

Undergraduate Research Symposia

HBCS New York Section



New York Section (left to right) Vidhi Shah (student), Alicia Thuraman (student), Dr. Mihaela Leonida, Dr. Ish Kumar (HBCS Section Chair), Brian Becker (student), Morrine Omolo (student). (See pp. 12-17)

North Jersey Section



North Jersey student winners with their mentors (from left) Dr. Ronald J. Doll, Tharani Theivakumar, Dr. Mary-Ann Pearsall, Tim Barnum, Danielle Centrella and Dr. Amber Charlebois. (See pp. 23-24)

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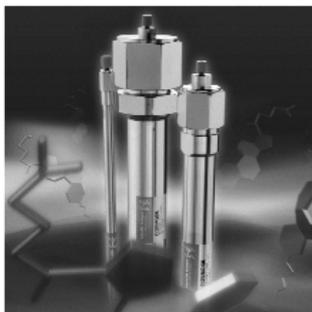
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Address advertising correspondence to Advertising Manager. Other correspondence to the Editor.

June Calendar

NEW YORK SECTION

Wednesday, June 6, 2012

Organic Topical Group
See page 8.

Thursday, June 7, 2012

Chemical Marketing & Economics Group
See page 8.

Friday, June 8, 2012

New York Section Board Meeting
See page 7.

NORTH JERSEY SECTION

Mondays, June 4 and 18, 2012

Careers in Transition Group
See page 21.

Wednesday, June 13, 2012

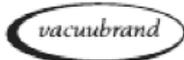
NMR Spectroscopy Discussion Group
See page 21.

Mondays, June 12-14, 2012

Current Process Chemistry Seminar
See page 25.

**The Indicator is posted to the web on the
15th of the previous month at
www.TheIndicator.org**

**Deadline for items to be included in the
September 2012 issue of *The Indicator* is
July 20, 2012.**



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THIS MONTH IN CHEMICAL HISTORY

By Harold Goldwhite, California State University, Los Angeles • hgoldwh@calstatela.edu

There's something fascinating about hundredth anniversaries – that something or some institution has lasted one hundred years, longer than the great majority of human lives. I live in a house that is one hundred years old this year – fairly old for California, though a mere babe compared to many houses in the land of my birth, England. There's a lot of current fuss about the hundredth anniversary of the launch of the ill-fated Titanic. And last year, 2011, the Southern California Section of the American Chemical Society celebrated its one hundredth anniversary. The November Western Regional Meeting of the ACS included celebrations of this event, and I gave a talk on one hundred years of teaching chemistry (not, I hasten to add, a personal reminiscence) looking back at what and how chemistry was taught in local universities in 1911. This article presents some of my findings.

First an overview of the California scene. The Journal "Pacific Outlook" Volume X, January 1911 has an article on the state of higher education in the state. It argues for a State University in Southern California. Chemistry courses are popular. At Berkeley, the only State University in California, chemistry laboratories designed for 150 students are now housing 1000. Interestingly the 6 year high school program experiment is doing well in Fresno: the final 2 years are vocational (some analogies to what is happening in high schools and Community Colleges in California now). There were seven private secular universities and colleges in Southern California in 1911, but no state-supported institution.

The 1911 bulletin of the Throop Institute in Pasadena, California (later to metamorphose into the California Institute of Technology) gives the rigorous preparation expected of undergraduates:

"The chemistry curriculum prerequisites (high school):

Engineering degrees require 1 unit of chemistry .. 5 recitations/week for 1 year. Besides the usual text-book and recitation work, each student should have a laboratory course in which he performs the experiments for himself. Accurate notes of the laboratory work should be kept. The necessary amount of laboratory experience cannot be obtained in less than four hours a week for one school year, in addition to the class-room. It is preferred that the laboratory work be entirely devoted to illustration of the important facts and principles of general chemistry, rather than partly to analytical chemistry. (1 unit)".

No less rigor is evident in the undergraduate course work. Again from the Throop 1911 bulletin:

"At Throop: 3 hrs. lec; 4hrs lab 5 hrs prep. First and second semesters Freshman year.

The course in Chemistry is planned with especial reference to the needs of engineering students, the object being to give them a training that will add to their general culture as well as to their technical equipment. To this end work in general chemistry and qualitative analysis is required of all Freshmen in the Engineering courses. In the Sophomore year there is opportunity for some exercise in quantitative analysis; especially designed for those contemplating a course in Mining Engineering.

300, 301. General Chemistry and Qualitative Analysis.-

This includes lectures on general inorganic chemistry, fully illustrated with experiments and supplemented by study of a text-book and by laboratory work. Special attention is given to class discussion and to the solution of problems. The laboratory work consists of experiments in qualitative analysis, in which emphasis is placed on careful manipulation, accurate recording of results and logical interpretation of phenomena.

Text: Alexander Smith's General Chemistry for Colleges and Morgan's Qualitative Analysis. Required of all engineering students, freshman year. (12 + 12 units)"

The sophomore year in chemistry was given over to quantitative analysis:

"303, 304. Quantitative Analysis.-This includes typical determination of metals and non-metals, with class-room discussions of processes and reactions, special attention being given to stoichiometry. Both gravimetric and volumetric processes are given, the aim of the course being to lay a good foundation for subsequent work in analysis as well as to give that thorough drill in careful manipulation which is so important to the student of science in general. Text: Talbot's Quantitative Analysis.

Prescriptive, sophomore year. (9 + 9 units)".

The Throop laboratories boasted the latest equipment: "... the department is well supplied with platinum ware, quartz dishes and crucibles, and graduated glassware for use in quantitative analysis. For the use of instructors there is special apparatus for gas, water, and milk analysis, assaying and research work. This includes boiling-point and freezing-point apparatus, assay furnace, crushing and grinding apparatus, assay balance. Zeiss-Abbe refractometer, Schmidt and Haensch polariscope, Babcock milk tester, and Elliott's apparatus for gas analysis."

Clearly chemistry was a rigorous and challenging discipline in 1911 – and yet a popular subject. Is there a lesson for us here? In a later column I will continue my exploration of chemistry teaching a century ago.

JUNE HISTORICAL EVENTS IN CHEMISTRY

By Leopold May, The Catholic University of America, Washington, DC

June 2, 1787

Two hundred and twenty-five years ago, Nils G. Sefstrom was born on this date. He is one of the discoverers of vanadium (V, 23) in 1830.

June 3, 1960

Robert B. Woodward reported the synthesis of chlorophyll on this date.

