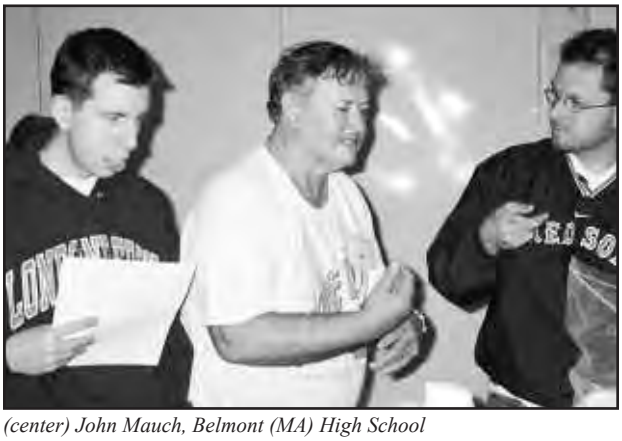
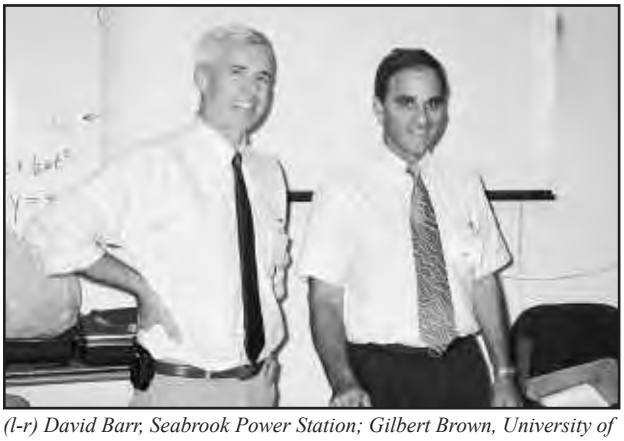
(l-r) Martin Isaks, University of Massachusetts Lowell; Ruth Tanner, University of Massachusetts Lowell; Bill Carroll, ACS President; Amy Tapper, NESACS Chair



(center) John Mauch, Belmont (MA) High School

Bill Carroll, ACS President



(l-r) David Barr, Seabrook Power Station; Gilbert Brown, University of Massachusetts Lowell

Arthur Watterson, University of Massachusetts Lowell

Nanotechnology as an Approach To Reducing Dependence on Platinum Catalysts

by Martin Freier

Pre-Columbian Indians were aware of platinum's value as early as 1557, but it was the extravagant French King Louis XV who recognized it as a metal fit for a king. Not surprisingly, platinum diamond rings have become a favorite symbol of committed love for prospective brides. Ultimately, it is the chemists who gained an appreciation for platinum's unique physical and chemical properties, such as wear and tarnish resistance, corrosion resistance, resistance to chemical attack, excellent high temperature resistance, stable electrical properties, catalytic properties, and others. Those properties have made this element practically indispensable for chemists. In fact, so vital is platinum today that the global market for platinum group metal catalysts is between ten and twelve billion US dollars per year. The market is growing, while the sources of platinum are both unstable and drying up.

As a result, unless we innovate, we may be facing a serious platinum scarcity in the not-too-distant future. The use of platinum needs to be substantially reduced before there is an impact on chemical output and the global economy. That means chemists must develop alternatives. New alloys created by the nanotechnology industry may offer effective solutions.

QuantumSphere, Inc., has just earned the 2005 Technology Innovation of the Year Award for its metallic nano-powder technologies for good reason. The company has been making progress in developing a nanotechnology process for metallic elements and alloys that should reduce America's dependence on platinum and potentially, foreign oil, in the next few years.

To get a better insight into this new technology, I interviewed three executives from QuantumSphere: Kevin Maloney, President, Chief Executive Officer & Co-Founder; R. Douglas Carpenter, Ph.D., Chief Scientific Officer & Co-Founder; and Kimberly M. McGrath, Ph.D., Director of Fuel Cell Research. QuantumSphere is a company that develops, manufactures, and sells metallic nano-powder products and is located in Santa Ana, California.

