

# THE NUCLEUS

January 1994

Of the Northeastern Section of the American Chemical Society

Vol. LXXII, No. 5

## Monthly Meeting

*Noel Plouffe speaks on the Biochemistry of Fruit Wines*

## From the New Chairman

*James A. Kaufman greets the Section*

## Consultant Chemists' Group

*A meeting on Statistical Design in Biotechnology*

## Historical Notes

*D.R. Herschbach's Memorial Address for E. Bright Wilson*



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**Cover:** James A. Kaufman, 1994 NESACS Chairman

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## THE NUCLEUS

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# From the New Chairman

by James A. Kaufman

When the nominating committee called about two years ago and asked (for the third time) if I would consider being a candidate for Chairman-Elect of the Section, I accepted. I didn't really think I'd be successful having lost twice before and having been less active for the past few years.

Well ... in June there was good news and bad news. The good news was I was elected; the bad news was I was elected! Now I had to get to work as Program Chairman and invite speakers for 1993 meetings.

One of the best things about becoming active again in the Section has been having an opportunity to see how many hard working folks make the Northeastern Section go. Membership, Hospitality, Program, Public Relations, Student Affiliates, Public Service, Continuing Education, Professional Relations, etc. There's a long list on page 6. It's fun, challenging, and very rewarding to be involved. And, I want you to join us.

If you've never been to a dinner meeting or have not attended one in the last few years, "come on down". Try at least one in 1994. Chair-Elect Val Wilcox has invited some excellent speakers. And, I'd like you to meet some of the great people who are part of this professional organization.

Furthermore, I invite you to attend

the meetings of the Board. This year I'll be proposing that we create a number of at-large seats to expand Board membership. We need to encourage more members to play a role in the Section's governance.

I invite you to join one of the Section's committees. Pick one that looks interesting and get involved. Or, invent your own committee. Call me at 617-237-1335 (or 800-484-1005 code 4857). Let's discuss your interests and see how the Section can help. It will be like Burger King ... 'have it your way'. What can the Section do that would most help your career? Let's do it!

I'd like you to call me and tell me what the Section can do that may be of interest to you; to serve you better; to assist you in your career; to enhance your professional growth; to improve your job security; to increase your income and earning potential.

A significant part of my professional development comes from involvement in ACS local and national health and safety committees. I learn a lot. I meet an enormous number of people with similar interests. I receive numerous opportunities to work on activities I feel are important to me personally and I grow through those activities.

I hope you'll check out our Local Section at least once in 1994. There are

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an unlimited number of opportunities waiting to enrich your career. I promise you that you won't regret it.

In November, our Education Committee organized a fantastic Careers Day for undergraduate chemistry students. It was hosted by Boston University. Nearly 150 students attended, along with company and graduate school recruiters. The Safety Committee gave each attendee a copy of the ACS publication *Safety in Academic Chemistry Laboratories*. Three quarters of the students had never seen it before. That's not good. So, I'm going to do more in 1994 to help get health and safety information to the undergraduates in our Section.

At the same time, I'm concerned about your health and safety. If you have concerns about health and safety issues in your workplace, need information or are looking for resources, please call. I'd like to help you find the information and solutions.

As 1994 Chairman of the Northeastern Section it's my privilege to extend this greeting at the start of the new year. On behalf of the officers and other members of the Section's Board of Directors, I want to wish all the membership a safe, healthy, successful and slightly more involved 1994. ◇

# Monthly Meeting

The 758th Meeting of the Northeastern Section of the American Chemical Society

Thursday, January 13, 1994

Curry College, Milton, MA, President's Dining Room, Student Center

5:30 Social Hour

6:30 Dinner

8:00 Evening Meeting, Dr. James Kaufman presiding  
Noel Plouffe, Laboratory Testing Services: *The Biochemistry of Fruit Wines*

Refreshments will be served after the program.

Dinner reservations should be made no later than January 7, 1994. Please call Marilou Cashman at (800) 872-2054. Reservations not cancelled at least 24 hours in advance must be paid. Members, \$21.00; Non-members, \$23.00; Retirees, \$12.50; Students, \$8.00. 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: See adjacent page.

Next meeting: Thursday, February 10, 1994 at Regis College, President's Dining Room. Social hour and dinner 5:30, evening meeting 8:00, Dr. Geoffrey Davies (Northeastern University) will speak on "Highly Selective Zeolite-supported Catalysts Made from Transmetalation Products".