June 5, 1951

The first paper on gas-chromatography (GC), Gas-liquid partition chromatography: the separation and micro-estimation of volatile fatty acids from formic acid to dodecanoic acid, by A. T. James and A. J. P. Martin was received on this date in 1951 and was published in *Biochem. J.* 1953, 50, 679-690.

June 8, 1916

Fifty years ago in 1962, Francis H. C. Crick shared the Nobel Prize in Physiology or Medicine with James D. Watson and M. H. F. Wilkins for their discoveries concerning the molecular structure of nucleic acids and its significance for information transfer in living material. He was born on this date and is a researcher on the double helix structure of the deoxyribonucleic acid (DNA) molecule.

June 9, 1862

Fifty years ago, Herbert B. Baker was born. He was a researcher on effect of water on chemical change and an authority on desiccating and poison gases.

June 10, 1906

Regina Schoental, who was born on this date, was a researcher on toxic pyrrolizidine (Senecio) alkaloids fusarium mycotoxins, zearalenone, the trichothecenes, and other carcinogenic metabolites of *Fusarium* and other microfungi, estrogenic mycotoxins on the development of cancers and behavioral disorders, nitroso compounds from action of the oral and anorectal microflora, and on the activation of human immunodeficiency virus.

June 14, 1862

One hundred and fifty years ago, Johann Ulrich Nef was born on this date. He discovered the valence of carbon and did research on free radicals and transition state in organic reactions. He is known as "Father of Physical Organic Chemistry".

June 15, 1755

Antoine François de Fourcroy, who was born on this date, developed chemical nomenclature with Lavoisier and Berthollet. He described salts such as calcium chloride.

June 18, 1906

Maria Goeppert Mayer, who developed the shell model of the nucleus and did research in isotopes effect, was born on this day. She shared the Nobel Prize in Physics in 1963 with J. H. D. Jensen for discoveries concerning nuclear shell structure and Eugene Paul Wigner for his contributions to the theory of the atomic nucleus and the elementary particles, particularly through the discovery and application of fundamental symmetry principles.

June 20, 1931

Mary L. Good is a researcher in inorganic chemistry and industrial chemist. She served as President of ACS and was born on this day.

June 22, 1903

Harry Julius Emeléus, a researcher in inorganic chemistry and fluorine chemistry, was born on this date.

June 25, 1812

Two hundred years ago, Hermann von Fehling was born on this date. He discovered Fehling's solution as an oxidizing agent and as an analytical reagent for aldehydes and sugars and prepared phenyl cyanide. The composition of paraldehyde and metaldehyde was determined by him.

June 28, 1873

One hundred years ago, Alexis Carrel was awarded the Nobel Prize in Physiology or Medicine in recognition of his work on vascular suture and the transplantation of blood-vessels and organs. He was born on this date and did research on suturing blood vessels in organ transplants.

June 30, 1926

Paul Berg, researcher in recombinant deoxyribonucleic acid (DNA) was born on this date. He shared the Nobel Prize in Chemistry in 1980 for his fundamental studies of the biochemistry of nucleic acids, with particular regard to recombinant-DNA with Walter Gilbert and Frederick Sanger for their contributions concerning the determination of base sequences in nucleic acids.

Additional historical events can be found at Dr. May's website, <http://faculty.cua.edu/may/ChemistryCalendar.htm> or This Week in Chemical History on the ACS website, <http://www.acs.org/whatischemistry>.

New York Meetings

www.newyorkacs.org

NEW YORK SECTION BOARD MEETING DATES FOR 2012

The dates for the Board Meetings of the ACS New York Section for 2012 were chosen and approved at the September 2011 Board Meeting. The meetings are open meetings – all are welcome. If non board members would like to attend the meeting, please let the New York Section office know by emailing Mrs. Marilyn Jespersen at njesper1@optonline.net or calling the office at (516) 883-7510.

The 2012 Board Meetings will be held on the following Fridays at 6:00 PM at St. Johns University, Writing Center, Jamaica, NY. Dr. JaimeLee lolani Rizzo will chair the meetings.

Friday, June 8

Friday September 14

Friday November 16

More information will be posted in future issues of *The Indicator* and on the New York website at <http://www.NewYorkACS.org>.



NEW YORK SECTION HONORS ITS 50 AND 60 YEAR MEMBERS

The New York Section Board would like to congratulate our members that have reached 50 and 60 years of service! This milestone will be marked by a free luncheon for the following members sometime in June. We will be sending an invitation out shortly.

(**Note:** All members that have previously achieved these milestones are also welcome to attend this luncheon for around \$40.00 per person. Please send an e-mail to mailto:nyacschair@newyorkacs.org and include your contact information if you are interested.)

50 Year Members

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Dr. Joseph J. Dannenberg
Dr. Jack C. Day
Mr. Edward M. Giles
Mr. Stephen E. Gould
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Dr. Naomi Mendelsohn
Dr. G. R. Padmanabha
Dr. Joseph R. Parrish
Dr. Lawrence Rocks
Dr. Laszlo Sarkozi
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Dr. Joanna F. Shulman
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Dr. Leonard I. Stiel
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Dr. Marvin Charton
Dr. Donald D. Clarke
Dr. Aaron D. Cooper
Mr. Leon Critides
Dr. William Vincent Curran
Mr. Rubin Drucker
Dr. Samuel I. Epstein
Miss Edith Marie Flanigen
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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.

**ORGANIC TOPICAL GROUP —
JOINT MEETING WITH THE NEW
YORK ACADEMY OF SCIENCES
CHEMICAL BIOLOGY
DISCUSSION GROUP**

**Chemical Biology Discussion Group
Year-End Symposium**



Organizers: Elizabeth Boon, PhD
Stony Brook University
Anthony Sauve, PhD
Weill Cornell Medical College
Jennifer Henry, PhD
The New York Academy of
Sciences

Keynote Speaker: Tom W. Muir, PhD
Princeton University

Chemical biology is a diverse and dynamic field involving chemical approaches to studying and manipulating biological systems. The goal of the Academy's Chemical Biology Discussion Group meetings is to enhance interactions among local-area laboratories working in chemical biology and to feature forefront research in chemical biology to the wider community. The meeting traditionally covers a range of current topics in chemical biology, including chemical probe development, organic synthesis, biosynthesis, protein engineering, nanotechnology, and drug discovery. The annual year-end meeting features distinguished keynote speaker Professor Tom Muir of Princeton University. This will be followed by shorter, cutting-edge talks by graduate students and postdoctoral fellows selected from participating NYC-area institutions.