Maloney is a seasoned investment, managerial, sales and marketing executive. He has been awarded two U.S. patents and earned his B.A. from the University of California, Irvine and an MBA from Pepperdine University. His strength is identifying and developing new business opportunities. He had the good fortune of becoming a fishing and barbecue buddy of Dr. Carpenter, a scientist who is brimming with new technology ideas. Dr. Carpenter's background includes over 30 years of senior technology and business leadership positions servicing military, industry and government research institutions. Armed with an MS in Organic Chemistry from University of the Pacific, received in 1974, Dr. Carpenter decided that a couple of decades in organic chemistry were enough. He decided that he would like to try his hand in material engineering, so he enrolled in a Ph.D. program at the University of California. In 2000 he

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Martin Freier is a consultant specializing in technical management, technical, and training strategies. He holds a BS in Chemistry from Brooklyn College and an MS degree in Engineering and Management Science from Worcester Polytechnic Institute. He is a member of the ACS, Northeastern Section.

Nanotechnology

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earned his Ph.D. in Materials Science and Engineering, with research concentrating on fracture testing and fabrication of functionally graded titanium/titanium-monoboride materials.

At one time in his career Dr. Carpenter had developed nano-scale aluminum that exhibited some unique characteristics that made it suitable for rocket propulsion. He had also been involved in developing a nano-nickel that could be used as a catalyst for hydrogenation. Dr. Carpenter had observed that, unlike typical nickel, the nano-nickel was not poisonous, yet much more effective as a catalyst. Therefore, he saw nano-nickel as, potentially, an excellent catalyst and substitute for platinum.

It was Maloney who became more fully aware of the market potential of such a substitute or supplement for platinum, when he looked at the sales numbers. Therefore, in 2002 he and Dr. Carpenter formed a venture to develop, manufacture, and sell nano-type products. Maloney prepared a business plan and assembled a team to develop a process for a number of nano elements that could be used in various applications. In October of that year, Maloney succeeded in raising the capital required and co-founded Quantum-Sphere with Dr. Carpenter, who became Chief Scientist. Oddly enough, this venture allowed Dr. Carpenter to return to chemistry as an inorganic chemist.

When I asked Dr. Carpenter why he decided to return to his chemical roots, his response was: "I realized that there isn't that much dif ference between chemistry and engineering. At some point, the two disciplines do meet and cross over. What is more important is the nature of the project."

In reality, Carpenter saw this venture as an opportunity and a challenge he couldn't afford to pass up.

He invented a chemical vapor deposition process that allowed him to produce metallic particles at nano scale much more efficiently than the dozen or so existing predominant processes, which included chemical vapor deposition, physical vapor deposition, reactive sputtering, laser pyrolysis, plasma gun spray conversion, mechanical alloying, grinding, and sol gel. He realized that the existing processes were too expensive, requiring sophisticated equipment, intensive labor, and frequent maintenance, and would not scale well. In addition, the size and shape of particles created through these methods could be inconsistent at best.

Dr. Carpenter found a way to adapt gas phase condensation into a continuous, fully automated 24/7 manufacturing process. In this process, the metal is fed into the vacuum chamber and melted on intermetallic composite boats, heated by electricity to a very high temperature. The metal is resistance heated to a temperature beyond the boiling point of the material until a sufficient rate of vaporization is achieved. The vapor is cooled by inert gas and condensed into droplets of liquid metal that further cool to solid nanospheres. Oxygen is then added to the gas stream containing the spheres to develop controlled oxide shells.

By means of computer control of metal flux, chamber pressure, temperature and gas flow, nano-powders having the desired size and particle distribution can easily be made at any production rate desired. In short, the resistance-heated vapor condensation method provides the best quality powder having the lowest level of agglomeration and fewest impurities. Products such as a nano-nickel/cobalt alloy, may be provided as compressed disks or in powder form. The material is fabricated in bulk inside a two-part machine. The nano-particles created in the upper cylinder are collected in the lower one. The nano-powder is then conveyed into metal containers for packaging in inert gas.

Technicians can manipulate the size of the nano-particles by controlling the laminar flow region around the chaotic metal vapor zone. This bottom-up process allows the technician to grow the nano-particles to the desired diameters prior to gas quenching. The result is a uniform distribution of controlled particle sizes. By multiplying the number of controlled laminar quench zones around the heating ele-

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Note from the Editor:

With the publication of the January issue it will be one year that I have been editor of the Nucleus. There has been a learning curve, but I hope the quality of the Nucleus established by previous editors has been maintained. I have very much enjoyed working with the Editorial team, the Board of Publications and the NESACS board in this endeavor. I view the Nucleus as a critical communication tool of the Northeastern Section and a vital part of its mission.