## Biography

Noel L. Plouffe, former "singing" chimney sweep, began his winemaking career as an orchard hand with Nashoba Valley Winery in 1985. Attracted to the winemaker's art, he soon became an Assistant Winemaker.

In 1989, the year he became Nashoba Valley's Winemaker, he developed the winery's acclaimed Blueberry Nouveau. Plouffe has been responsible for the creation of many of the company's award-winning selections, including: Cyser (Honey-Apple wine), which won a silver medal at the 1991 New England Wine Competition and Plum, which received the 1990 gold and 1991 silver medals from the Indiana State Fair.

Plouffe produces wines, ranging from dry to sweet, designed to please a wide range of palates. Summer stone fruits lead off the schedule in August and progress to apples and pears in the fall. He is constantly experimenting with new fruits and new winemaking techniques. Quality fruit winemaking is still a pioneer field, and Plouffe is considered one of the leading "pioneers".

## Abstract

There are many similarities between grape wines and fruit wines. Both wines go through the same biochemical changes as they age; both wines can suffer from the same microbial spoilage. Flavor constituents, tannins, pigments and many other chemical compounds are shared by both wines.

In spite of all these similarities there are many profound biochemical differences in acids, pigments, sugars and also processing needs in fruits and fruit wines that make their production uniquely difficult. ◇

Plouffe is a graduate of Worcester State College and has studied music at the Hartford Conservatory. He regularly entertains at Nashoba Valley's Winter Wassail. During the rest of the year, visitors who have taken the winery tour may be lucky enough to have caught a tune or two as he worked.

In December of 1993 Noel Plouffe left Nashoba Valley Winery to become a wine consultant specializing in fruit wine production, under the name Laboratory Testing Services. ◇

# Board of Directors

Condensed Minutes, Meeting of October 14, 1993

Dr. Kaufman chaired the meeting.

## Officer's Reports:

**Chairman's Report:** Dr. Kaufman asked whether the Section should provide free copies of the booklet *Safety in Undergraduate Laboratories* to each participant in the Annual Undergraduate Day on November 6. To be referred to Dr. Hoffman, chairman of the Chemical Education Committee.

**Treasurer's Report:** It was VOTED and PASSED to accept the Treasurer's itemization for September. It was VOTED to authorize the Treasurer to buy, sell or exchange shares of Fidelity Mutual Funds on behalf of the Section.

**Archivist:** Dr. Simon is discussing possible placement of the archives at an industrial site.

## Committee Reports:

**Education:** Dr. Hoffman spoke about the activities planned for the National Chemistry Week: Undergraduate Day, ACS satellite link programs at the U. of Massachusetts, both at the Dartmouth and Lowell campus. He mentioned that for the second successive year the Boston University Student Affiliate Chapter has been cited as "Outstanding".

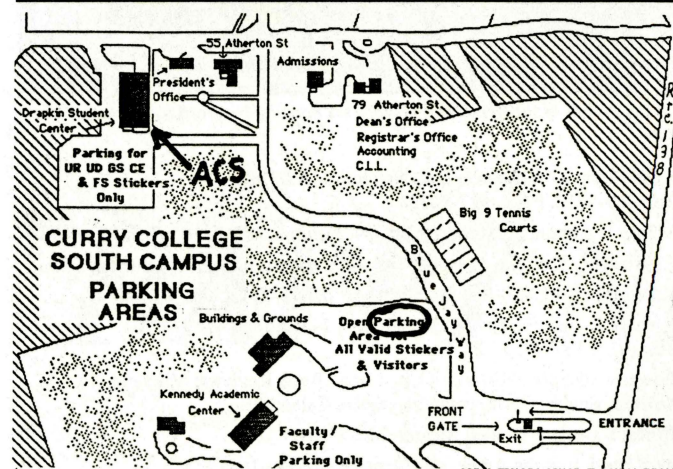
## Other Committees:

**Continuing Education:** Dr. Viola reported that to this date 17 paying and 2 unemployed (non-paying) members had registered for the Short Course for October 28-9.

**National Chemistry Week:** Bert Paul spoke about the MIT program which will include inner city students. There will be an ACS film on the contributions of Afro-Americans to the life sciences, chemistry demonstrations and a tour of department at MIT.