Call for Poster Abstracts

The deadline for abstract submission is **Friday, May 18, 2012.**

Several presenters of submitted abstracts will be selected to give short presentations. For complete abstract instructions, please send an e-mail to CBDG@nyas.org with the

words 'Abstract Information' in the subject line.

Date: Wednesday, June 6, 2012

Time: 1:00 – 6:00 PM

Place: The New York Academy of Sciences
7 World Trade Center
250 Greenwich Street – 40th Floor
New York, NY 10007

Cost: This event is FREE for ACS and NYAS members. Please select the appropriate non-member Registration Category and use the Priority Code ACS. Non-members may attend for a fee of \$30, or \$15 for students and post-docs.

For more information and to register for the event, go to: www.nyas.org/YearEnd2012

To become a Member of the Academy, visit www.nyas.org/benefits



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Speaker: Nancy Kelley
Founder and Executive Director
New York Genome Center

Please REGISTER EARLY – seating is limited.

Date: Thursday, June 7, 2012

Time: 1:15 AM – 2 PM

Place: Aureole Restaurant
135W 42nd Street
New York, NY

Cost: \$90 for non-members or 2011 CM&E members
\$70 for CM&E members who paid 2012 Dues

This event will be webcasted, so that if you cannot attend you may watch it at your convenience. More information available on www.cmeacs.com

To keep up with the CME calendar and receive event articles, join the free CM&E LinkedIn Group: <http://www.linkedin.com/groups?home=&gid=2092067>

NICHOLS SYMPOSIUM IN REVIEW

The William H. Nichols Medal Award for 2012 was presented to Professor Alan G. Marshall of The Florida State University on March 16, at an award dinner at the Crown Plaza Hotel, White Plains, NY. Professor Marshall received the gold Medal for "Advances in Fourier Transform Ion Cyclotron Resonance Mass Spectrometry." In attendance were 260 people including industrial chemists, students and faculty from New York Section colleges and universities.



The William H. Nichols Distinguished Symposium, that preceded the award dinner, was titled "Mass Spectrometry: New Ways to Probe Molecular Structure and Reactivity" and featured internationally known speakers: Professor R. Graham Cooks (Purdue University), Professor Michael L. Gross (Washington University), Professor Richard N. Zare (Stanford University) and Professor Marshall who gave the Award Lecture titled "Mass: The Universal Chemical Currency." Professor Phil H. Mark, Chair-elect of the New York Section, emceed the symposium, introducing each speaker. The Nichols Distinguished Symposium was enjoyed by all attendees, most of whom attended the social hour and the award dinner that followed.

At the award dinner, Professor JaimeLee Iolani Rizzo, 2012 Chair of the ACS New York Section, welcomed the guests and related the History of the Nichols Medal; Prof Neil D. Jespersen, ACS Board of Directors, brought greetings and congratulations from the American Chemical Society; and Professor John D. Baldeschwieler of the California Institute of Technology introduced his friend and colleague, Alan Marshall. Chair Rizzo and Mr. David Nichols then awarded the gold medal, identical bronze medal and \$5000 to Medalist Professor Marshall, who was accompanied by his wife, Susan Marshall. The Medalist then happily autographed the guests' dinner booklets and spoke with many students who enjoyed meeting him.

Many generations of the Nichols family also enjoyed this gala event. The New York Section was honored to have as guests: Mr. David Nichols and Mr. C. Walter Nichols III (great grandsons of Dr. William Nichols; Mrs. Helga Nichols; and Mr. Charles Nichols, Mr. C. Walter Nichols IV, Mrs. Sandra Nash and Mrs. Hope Procktop (great, great grandsons and granddaughters); as well as three great, great, great grandchildren. It is truly a great pleasure to have so many generations of the Nichols family present at this special New York Section event.

The Nichols Medal Award was established in 1902 by Dr. William H. Nichols to honor a chemical scientist for outstanding original research and was first awarded in 1903. Dr. Nichols, a charter member of the American Chemical Society and its president in 1918 and 1919, maintained a deep commitment to research and development and to the importance of supporting science education and students of chemistry. Since its inception, through an endowment fund, the New York Section administers the award. It has been perpetuated by the generosity of Dr. Nichols, his family and the Nichols Foundation, Inc. The William H. Nichols Medal is the first award in chemistry of the American Chemical Society.

The Nichols Medal Award celebration in 2013 will be held on March 15 at the Crowne Plaza Hotel.



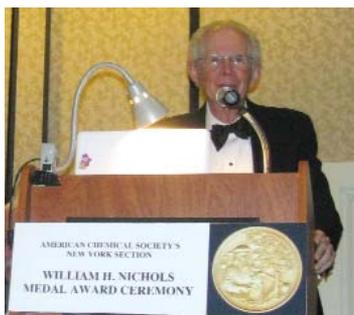
Speakers and NYACS Officers with Mr. David Nichols (center) and Mr. C. Walter Nichols III (second from right).

(All photos courtesy of Marilyn Jespersen and Jeff Rizzo)

More photos on next two pages.



Before the Nichols Distinguished Symposium - Dr. JaimeLee Rizzo (2012 ACS NY Chair), Medalist Dr. Alan Marshall, Dr. Philip Mark (2012 ACS NY Chair-elect), Dr. Neil Jespersen (ACS Board of Director).



Dr. John Baldeschwieler, a very good friend and colleague of the Medalist, did an excellent introduction of Dr. Marshall.



Dr. Marshall and Dr. Rizzo displaying the William H. Nichols gold medal. A bronze replica is also given – for display purposes.



Medalist Alan Marshall (center) with colleagues and speakers – Dr. R. Graham Cooks, Dr. Michael Gross, Dr. Richard Zare and Dr. John Baldeschwieler.



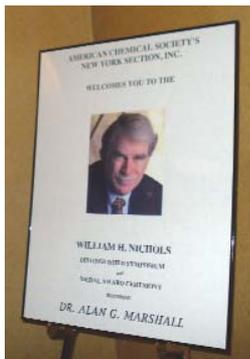
Group photo with nine members of the Nichols family.



Enjoying the Reception before the award dinner – Dr. Phil Mark, Mrs. Susan Marshall, Dr. Alan Marshall and Dr. JaimeLee Rizzo.



Dr. York Rhodes enjoying good conversation with Mr. C. Walter Nichols III (great grandson of Dr. William H. Nichols) at the reception.



Welcoming Poster



Dr. Marshall enjoyed speaking with the students and taking photos with them. Here with faculty and students from Queensborough Community College – CUNY, Bayside, NY.