I want to thank departed Associate Editor, Ao Zhang, for his efforts in laying out issues of the *Nucleus* under tight time lines. I also want to welcome Sheila Rodman as a new Associate Editor. Sheila not only helps with layout and copy editing; she has also volunteered to replace Don Rickter as the calendar editor. All future calendar entries should be sent to Sheila at serodman(at)hotmail.com. I want to thank Don for all his service to the Nucleus and I certainly hope he remains involved.

My own contact information has also changed. Polaroid's Instant Digital Printing Division has been spun-off as a separate company, Zink Imaging Incorporated. My contact information is substantially the same and is listed on page 3. My email does formally change to Michael.Filosa(at)zink.com. I look forward to any comments or suggestions concerning the Nucleus. I am also particularly fond of publishing reports and pictures from members covering the activities within the Northeastern Section and appreciate any and all submissions on NESACS activities.

MPF ◇

Nanotechnology

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ments within the vacuum chamber, the process can be scaled to meet the output demand. As a result, the process can produce spheres of metal that are incredibly small. For certain applications, QuantumSphere has already produced particles that are a mere two nanometers across and consist of just a few hundred atoms.

By means of QuantumSphere's unique process, the nano-particles produced are small enough to allow virtually every atom in the particle to react, thus making them good catalyst candidates. Nano-nickel and other nano-particles made by the company must be specially treated and stored in airtight containers to prevent them from oxidizing.

What about personnel safety in the manufacturing process?

"The whole process is self-contained in a closed vacuum system, providing no access to the technician", said Dr. Carpenter. "However, during maintenance, the technicians are directed to wear masks."

How can we account for the tremendous catalytic power of nano-metal as compared to the traditional metal?

Dr. Carpenter said, "One way to increase the catalytic power of a material is to increase the overall surface area exposed to the reactants. That means the greatest catalytic power can be obtained by making powdered catalysts of exceedingly small diameter."

These nickel nano-particles have much greater catalytic power than ordinary plate nickel. QuantumSphere is investigating a wide variety of nanometals and alloys to reduce or replace platinum as a catalyst in proton exchange membrane fuel cells, such as the direct methanol fuel cell and the hydrogen fuel cell. This kind of shift to nanometals and alloys could result in a reduction in the cost of fuel cell catalysts by more than 80 percent, based on current prices. Replacing platinum with non-precious nanometal particles would also have an impact on the cost of internal combustion engines. Platinum is found in lean-burn diesel engine catalytic materials and in catalytic emissions controls; these are potential applications for nickel nano-particles.

According to Dr. Carpenter, by developing nano-nickel, QuantumSphere plans to reduce significantly the amount of platinum and related metals required in conventional catalytic processes. In fact, he has been able to use nano-nickel very successfully in hydrogenation without the typical concern about the poisonous nature of nickel because of the unique characteristics of nano-nickel.

When I asked Maloney what other products are now being considered for full production, he named nano-copper, nano-cobalt, and nano-iron. Nano-copper and nano-iron are already being marketed by the company and bringing in some income. Nano-copper is widely used in inks, and nano-iron is used in polymers and magnetics.

Dr. McGrath, who joined the two founders in the company as director of the fuel cell research ef fort, has assumed responsibility for the major effort to develop nano materials for fuel cell and battery applications, with an emphasis on cells for small, portable devices. She has over five years experience in the design of catalysts, membranes, and components for direct oxidation fuel cells. In addition, she has extensive knowledge of fuel cell performance evaluation and electrochemical characterization of anode and cathode catalysts.

Dr. McGrath received a B.S. in Chemistry from the University of California, Santa Cruz, and a Ph.D. in Chemistry from the University of Southern California, where she studied composite proton exchange membranes and new binary cathode catalysts with increased activity and methanol tolerance for direct methanol fuel cells.

Dr. McGrath indicated that she hopes to use nano-cobalt as a potential

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S U R | R I S E

our editor by calling and saying you appreciate the quality and content of our newsletter. Our editor works hard to maintain a publication of interest to our membership. Oh, and by the way you could also give credit to our advertisers who financially support us.

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replacement or supplement for platinum in the near future.

"Are you planning to use nano-cobalt alone or in the form of an alloy?" I asked McGrath.