**Public Service:** Dr. Brauner announced that for the Holiday Lectures the Section is to provide the speakers,

continued on page 6



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## NESACS Committee Chairmen for 1994

**Archivist:** Myron Simon  
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**Bd. of Publications:** Catherine Costello, Joseph Lima, Michael Strem  
**Budget:** \*James Piper  
**Chemistry Education:** Morton Hoffman  
**Constitution and Bylaws:** Esther Hopkins  
**Consultants' Group:** Debra Saez  
**Continuing Education:** Alfred Viola  
**Education Task Force:** Charles Kolb  
**\*Esselen Award:** Truman Light  
**Henry Hill Award:** Leon Rubin  
**Hospitality:** David Howell  
**Membership:** Iclal Hartman  
**National Chemistry Week:** Albertha Paul  
**NERM Meeting:**  
**\*Nominating Committee:** \*Dorothy Phillips  
**\*Norris Award:** Marco Scheer  
**Professional Relations:** Arlene Light, Leon Rubin  
**Program:** \*Valery Wilcox  
**Project SEED:** David Hughes  
**Public Relations:** Linda Charpentier, Pat Samuels  
**\*Richards Committee:** Frederick Greene  
**Safety:** Frank Wagner  
**Senior Chemists' Group:** Ernest Becker

**Speakers Bureau:** Michael Dube, Mary Ann Solstad  
**Student Affiliates:** Marietta Schwartz  
**Summer Program:** ◇

\* Elected committee or *ex officio* chairman

## Board of Directors

*continued from page 5*

the Museum will take care of the arrangements.

**Old Business:** Dr. Tanner was requested to bring the Phoenix Award citation to the next meeting so Board members can see it. The Section received this award at the Chicago meeting for its Student Affiliate activities.

**New Business:** Dr. Simon commented favorably on Dr. Becker's memorandum on a greater amount of information in the *NUCLEUS* about Council activities and the activity of the Section's representatives. The Board approved the idea and recommended further discussion with Dr. Becker. ◇

## Consulting Chemists' Meeting

Thursday, January 20, 1994  
Sheraton Tara Lexington Inn  
Lexington, MA  
727 Marrett Rd., Exit 30B, Rte. 128,  
Rte. 2A West 1/4 mile to Hotel  
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## Norris Award Address

Arthur C. Breyer speaks on  
"Chemistry and Teaching –  
Twin Arts"

On November 11, 1994 a large audience honored Arthur C. Breyer of Beaver College, PA, the recipient of the award.

Dr. Breyer demonstrated and spoke about his approach to the teaching of chemistry and the teaching of teachers. He showed how simple demonstration experiments can be used as the basis of extending learning. For example, blowing HCl vapors through a bottle containing ammonia, generating a dense fog of NH<sub>4</sub>Cl leads to a discussion of acids and bases, crystal structure of ammonium chloride, heats of reaction, mechanism, and stoichiometry of the reaction.

Similarly, he demonstrated "golden rod" mimeograph paper, bright red when exposed to ammonia vapor, fades again to yellow as the NH<sub>3</sub> evaporates, diffusion of dyes in water when there is no convection, flame colors due to calcium, barium, strontium, sodium, potassium and copper.

He showed that simple experiments can introduce any topic in chemistry, thus giving somewhat abstruse concepts a basis which can be seen and experienced. Students therefore learn theory as something related to what has been seen, rather than as a collection of formulas. ◇

## Historical Notes

Dudley R. Herschbach honors the memory of  
Edgar Bright Wilson

The following is the text of the remarks Dr. Herschbach delivered on the occasion of the memorial service for the late E.B. Wilson at Memorial Church, Harvard on October 16, 1992. A short biography of EBW was published in this column in January, 1993 (*The NUCLEUS*, 71, #6, p.11).

### EBW, Beloved Mentor

To those privileged to know him, Bright Wilson was a joy, a wonder. As a scientist, teacher, mentor, colleague, and citizen, he was greatly admired; as a man, greatly beloved. He exemplified in his life and work the best qualities humanity can attain.

Years ago, when I accompanied Bright to a memorial service for another colleague, he remarked afterwards that he valued most the anecdotes. He said this was because the stories, like snapshots in a family album, not only revealed the person more vividly, but also often gave thought-provoking historical perspective.