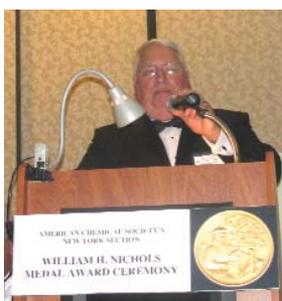
Dr. Alan Marshall receiving the Nichols Medal Award from Dr. JaimeLee Rizzo and Mr. David Nichols, (President of the Nichols Foundation).



Dr. Marshall signing many dinner programs for the guests.



ACS colleagues socializing at the symposium's coffee break. – Dr. Yorke Rhodes, Mr. Frank Romano and Dr. Hessa Taft.



Dr. Neil Jespersen of the ACS Board of Directors extending greetings and good wishes from the American Chemical Society to Dr. Marshall and the guests.



Symposium Speakers – Dr. R. Graham Cooks, Dr. Michel Gross, Dr. Alan Marshall with Dr. Rizzo, Dr. Mark and Dr. John Baldeschwieler (Introducer at the Dinner).



Mrs. Marilyn Jespersen, ACS NY Office Secretary and Coordinator of the Nichols events, appreciates the excellent service of the Crowne Plaza staff. Here with John and Jorge who worked the coffee break.

HUDSON-BERGEN CHEMICAL SOCIETY AND FDU SCHOOL OF NATURAL SCIENCES

In Memoriam – Dr. Anita Brandolini

We are dedicating this symposium to the memory of Dr. Anita Brandolini, who was an Assistant Professor at Ramapo College of New Jersey. Dr. Brandolini had an incredible enthusiasm for chemistry, which extended beyond the campus community. She was a longtime volunteer at the Liberty Science Center (where she frequently took her students on trips and to attend annual Chemistry Expos). Dr. Brandolini served as a councilor for the North Jersey ACS section. She was also a national committee member of ACS's Project SEED, which is a program that encourages low-income, underrepresented high school students to study chemistry at colleges over the summer by providing them with research mentors and the stipends. Dr. Brandolini was elected as the recipient of the 2012 Gift of Mentoring Award from the MWCC. Dr. Brandolini authored two books, including one for children, "Fizz, Bubble and Flash!: Element Explorations" and "Atom Adventures for Hands-On Science Fun."

14TH ANNUAL UNDERGRADUATE RESEARCH SYMPOSIUM AND STUDENT AWARD NIGHT

2012 STUDENT AWARDS

The following students have been recognized for their academic achievements by the chemistry departments of their respective schools:

Elaine Sedhom
Fairleigh Dickinson University

Hemlata Persaud
New Jersey City University

Daniella Mazza
Ramapo College of New Jersey

Victoria Bisceglia
St. Peter's College

ABSTRACTS

Virtual and Random Screening of Non Covalent and/or Coordinated Inhibitors for Matrix Metalloproteinase-1

Suzanne Wiecek, Kevin Lu and Ish Kumar,
Fairleigh Dickinson University

Matrix metalloproteinases (MMPs) are a class of structurally related enzymes, which are responsi-

ble for the metabolism of extracellular matrix (ECM) proteins. These are zinc and calcium dependent enzymes synthesized in an inactive form and under physiological conditions regulated by endogenous inhibitors called tissue inhibitors of metalloproteinases (TIMPS). In healthy and youthful skin, the synthesis and degradation of the matrix are in balance: a damaged matrix is degraded by MMPs and the deficit is replaced by ongoing synthesis by fibroblast cells. Unfortunately, with aging, this intricate balance gets disrupted: too many MMPs are produced and very little matrix is synthesized. Many of the available skin rejuvenation products boost the synthesis of the collagen matrix. Unfortunately, this approach fails or falls short in some people, presumably, due to individual variations in skin chemistry. We can use the approach of inhibiting MMPs to reduce further loss of extra cellular matrix. This may be beneficial for older people, as MMP level increases with age. Here, the focus of our project is inhibition of MMP-1 using the tools of random and virtual screening. Here we report Virtual screening of NCI diversity set III against the active site of MMP-1 using the soft ware AutoDock Vina. The docking gave us 85 hit ligands with bonding energy of -6.0 kilocalorie per mole or less from the over 1600 molecules provided by the NCI database. Following this virtual determination, the data is used as a starting point to perform in situ assays which screen the potential inhibitors through use of thiopeptide as a chromogenic substrate.

Anti-oxidant Activity of Vitamins and its Hydroxy-derivatives

Robert Benn, Hossam Shahin, Michael Ret, and Neena Philips, Fairleigh Dickinson University

Oxidative stress is the inability of a biological system to remove reactive oxygen species. This phenomenon has been implicated in the aging process. Various vitamins, such as vitamin E, accept free radicals to counteract this damage. Our goal was to compare the antioxidant activity of vitamins and hydroxyl derivatives of nicotinamide. The hydroxyl derivatives of nicotinamide have greater antioxidant activity than nicotinamide. The chemical modification of vitamins may be more beneficial to anti-aging than vitamins.

Antibacterial Effect of Chitosan and Mixed Chitosan-Plant Extract Nanoparticles

Alicia Thuraman, Suchitra Ghumwala, Gerhard Haas, and Mihaela Leonida, Fairleigh Dickinson University

Pseudomonas (Gram-negative bacteria) cause morbidity and mortality in burns and surgical patients and have also been found in contaminated cosmetic products. Chitosan was used to prepare nanoparticulate material by ionic gelation, with sodium tripolyphosphate as cross-linking agent. The nanoparticles were characterized by FT-IR, UV, size distribution, and zeta potential values. Chitosan is known to have antibacterial activity against both Gram-positive and Gram-negative species of bacteria. The nanoparticulate material was assayed against *Pseudomonas putida*, found active, and the minimum inhibitory concentration (MIC) was deter-

mined and compared with that of the starting chitosan. Targeting synergistic effects, mixed nanoparticles were prepared from chitosan and plant extracts with known antibacterial activity, using the same procedure. They were characterized and their antibacterial effect was evaluated and compared with that of nanoparticles prepared from chitosan only. Cosmetic skin care formulations containing this type of particles were also prepared and assayed against *Pseudomonas putida*.