She replied, "We plan to use cobalt in the form of a nano nickel-cobalt alloy. The nano nickel-cobalt alloy exhibits a mixture of the properties of the individual elements, which seems to increase its effectiveness as a catalyst. These materials are known to enhance the kinetics of oxygen reduction when combined with platinum, and we are currently investigating if they can accomplish this alone at the nanoscale level. In addition, they may provide methanol tolerance to the cathode, which can improve performance of the direct methanol fuel cell."

"In fact, we are much further along on this project than a lot of our customers realize," she continued. "Quite recently, DoppStein Enterprises conducted a validation that provided independent scientific data to validate the effectiveness of QuantumSphere's oxygen reduction catalysis on cathode electrodes. The data confirmed that the nano nickel-cobalt alloy material compared favorably with platinum in a zinc/air battery, especially considering platinum is five times more expensive than the nano nickel-cobalt alloy."

When I spoke to Dr. Michael Pien, a Senior Research Engineer/Chemical Engineer with ElectroChem, Inc., since 1986 a leading-edge research and development company of fuel cells based in Woburn, Massachusetts, he was very pleased that a nano nickel-cobalt alloy might soon be available as a commercial catalyst.

"If the nano nickel-cobalt alloy can supplement the platinum catalyst, does that mean that fuel cell technology will be completely revolutionized?" I asked.

"Definitely. Of course, I am talking about fuel cells for small electronic devices, such as laptops and cell phones, where once we add the cost of platinum, the fuel cell costs are just too prohibitive. This is where there could be wider application in direct methanol type of fuel cells because it can make use of the nano nickel-cobalt alloy's more reasonable cost. I am not so sure that this would be equally effective in the large type of hydrogen fuel cells."

What Pien was referring to was that, once the engineering is done, fuel cells in laptops could be filled in a matter of minutes from a methanol cartridge and last for eight hours or more, as compared with a conventional battery, which has to be recharged every two to three hours of use. The recharge process of a conventional laptop battery can run into hours.

When I asked Maloney about the progress his company was making toward his goal to replace or supplement platinum, he was very hopeful and pleased.

"At QuantumSphere we have a highly motivated technical team in place. This company has barely started and we are already selling some of our products," Maloney said. "Our company is working on ramping up the process developed (now in the pilot stage) to full production, possibly as early as the end of 2006. We also would like to add more nano products and continue to file IP on end-use applications. Note that currently there are 20 elements on the periodic table available for conversion to nanomaterials. And that also means we will need to expand our facilities and add more chemists and scientists with various skill sets."

In summary, there is a great future for nanotechnology in catalysis. If we can maintain the pace of replacing platinum, in the near future it will no longer be the indispensable catalyst. ◇

National Chemistry Week

By Christine Jaworek-Lopes

The National Chemistry Week Kick-Off event was held at Wellesley College on October 16, 2005. More than 40 volunteers from the Brauner Committee, Bridgewater State College, Clark University, Emmanuel College, Simmons College, Suffolk University, Tufts University and Wellesley College ensured the day ran smoothly for the 325+ individuals that attended the day-long event. Both Phyllis A. Brauner Memorial Lectures were filled to capacity. Visitors throughout the day enjoyed making slime, super balls, nature prints, bunny copters, and marker butterflies as well as learned how to elicit a reversible color change in Barbie's hair.

The increased attendance at this year's kick-off event could be attributed to a concerted effort by the NCW and Brauner committees to increase publicity. Information was posted on the NEACT, MAST, WGBH Calendar and NESACS websites. Notices were sent to Parents & Kids, Boston Parents Paper, several CNC weeklies, and the Boston Globe. A WBUR radio ad was purchased as well.

The Northeastern Section is participating in the unifying theme of a toy drive. Hundreds of toys were collected at the kick-off event and the Suffolk University Student Affiliates Chapter will coordinate sending of the toys to Louisiana to assist with the Hurricane Katrina relief efforts. The section is also participating in the NCW K-12 poster competition. Deadline for poster submission was October 30th. Members of the NCW committee will serve as judges.

Preliminary discussions regarding having a second hands-on activity day in addition to the kick-off event for NCW 2006 have begun. ◇

2006 Chair

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tion who have had amazing careers and who could serve as a powerful teaching and mentoring resource for younger section members – student affiliates, Younger Chemists, and mid-career scientists – through the creation of a senior chemists circle. I would also love to see the section develop a vibrant women's chemist committee that promotes and advances the careers in our section. In this regard I would like to explore the level of interest for this activity in our section by sponsoring a series of breakfasts for women in our section this spring.