So I want to tell a few stories about Bright, some favorites of his, some of others who loved him. The first has to do with how he came to choose science as a career. He was born in Gallatin, Tennessee, but grew up in Yonkers, New York. His mother came from a family with deep Southern roots. His father was a lawyer, and served in the State Legislature before

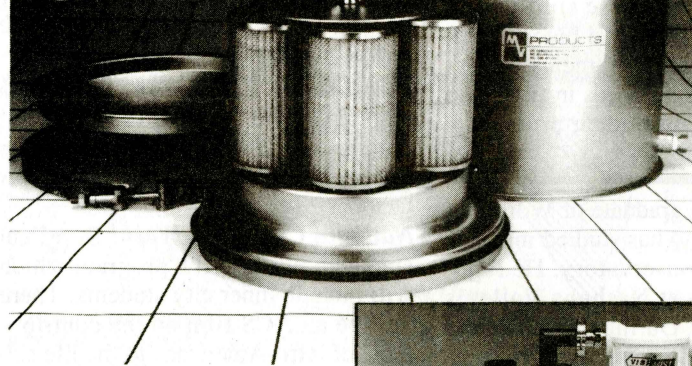
Bright arrived. As a youngster, Bright undertook chemical experiments at home, built radio receivers, and obtained an amateur radio license in his early teens. Such interests were unprecedented in his family. He told of his excitement when, as a high school boy of 15, he discovered in the town library a new book, the now classic text on thermodynamics by Lewis and Randall, published in 1923. This book first revealed to Bright the grand scope and logical beauty of science, which he pursued ardently thereafter. To appreciate how remarkable this episode is, you need to know that the Lewis and Randall book and its clones or descendants have over the intervening seven decades been used strictly as a graduate-level text. Today it seems amazing that a high school lad could be captivated by such a book—and that a town library would acquire it. That is as instructive as the fact that Bach wrote his cantatas (aside from the solo parts) to be sung, unrehearsed, by the ordinary folk of the congregation.

After earning B.S. and M.S. degrees in Chemistry at Princeton, and publishing several experimental papers, Bright headed west in 1931 to Cal Tech to work with the brilliant young theorist, Linus Pauling. The trip was made with a couple of friends in a sturdy touring car. It had to be sturdy for, as Bright liked to emphasize, in those days the long road across the southwestern desert consisted of logs laid crosswise in the sand. But after his bumpy journey on that corduroy road, Bright soared at Cal Tech. He completed his Ph.D. in just 2 years, while also teaching freshman chemistry sections and assisting Pauling with his quantum mechanics course.

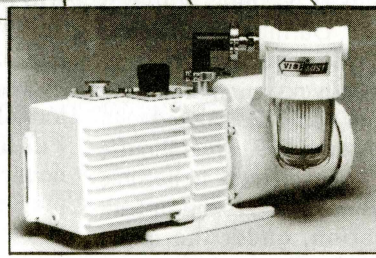
Bright did encounter a significant bump, however. His thesis project was a quantum theoretical calculation for the lithium atom. The Cal Tech Chemistry Department had a rule, not rescinded until some years later, that

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required every Ph.D. thesis to include experimental work. This produced a story that I heard several times from Bright and once from Pauling, with an instructive difference in emphasis. To honor the rule, Bright measured at Pauling's suggestion the magnetic susceptibilities of several nitroso compounds. His results proved to be in drastic disagreement with Pauling's predictions, an aspect not mentioned in Pauling's rendition but cheerfully stressed by Bright as a cautionary tale for his graduate students.

The Cal Tech rule reflected the strong cultural bias most chemists then had against mathematical theory. For instance, the *Journal of Physical Chemistry* refused to accept purely theoretical papers until the late 1940's; *Chemical Abstracts* often dismissed such papers with a four-letter entry: "math." Undaunted in facing such a cultural desert, with many professorial heads buried in the sand, Bright set out to build his own intellectual highway to the beckoning frontier of chemical physics.

Bright arrived at Harvard in 1934 as one of the first Junior Fellows elected to the newly endowed Society of Fellows. He became an Assistant Professor in 1936 and was promoted to tenure only 3 years later, at the early age of 30. Then as later he was remarkably productive in research. He did pioneering work with symmetry analysis and developed definitive theoretical treatments of molecular vibrational and rotational dynamics. With his graduate students, he devised key experimental methods in molecular spectroscopy.