Antiproliferative Activity of 2'-hydroxy-chalcones

Christopher DiRusso¹, Nicholas J. Kramer², Hugh J. Prentice², Suparna Bhalla¹, Jay R. Carreon², and Miriam Rossi³. 1Mount Saint Mary College, 2Ramapo College, 3Vassar College

The human body is continuously exposed to radicals and other reactive oxygen species either from external sources such as exposure to X-rays, ozone, cigarette smoking and pollutants or from normal essential metabolic processes in the human body. Lipid membranes, proteins, and DNA are all susceptible to interaction with radicals, and natural molecules termed antioxidants provide an important defense against such damage. Antioxidants are compounds that interact with radical intermediates to form less-reactive radicals. Chalcones (1,3-diphenylprop-2-propen-1-ones) are a family of natural compounds that display a wide spectrum of biological activities including antioxidant activity. Earlier studies in our laboratory determined that 2'-hydroxyl group substitution patterns were particularly effective for stronger antioxidant activity. A series of 2'-hydroxychalcones substituted at the para- position with either electron-donating or electron-withdrawing substituents have been synthesized and tested for their growth inhibitory activity in the cervical epithelial carcinoma (HeLa) cell line.

Going Green in the Organic Chemistry Teaching Laboratory

Mallory B. Coyman, Joanna E. Prumos, and Jay R. Carreon, Ramapo College of New Jersey

In the wake of a more environment and health conscious world, green chemistry is playing a greater role in the design, production and use of chemical products. Green chemistry aims to diminish or eliminate the use and generation of hazardous materials. By modifying our laboratory program to integrate principles of green chemistry, we can reduce the amount of generated waste, and incorporate safer laboratory procedures and protocols, while still complementing the standard undergraduate organic chemistry sequence. This academic year, we performed experiments that incorporated these principles including performing a synthesis of salicylic acid from oil of wintergreen and its subsequent conversion into acetylsalicylic acid, iodination of vanillin, and solventless aldol condensation. The synthesis, characterization, and 'green' aspects of these experiments will be discussed.

Cyclic Voltammetry of Organometallic

Complexes as Precursors for Molecular Jumper Cables

Stephan Bien-Aime, Gregory Bukowski, and Dr. Sarah Carberry Ramapo College of New Jersey

Miniaturization of electronic devices is increasing drastically. This new technology requires the use of molecular components, such as organometallic molecular wires, operating at the micro and nano level. A molecular jumper cable (MJC) is a compound which can be employed to connect molecular circuits. In order to perform correctly, a MJC must fulfill two essential requirements: the wire must be capped with redox active metal centers, and these metals must be connected via a conjugated bridge guaranteeing transfer of electrons along the wire. A dichromium molecular wire can be synthesized using chromium hexacarbonyl, Cr(CO)₆, as the metallic portion of the MJC. Currently, a cyclic voltammetry (CV) apparatus is being calibrated using several solvents and a common electrolyte (Bu₄NPF₆). Organometallic complexes used so far are ferrocene (FeCp₂) and chromium hexacarbonyl. Both FeCp₂ and Cr(CO)₆ were dissolved in tetrahydrofuran (THF) and in dichloromethane. The CV of Cr(CO)₆ in THF gave unexpected results. Under constant flow of nitrogen gas, and according to the obtained CVs results, dichloromethane proved to be a better suitable solvent for the purpose of the project.

Flourene p-Type Materials Synthesized by using a Carbon-Carbon Coupling Procedure

Akim Abdullahi and Kenneth Yamaguchi, New Jersey City University

The synthesis of a flourene-based compounds was investigated as luminescent for p-type materials. Interest in polyfluorene derivatives has increased because of their high photoluminescence quantum efficiency, high thermal stability, and their facile color tunability, obtained by introducing low-band-gap co-monomers. Research in this field has increased significantly due to its potential application in tuning organic light-emitting diodes (OLEDs). We made use of a Sonagashira-type cross-coupling reaction to attach an ethynyl substituent onto the flourene moiety. This product was in turn used to couple with a boronylated compound. The synthesis and characterization of this product will be discussed.

Photoprotective Effects of Xanthohumol on the Extracellular Matrix.

Harit Parakandi, Sessa Gopal, Halyna Siomyk, and Neena Philips, Fairleigh Dickinson University

Ultraviolet (UV) radiation induces matrix metalloproteinase (MMP), and subsequent remodeling of the extracellular matrix (ECM) that is composed primarily of collagen. The predominant classes of MMPs include collagenases (MMP-1) and gelatinases (MMP-2), which degrade the interstitial collagen and basement membrane. They are inhibited by the tissue inhibitor of metalloproteinases

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(TIMP), especially TIMP-1 and TIMP-2. The induction of MMPs by UV radiation is the result of oxidative stress and inflammation. *Humulus lupulus L.* (Cannabinaceae) is rich in anti-oxidant and anti-inflammatory components, one of which is xanthohumol. The goal of this project was to determine the potential of xanthohumol to inhibit MMPs, to prevent the remodeling of the ECM.

Non-irradiated or UV radiated fibroblasts were exposed to xanthohumol, and the regulation of MMP-1, MMP-2, TIMP-1, and TIMP-2 expression was determined by reverse transcriptase-real time polymerase chain reaction. UVA and UVB radiation significantly increased the expression of MMPs, and decreased the expression TIMPs in dermal fibroblasts. Xanthohumol was effective in reversing the detrimental regulation of MMPs and TIMPs by UV radiation. It is inferred that xanthohumol has the potential to strengthen the ECM by reducing the MMPs to TIMPs ratio, and thereby ameliorate skin aging, impaired wound healing and cancer.

Regulation of Transforming Growth Factor-beta and Vascular Endothelial Growth Factor by Copper in Fibroblasts and Melanoma Cells

Hui Jia, Hardika Patel, Sessa Gopal, Halyna Siomyk, Harit Parakandi, and Neena Philips, Fairleigh Dickinson University

Transforming Growth Factor-beta (TGF- β) and Vascular Endothelial Growth Factor (VEGF) are essential for angiogenesis and extracellular matrix (ECM) remodeling in wound. However, they facilitate cancer metastasis. Copper is associated with wound healing as well as cancer, though its mechanism has not been delineated. The goal of this research was to determine the regulation of TGF- β and VEGF by copper in fibroblasts and melanoma cells. Fibroblast or melanoma were dosed with physiological concentrations of copper and examined for cell viability, and expression of TGF- β and VEGF. Copper increased the expression of TGF- β and VEGF in fibroblast, without altering cell viability, suggesting its mechanism to wound healing through the stimulation of angiogenesis. Copper inhibited melanoma cells growth. Our results indicate that physiological doses of copper are beneficial to wound healing, as well as for cancer therapy.