If you can commit to coming into Boston once a month to attend board meetings and would like to take a more active role in the Section, then speak to me about how you might become a member of a committee, with an eye toward Board membership. If you can't attend regularly, there are a number of committees that meet infrequently or that accomplish their committee work via mail and/or e-mail. We will be posting a listing of section committees, their function, and current membership, including contact information for the chair of each committee, on the NESACS website so that you can identify opportunities to plug in.

If you are interested in any of the above ideas, remember that I can do little without you, as ACS is a volunteer organization. This is your ACS! If you think there is something that our section should be doing or something that we shouldn't do, I would really love to hear about it. If you would like to become (more) active in the life of the Section and aren't sure where to plug in, again, I would be happy to help. Please feel free to e-mail me at p.mabrouk@neu.edu. I wish you the best this year and I look forward to meeting you at an upcoming NESACS event.

Respectfully,

Patricia Ann (Pam J) Mabrouk

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Biography

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protein function.

In the Fall of 1995, his research activities expanded when he did a year's sabbatical work in yeast genetics in the laboratory of Professor Ira Herskowitz at UCSF. As a result, Prof. Petsko now has a budding yeast genetics program (pun intended), which is concerned with the biology of stationary phase. For the past few years he has worked on the biochemistry and structural biology of neurodegenerative diseases, particularly Parkinson's Disease. In 2005 he co-founded the Structural Neurology Laboratory in the Center for Neurologic Diseases at Harvard Medical School, where he is Adjunct Professor of Neurology.

Professor Petsko's work has received numerous awards, including an Alfred P. Sloan Foundation Fellowship, a U.S. Public Health Service Research Career Development Award, the Siddhu Award of the American Crystallographic Association, an Alexander von Humboldt Foundation Senior Scientist Award, and the Pfizer Award in Enzymology from the American Chemical Society. In 1991 he shared the Max Planck Prize with Professor Roger Goody of Heidelberg for their studies of proteins involved in causing cancer. He received a Guggenheim Fellowship in 1995 and was awarded the Lynen Medal in 2001. In 1995 he was elected to the National Academy of Sciences, and in 2001 he was elected to the Institute of Medicine. He was elected to the American Academy of Arts and Sciences in 2002. In 2004 he and Prof. Ringe shared the McKnight Award in Neuroscience.

In addition to his academic pursuits, Professor Petsko is one of the four founding scientists of ArQule, Inc., of Woburn, Massachusetts, one of the world's leading companies in combinatorial chemistry.

Professor Petsko describes himself as overweight, out-of-shape, and frequently grouchy, conclusions largely unsupported by peer review. While

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Historical Notes

Oscar Levine

Oscar Levine died December 20, 2004 at 81 years of age. He had been a 50+ year member of the American Chemical Society.

He graduated from City College of New York in 1943, enlisted and fought in Germany in WWII, then earned a master's degree in 1948 at Columbia. He worked at the National Advisory Committee for Aeronautics in Cleveland, then the Naval Research Laboratory while earning his doctorate from Georgetown in 1958.

He accepted a job with Gillette Safety Razor Company and spent the next 27 years in its Research Division in South Boston, developing coatings for razor blades.

Retirement was short, as he co-founded and co-owned a company, RO-59, Inc., in Stoughton. There he developed bonded lubricant coatings to decrease friction on metals, plastics and ceramics. Attuned to the needs of the future, Dr. Levine tutored students at a Quincy elementary school in math and science.

He was described by Emma Stickgold in the Boston Globe (12/30/04) as being "chipper and witty, with a propensity for humming show tunes", and by his wife, Betty (Palais) as a "calm, warm person who always looked for humor in life." He is survived by his wife, a son and a daughter.

Joseph P. Martin

Joseph P. Martin died on October 15, 2004 at the age of 87. He was born in Waltham , MA the son of the late Joseph and Albina (Perodeau) Martin. He graduated from St. Mary's High School and earned a chemistry degree at Boston College in 1939.

He was employed as a research chemist at the Waltham Watch Company, Massachusetts Institute of Technology and the National Research Company, retiring from Factory Mutual Research in Norwood, MA in 1983. He had been a member of the American Chemical Society for 61 years.

He was the husband of Elizabeth M. (Gibson) Martin for 56 years and the father of a son and three daughters and grandfather of six.