Yet Bright was also fully devoted to teaching in all its aspects. A characteristic instance was told to me by Don Hornig. As a sophomore in 1937, he took Bright's physical chemistry course. In those days, the course dealt largely with thermodynamics, but Don had discovered the recently published text, *Introduction to Quantum Mechanics*, by Pauling and Wilson. This superb book, the most accessible ever written on the subject, had evolved from notes taken by Bright when he served as Linus' assistant.

When Don asked Bright for help with one of the problems in the book, Bright volunteered to meet with him on Saturday morning, and kept up this informal tutorial regime for much of the academic year. Bright was then only in his second year on the faculty, untenured, teaching two courses, and intensely involved in research. Thus this episode says a lot about his attitude to teaching, and also about his keen judgement, for Don was destined to become one of the most distinguished of Bright's students.

Bright likewise was exceptionally engaged with his faculty colleagues. Above all, he and George Kistiakowsky enjoyed many adventures together over a span of nearly fifty years. As well as scientific collaborations at Harvard, this teamwork included four years of work on explosives during World War II. Bright assumed responsibility for developing techniques for measuring the performance of explosives underwater, particularly depth charges, work hosted by the Woods Hole Oceanographic Institution. One of Kisty's favorite stories about Bright pertains to this work; it appears in a biographical article in the 1979 Wilson Festschrift issue of the *Journal of Physical Chemistry*. Kisty relates that "Even Bright's gentleness seemed to depart at times... One day at sea Bright saw a novice test crew member about to connect an ohmmeter in a way that would have detonated—very prematurely—the 500-lb. depth charge hanging overboard. With moments at his disposal before the lethal bang, Bright in one smooth motion reached for an oar and laid flat that innocent beginner." Kisty also on occasion would tease Bright about the wicked pleasure that Bright used to take in escorting certain visiting dignitaries (including Kisty) "in the foulest weather, to demonstrate this or that new twist in test technology while his cold and drenched audience wallowed in choppy seas."

My own first meeting with Bright came in 1955, when I arrived as a graduate student. Like many other budding scientists, I'd been hooked on quantum mechanics by the Pauling and Wilson

book. Already I was intrigued with molecular dynamics and hoped to join Bright's research group. After my first conversation with him, I wrote in my diary: "EB's a great guy! Really loves science, not just publishing papers." We graduate students of course never called him Bright but rather EB, which seemed more respectful, or sometimes EBW when slightly more respect was called for. Luckily, that Fall I had the opportunity to take a course EB gave only once. It was called *Molecular Vibrations* and was based on his just published book with Decius and Cross, which remains today the definitive treatment.

It was also an exciting time in Bright's research group, which was developing an elegant new way to determine barriers to internal rotation in molecules from microwave spectra. This exploited the tunnel effect, one of the most striking of quantum mechanical phenomena. I learned invaluable lessons from working with EB and his extremely able group. EB's wholehearted commitment, high standards, and passion for lucidity and integrity had great impact on his students. He also gave strong emphasis to mapping out the big questions and to coupling theoretical studies with experiments. His third book, *Introduction to Scientific Research*, beautifully presents EB's precepts. Published in 1952, and also still in print, it is unabashedly evangelical about methods of operational research, crammed with wise, practical advice and whimsical stories. For instance, the index lists: Gremlins, 128; Haircut story, 266; Savage love nest story, 9; Three chickens story, 46; Tobacco juice story, 128...and many more! Whenever I became frustrated in the lab by experimental glitches, I took a few minutes off to read EB's book; it always got me laughing and the problem then became easier to solve.

Bright served as mentor to 90 Ph.D. students and some 60 postdoctoral fellows and to legions of others by way of his books. Furthermore, research students from other groups and undergraduates as well as faculty here and elsewhere all naturally sought out his advice and help. His efforts to

foster the careers of young people were acknowledged in two ways that probably pleased him as much as the many awards and honorary degrees he received. First, the Chemistry Department baseball team has long called itself the "E. Bright Stars" and enjoyed presenting EB with their monogrammed shirts and caps. Second, ten years ago his students and colleagues endowed the Wilson Prize Lectureship, awarded each year to a young chemist of outstanding promise. There is no restriction as to subfield, although the criteria were stretched slightly for the inaugural award. Bright's eldest son Kenneth was invited to tell of his work in theoretical physics and the lecture scheduled for mid-December, near Bright's birthday. The event had to be postponed because Kenneth and the whole Wilson clan took a slightly unanticipated trip to Stockholm. The inaugural Wilson Lecture was appropriately rescheduled for Valentine's Day.