Effect of Ultraviolet Radiation on Cell Viability and Elastin Expression in Melanoma Cells

Jessica Idumonyi and Neena Philips, Fairleigh Dickinson University

Solar ultraviolet (UV) radiation is one of the causes of melanoma. UV radiation induces solar elastosis, or excessive deposition of elastin, and loss

of cell viability. Its mechanisms include oxidative stress and inflammation. The goal of this research was to determine whether the melanoma cells could directly contribute to solar elasticity in response to UV radiation. Melanoma cells were non-irradiated or exposed to UVA, UVB or UVC radiation and examined for cell viability, and the expression of elastin at the protein, mRNA, and promoter levels. UVB radiation was most potent in the alteration of cell viability, though not in the regulation of the expression of elastin. The data indicates need for protection from solar UVB radiation, and that solar elastosis may be primarily from the fibroblasts and not melanoma cells.

Low Concentrations of Ascorbate Decreases Cell Viability and the Expression of Matrixmetalloproteinase-1 in Melanoma Cells

Neha Shah, Kevin R Merjanian, Sharon Goda, Carmelie Jean-Pierre, Christopher Mc-Ana, and Neena Philips, Fairleigh Dickinson University

Cancer is associated with the proliferation of cell growth. Cancer cell growth is allied with the increased expression of matrix metalloproteinase (MMP-1) in the extracellular matrix. Previous studies have indicated reciprocal effects of ascorbate on cell viability and expression of MMP-1. The goal of this research was to determine whether lower concentrations of ascorbate, than previously reported, would simultaneously reduce cancer cell viability as well as the expression of MMP-1. Melanoma cells were dosed with 0, 30, 300 and 3000 μ M ascorbate, and examined for cell viability, and the expression of the MMP-1 gene. While the 300 and 3000 μ M ascorbate reciprocally regulated cell viability and expression of MMP-1, as previously reported, the lowest concentration of ascorbate (30 μ M) simultaneously inhibited cell viability and MMP-1 expression. It is inferred that reduced ascorbate doses would be effective in cancer management.

Hydrogen Peroxide Improves Wound Healing Through Increased Collagen Deposition

Michael Ibrahim, Julie Woodridge, Gamal Elbaz, Dimple Chhatlani, and Neena Philips, Fairleigh Dickinson University

Wound healing requires the removal of debris and deposition of collagen. Hydrogen peroxide is known to have biocidal activity. Hydrogen peroxide was added on fibroblast cells at varying concentrations (0, 0.1, 1.0, and 10.0 micro-molar) to determine if it would aid in wound healing through the deposition of collagen. Collagen promoter had been transfected into the cells prior to dosing, and the cells were examined for the promoter activity and the secretion of collagen protein. The optimal concentration of hydrogen peroxide was determined to be 1.0 micro-molar for the stimulation of collagen at the protein and transcriptional levels.

Anti-cancer activity of Xanthohumol through the Inhibition of Matrixmetalloproteinases and the Stimulation of its Inhibitors in Melanoma Cells

Halya Siomyk, Harit Parakandi, Sesha Gopal, and Neena Philips, Fairleigh Dickinson University

Melanoma is highly invasive and malignant tumor of melanocytes. Degradation of basement membranes and extracellular matrix is an essential step in melanoma cell migration, invasion, and metastasis formation. Matrix metalloproteinases (MMP-1 and MMP-2) and their tissue inhibitors (TIMP-1 and TIMP-2) play a crucial role in these complex multistep processes. That's why, the role of matrix metalloproteinases (MMPs) in invasion and metastasis in many types of tumors has been extensively reviewed.

Humulus lupulus L. (Cannabaceae) (hop) is rich in antioxidants, anti-inflammatory or anti-carcinogenic components, one of which is xanthohumol. The goal of this study was to determine the effect xanthohumol on matrix metalloproteinases (MMP-1 and MMP-2) and their tissue inhibitors (TIMP-1 and TIMP-2) in melanoma cells.

Results showed that of xanthohumol inhibited MMP-1 and MMP-2 and significantly activated TIMP-1 and TIMP-2 in melanoma cells. Since balance between levels of activated MMP and free inhibitors is critical for MMP activity, xanthohumol may play a crucial role in anti-cancer activity by inhibiting MMP-1 and MMP-2 and stimulating TIMP-1 and TIMP-2.

Synthesis of Perylene-3, 4, 9, 10-tetracarboxylic Acid as a Chelating Agent

Katterin Colon, Kenneth Yamaguchi, New Jersey City University

Perelyene-3, 4, 9, 10-tetracarboxylic acid bisimide is an organic compound that is useful due to its variety of scientific and industrial applications, such as: polymers, n-type semiconducting materials, photovoltaics, OLEDs, fluorescent tags, and dyes. The goal is to find an easy and successful route for the reaction of Perelyene-3, 4, 9, 10-tetracarboxylic acid bisimide and 4-Iodoaniline, which in turn will be coupled to a chelating ligand via Suzuki coupling reactions which can ultimately generate a variety of new and useful compounds.

Hydrogen Peroxide Promotes Angiogenesis through Oxidative Stress, without Loss of Cell Viability or Membrane Damage, to benefit Wound Healing

Alfonso De Leon, Andrea Suria, and Neena Philips, Fairleigh Dickinson University

Wound healing requires a supply of nutrients and the removal of dying cells and debris to promote new cell growth. Once debris is removed, new cell proliferation is promoted by supply of nutrients via angiogenesis. Intracellular H₂O₂ is known to be an inducer of VEGF and NF-κB expression. The goal of this research was to up-regulate vascular endothelial growth factor (VEGF) and NF-κB

genes with oxidative stress, using H₂O₂, so that angiogenesis can both be promoted without negatively affecting new tissue formation. Human fibroblast cells were dosed with 0, 0.1, 1.0, and 10 mM H₂O₂ and tested for cell viability, membrane damage, apoptosis, protein content in cells/media, and promoter activity. H₂O₂ was found to have no effect on membrane damage at any concentration, and no cell death was observed until H₂O₂ concentrations were higher than 1.0 mM. Higher protein content was found in the media when compared to the cells with increasing concentrations of H₂O₂, supporting the increased expression of extracellular proteins. Expression of VEGF and NF-κB promoter activity were both increased with increasing concentrations of H₂O₂. We conclude that concentrations of hydrogen peroxide between 0.1 and 1.0 mM will promote angiogenesis and assist in wound healing, though at 1.0 mM there was a slight decrease in cell viability.