Arthur R. Olson

Arthur R. Olson died February 19, 2005 in Norwood, MA. He was 86. He was born in Lawrence, MA., graduated from Johnson High School in North Andover in 1935 and from Massachusetts Institute of Technology in Cambridge in 1939 with a degree in chemistry,

He was an Army veteran of World War II, rising to the rank of captain and serving in federal laboratories.

He was a manager of the Research and Development Division of the Kendall Mill Co. in Walpole for more than 30 years, retiring in 1982.

He was a member of the American Chemical Society and the MIT Alumni Association.

Mr. Olson is survived by his wife, Caroline E. (Brownlow), two daughters, two sons, five grandchildren; and five great-grandchildren.

MSS

Historical Notes is an ongoing series of short biographies of recently deceased chemists and chemical engineers whose deaths have been reported to us during the past year. We thank members of the Northeastern Section who have sent us obituary notices appearing in community newspapers we do not see. ◇

Biography

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teaching, research, and communicating the importance of basic scientific research to general audiences take up increasing amounts of his time as he grows chronologically older, Professor Petsko continues to enjoy good writing; movies; bushwalking in Africa, Australia, New Hampshire and the American Southwest; 12-year old single malt scotch, and high-performance cars. (He usually drives, however, a Jeep Cherokee.) Professor Petsko states that his greatest achievement is, and always will be, the young scientists he has helped to train.. ◇

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Connections to Chemistry 2005

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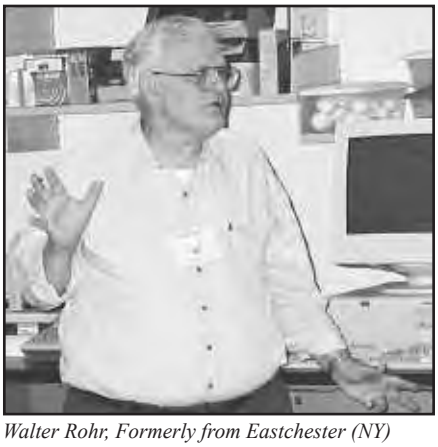

Walter Rohr, Formerly from Eastchester (NY) High School

2015 was also given by Dr. Carroll. Following his address, door prizes were given which included subscriptions to *J Chem Educ*, affiliate memberships in CHED, educational materials, ACS software, and ACS logo merchandise as well as certificates for professional development credits and a year's subscription to ChemMatters.

An abstract has been submitted to the session on *Professional Development of High School Chemistry Teachers* to be presented at the ACS National Meeting in Atlanta, March 2006. The title of the presentation is: *Six Years of Connections to Chemistry for High School Chemistry Teachers*. ◇

Calendar

Check the NESACS Homepage for late additions: http://www.NESACS.org

Note also the Chemistry Department web pages for travel directions and updates.
These include:
http://chemserv.bc.edu/seminar.html
http://www.bu.edu/chemistry/events/
http://www.chem.brandeis.edu/colloquium.shtml
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http://www.unh.edu/chemistry/seminars.html

Jan 18

Prof. Lamartine Meda (Kennesaw State Univ.. Atlanta, GA)
Distinguished Alumni Award Speaker,
"Preparation of a Stable Thin-Film Electrolyte for Application in Rechargeable Lithium-ion Batteries"
Northeastern Univ., 129 Hurtig Hall,
12 noon

Jan 23

Prof. Peter Beak (Univ. of Illinois)
"Lessons Learned from Physical Organic Carbanion Chemistry"
Brandeis Univ., Edison Lecks Bldg.,
Gerstenzang 122,
3:45 pm

Jan 26

Prof. Mark Ratner (Northwestern Univ.)
"Molecular Conductance Junctions: Models and Mechanisms"
Boston College, Merkert 130,
4:00 pm

Jan 30

Prof. Jonathan A. Ellman (Univ. Cal. Berkeley)
Brandeis Univ., Edison Lecks Bldg.,
Gerstenzang 122,
3:45 pm

Jan 31

Prof. John Frost (Michigan State Univ.)
"Discovery, Manipulation, and Creation of Biosynthetic Pathways"
Chemical Biology Seminar
Boston College, Merkert 130,
4:00 pm

NOTE-
Notices for the Nucleus Calendar FOR MARCH 2006 AND THE FOLLOWING MONTHS should be sent to:

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