I have been multiply blessed to be a student, colleague, and friend of

Bright and thereby to know Thérèse and their family for the past 37 years. It is a family that bubbles over with affectionate play as well as enterprising, creative work. As Bright's bodily health sadly declined in recent years, the intense love of Thérèse and his children buoyed him through those foul and choppy seas and across that last corduroy road.

I want to close by returning to the Yonkers public library with Bright at age 15, to the grand opening sentences that he found in the preface of the book by Lewis and Randall: *There are ancient cathedrals which, apart from their consecrated purpose, inspire solemnity and awe. Even the curious visitor speaks of serious things, with hushed voice, and as each whisper reverberates through the vaulted nave, the returning echo seems to bear a message of mystery.* There are also mortal people who inspire us to strive for lofty ideals and whose message of mystery reverberates in our hearts and minds. Bright Wilson was such a one.

## ACS News

### Dialog Suit Settled

Both the ACS and Dialog Information Services have announced on October 29, 1993 that the parties to the several lawsuits have agreed to settle their litigation. The settlement includes the mutual release of any and all claims against each party, according to the announcement.

To promote future cooperation, a high-level task force has been established under the personal direction of Bob Massie, director of the ACS's Chemical Abstracts Service Division and Pat Tierney, CEO of Dialog.

With the law suit thus settled, both organizations can devote their resources to advancing information services in chemistry rather than to pursuing drawn-out lawsuits. ◇

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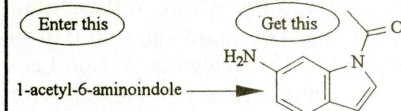
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# Calendar

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## January 11

Prof. Brian Halton (Victoria University, New Zealand)  
“Cycloproparenes: Past, Present, and Future”  
Northeastern University  
Hurtig Hall at 4:00 pm

## January 13

Prof. Brian Halton (Victoria University, New Zealand)  
“Cycloproparenes: Past, Present, and Future”  
Boston College  
Rm 127, Merkert Chemistry Center  
at 4:00 pm

## January 18

Prof. Peter Dervan (California Institute of Technology)  
“Sequence Specific Recognition of Double Helical DNA by Triple Helix Formation”  
Northeastern University  
Hurtig Hall at 4:00 pm

## January 19

Prof. Peter Dervan (California Institute of Technology)  
“Design of Peptides for Sequence Specific Recognition in the Minor Groove of DNA”  
Northeastern University  
Hurtig Hall at 3:00 pm

Dr. Martha Teeter (Boston College)  
“Modelling Protein Structure with the High-Resolution Crystal Structure of Crambin”  
UMass Dartmouth  
Rm. 305, Science & Engineering Bldg (Group II) at 4:00 pm

## January 20

Dr. Bruce Maryanoff (R. W. Johnson Pharmaceutical Research Institute)  
“Macrocyclic Peptide Inhibitor of Serine Protease: The Cyclotheonamide Story”  
Boston College  
Rm. 127, Merkert Chemistry Center  
at 4:00 pm

## January 24

Prof. Gregory Verdine (Harvard University)  
“Recent Advances in the Chemistry of DNA-Binding Proteins”  
Brandeis University  
Gerstenzang 122 at 4:00 pm

## January 27

Prof. John A. Gladsysz (University of Utah)  
“New Forms of Coordinated Carbon: Unsupported and Supported C<sub>x</sub> Chains That Span Two Transition Metals”  
Boston College  
Rm. 127, Merkert Chemistry Center  
at 4:00 pm

## January 31

Dr. C.S. Yannoni (IBM Almaden Research Center)  
“Magnetic Resonance Detection and Imaging Using Force Microscope Techniques”  
Boston College  
Rm. 127, Merkert Chemistry Center  
at 4:00 pm  
Prof. Hanno zur Loye (MIT)  
“Synthesis of New Nitrides Using Solid State Oxide Precursors”  
Brandeis University  
Gerstenzang 122 at 4:00 pm

## Notices for the Nucleus Calendar should be sent to:

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