Synthesis of Chalcones as Antioxidants

Nicholas J. Kramer¹, Jay R. Carreon¹ and Miriam Rossi². 1Ramapo College, 2Vassar College

Antioxidants are compounds that interact with radical intermediates to form less-reactive radicals. Chalcones (1,3-diphenylprop-2-propen-1-ones) are a family of natural compounds that display a wide spectrum of biological activities including antioxidant activity. We want to understand how the chemical structure influences the radical scavenging ability of chalcones. Earlier studies in our laboratory determined that 2'-hydroxyl group substitution patterns were particularly effective for stronger antioxidant activity. A series of 2'-hydroxy-chalcones have been synthesized via the Claisen-Schmidt condensation in order to contribute to an extensive structure-activity relationship study. The synthesis and characterization will be discussed.

Lupulone Treats Melanoma Cells through Reducing Oxidative Stress and Angiogenesis

Rojina Begum, Krystyn Crony, Samantha DeCeglie, Mohini Patel, Craig Warner, and Neena Philips, Fairleigh Dickinson University

A goal in cancer research is to inhibit cell growth, angiogenesis and metastasis. Lupulone has antioxidant activity, and inhibits cancer cell growth and angiogenesis. The goal of research was to determine the pathways through which lupulone accomplishes anti-cancer effects by examining expression of vascular endothelial growth factor (VEGF), essential for angiogenesis, and NF-κB promoter activity, mediator of oxidative stress. Melanoma cells were dosed with or without lupulone and examined for cell viability, apoptosis, and membrane damage. In addition, cells were transfected with a NF-κB promoter, dosed with lupulone and examined for NF-κB promoter activity as well as the expression of p53 and VEGF. The results achieved from this research shows that lupulone inhibits cell growth through apoptosis without membrane damage, inhibits VEGF for anti-angio-

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genesis, and NF- κ B promoter activity for the removal of oxidative stress.

Hydrogenation Without Hydrogen: Saturating Organic Compounds Using Hydrogen Transfer Catalysts

Danielle Mazza and Stephen Anderson, Ramapo College of New Jersey

The hydrogenation of unsaturated organic compounds is conventionally performed with hydrogen gas and a transition metal catalyst such as palladium, nickel or platinum. However, gaseous hydrogen can be costly and hazardous, thus this reaction can also be carried out using hydrogen transfer catalysts. These transition metal complexes remove hydrogen from protic substrates (isopropanol was used as this reagent) and transfer it to an unsaturated compound, such as a ketone or alkene. Using this method and Wilkinson's catalyst [RhCl(PPh₃)₃], acetophenone was successfully hydrogenated into 1-phenylethanol, and benzophenone was converted into diphenylmethanol. Both products were obtained in racemic mixtures. To model asymmetric hydrogen transfer, the dimer [RhCODC]2 and achiral bidentate ligand DIPHOS were used to convert acetophenone into 1-phenylethanol, which occurred in low yields. Wilkinson's catalyst was also used to convert 5-hexen-2-one into 2-hexanol, hydrogenating both the carbonyl C=O bond and unsaturated C=C bond. The formation of products in each reaction was monitored using infrared spectroscopy and confirmed with gas chromatography.

1-ethyl-3-methylimidazolium Tetrafluoroborate Used to "Wire" Cholesterol Oxidase

Morrine Omolo, Jennifer Elie, and Mihaela D. Leonida, Fairleigh Dickinson University

Ionic liquids (IL) gained interest due to their unique properties, notably their solvent capabilities and environmental friendliness. Their ability to dissolve proteins is of particular interest to bioorganic catalysis. Protein stability in IL varies depending on the nature of both protein and IL. Some enzymes are stabilized due to moderately and favorably altered secondary structures while suspended in IL, while others lose stability as a result of significant changes in structural conformation and permanent complexation between surface residues and components of the IL. The present study investigates the effect of transient exposure of cholesterol oxidase (ChO) to 1-ethyl-3-methylimidazolium tetrafluoroborate (emim-BF₄) in the presence of flavin adenine dinucleotide (FAD), the prosthetic group of ChO. The activity and stability of the modified enzyme (ME) are compared to those of the starting enzyme and to those of a ME obtained in an alternate procedure using IL in the presence of water.

Determining the Behavior of Tie1Fn3 Domains

Brian Becker¹, Kathryn Ferguson², Jason Moore², Nick Agostino¹, ¹Fairleigh Dickinson University, ²University of Pennsylvania

Tie1 and Tie2 are receptor tyrosine kinases (RTKs) that act as regulators of angiogenesis. This is a normal process that can also result in vascularized tumors. Tie2 is an activator of angiogenesis while Tie1 is thought to repress Tie2, thus preventing vascularization. Ligand-induced receptor oligomerization is key in the activation of many RTKs. Unlike most RTKs that are monomeric in the absence of ligands, Tie2 appears to form ligand-independent homo-dimers that are mediated largely through interaction of the membrane proximal FNIII domains. We hypothesize that Tie1 and Tie2 form hetero-oligomers and that the three FNIII domains are also important for this interaction. Furthermore, differences in ligand binding to homo-dimers vs hetero-dimers likely result in the different biological outcomes. To explore this we generated proteins comprising the three FNIII domains (FNIIIx3) of Tie1 and Tie2 receptors in *E. coli*. The proteins were purified using a nickel affinity column, an ion exchange column, and size exclusion chromatography. SDS-PAGE, native PAGE, and analytical ultracentrifugation were used to determine the behavior of the proteins. Purified Tie1FNIIIx3 domains were analyzed alone and in heteromeric pairings with Tie2FNIIIx3 domains. Regulation of receptor activation by interactions of these membrane proximal FNIII domains were found to be similar to those that have been seen for other RTKs such as Kit-SCF and EphA2-EphrinB2. The oligomerization of these RTKs is what results in their activation/inhibition, as theorized in Tie1 and Tie2.

Synthesis, Purification, Characterization and Evaluation of Cell organelle-Targeted Styryl Fluorescent Compounds

Ish Kumar¹, Joseph Lukose¹, and Ann F Hoffman², ¹School of Natural Sciences, Fairleigh Dickinson University, ²Roche Pharmaceuticals

Fluorescent compounds are important because of their applications particularly because of their highly sensitive and specific detection methods. Here in this work, a library of molecular compounds with styryl scaffold is synthesized by the condensation of aldehydes and pyridinium salts. Aldehydes containing functionalities of various sizes, conjugation lengths and electron with-drawing or donating capacities are chosen. Initially the pyridinium salts are synthesized by methylation reaction by refluxing overnight and then the desired Styryl fluorescent compounds synthesized by condensation reaction with different aldehydes. The products were isolated and purified with double silica gel chromatography. The obtained compounds are then characterized for their purity with NMR and Mass spectral data. Further these molecules were evaluated if these probes display fluorescence and in which areas of cells (nucleus or cytoplasm) using confocal microscopy. The tested molecules were found to be non specific after 24 hours incubation with H460 cells.

The Effects of Emulsification and Viscosity on ¹H-NMR.

Zachary Cropley, Jefferey Stellitano, and Anita J. Brandolini, Ramapo College of New Jersey

The purpose of the project was to further the field of analytical chemistry by experimentally measuring peak changes in the ¹H-NMR spectra of solutions of varying viscosity and varying emulsion concentrations. Mixtures of mineral oil, water, and polysorbate 20 were evaluated, along with mixtures of polyvinyl alcohol, borax and water. Dramatic change in chemical composition was not expected since neither viscosity nor emulsion take part in chemical reactions. Instead, more minor changes were anticipated; and the cause of such minor changes was the aim of this research. Specific concentrations of emulsions and viscous fluids were scanned using ¹H-NMR spectroscopy. Although no obvious changes in ¹H-NMR spectra have been observed, future plans include experimenting with solutions of different polymers and

borax as well as other emulsions besides those comprised of mineral oil and polysorbate 20.

* * * * *

Adoption of Polyacrylonitriles and Poly(Diallyl-Phthalates Onto Silica

Ernest Pianim and Anita J. Brandolini, Ramapo College of New Jersey

The purpose of the project was to study the effect that structural changes have on the infrared spectra of two different families of polymers. In this study the intensity of the infrared bands corresponding to the nitrile function of polyacrylonitrile was compared to that of polymethacrylonitrile. In addition we studied the intensities of the infrared bands corresponding to the carbonyl-function of poly-(diallylphthalate) and that of poly-(diallylisophthalate). Studies were carried out respectively in dichloromethane and benzene. Discussion will focus on our attempts to correlate the observed infrared spectra with structural change of these polymers.



Students at the New York Section Research Symposium and Student Award Night.

WESTCHESTER CHEMICAL SOCIETY

The Westchester Chemical Society met April 11, 2012 to hear a presentation by Dr. Georg Wisniewski, Associate Professor of Medicine in the Department of Microbiology at the New York University School of Medicine. Dr. Wisniewski spoke on the TSG-6 protein involved in inflammatory

processes, ovulation and innate immunity. He focused particularly on its interactions with the plasma protein inter-alpha-inhibitor, hyaluron, a ubiquitous extracellular matrix component, bikunin and the hyaluron-heavy chain complexes; and their role in osteoarthritis and fertility. His fascinating talk was enthusiastically received. We thoroughly enjoyed Dr. Wisniewski's interesting talk and the lively discussion afterward.



WCS Board Members with our speaker: Paul Dillon, Rolande Hodel, Georg Wisniewski and Peter Corfield.

(Photo courtesy of Paul Dillon)

EMPLOYMENT AND PROFESSIONAL RELATIONS COMMITTEE OF THE NEW YORK SECTION

To Human Resources Departments in Industry and Academia

The Employment and Professional Relations Committee maintains a roster of candidates who are ACS members seeking a position in the New York metropolitan area. If you have job openings and would like qualified candidates to contact you, please send a brief job description and educational/experience background required to hessytaft@hotmail.com.

Candidates from our roster who meet the requirements you describe will be asked to contact you.



LONG ISLAND SUBSECTION

Queensborough Community College Hosts the 12th Annual Chemistry Challenge

The 12th Annual LI-ACS Chemistry Challenge was held on Friday, March 23rd at Queensborough Community College. The event was attended by students from both 2- and 4-year institutions including Hofstra University, Nassau Community College, St. John's University, Stony Brook University, Queens College, and Queensborough Community College. The event began with food and drinks provided by the LIACS and the QCC Chemistry Club. The Chemistry

Challenge itself consisted of 45 multiple choice questions ranging from general chemistry to organic chemistry topics. The questions were timed and students used clickers to enter their answers. Students were arranged in groups of three and worked together to solve the problems using only pencils and paper (no calculators!).

The top three teams in the 2- and 4-year categories were awarded medals and Barnes and Noble gift cards. The first place teams also received a Merck Index. The top teams for students in the 4-year category were: 1) Queens College, 2) Hofstra University, and 3) tie between Hofstra and a team of Stony Brook and St. John's students. The top teams in the 2-year category were: 1) St. John's, and 2) and 3) both went to QCC students. The MC for the challenge was Julie Pigza and the event could not have been possible without the assistance of the QCC Chemistry Department and specifically the following people: Luis Vargas, Pete Irigoyen, Andrew Xu, Mahir Hossein, Frank Romano, John Schmermund, David Sarno, Paris Svoronos, and Jordan Verdis.

For more pictures, go to:

<http://www.qcc.cuny.edu/Chemistry/chemchallenge2012.html>

**Learn more about the
New York Section at
www.NewYorkACS.org**



(Photo courtesy of David Sarno)

NY METRO WOMEN CHEMISTS GROUP

The Metro Women Chemists Group of the New York Section of the ACS cosponsored the Sixth Annual Women in Science and Math seminar held on March 14, 2012 at Medgar Evers College, Brooklyn, New York. Speakers, Yolanda Small, PhD (Assistant

Professor at York College) and Elena Shumay, MD, PhD (Scientist at Brookhaven National Laboratory) shared their stories about their journey in science and provided eager students insights into maneuvering through the process from undergrad to grad and beyond. The seminar was well attended by faculty, staff and students.



Photo from left: Dr. Alicia Reid, co-chair of the Metro Women Chemists Group, Dr. Elena Shumay, Dr. Yolanda Small and guest of honor Mrs. Pollard.

(Photo courtesy of Dr. Alicia Reid)

**Have A Wonderful Summer.
See You In September!**



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EARTH DAY - 2012

The New York Section's First Annual Earth Day Parade, "Walk the Brooklyn Bridge" was hosted by Pace University on Sunday, April 22, 2012. There were approximately 100 enthusiastic earth-loving participants who took part in the fun!

<http://www.newyorkacs.org/meetings/EarthDay/CCED.php>

Dr. JaimeLee Rizzo, Chair of the NY Section and Coordinator of the Earth Day Event organized the parade, which was generously supported by an ACS Innovative Project Grant.

Participants were given earth day wrist bands, earth day balloons, earth day pamphlets, "having a ball with chemistry" balls, fresh fruit, nuts, protein bars, sun chips, veggie chips, bottles of water....and PONCHOS! Yes, ponchos....as we all bravely paraded across the Brooklyn Bridge in a downpour! That did not hinder our fun one bit! After all, New York City has been suffering from a drought and the rain for our beautiful earth was much needed!! So bring on the rain!!!! The parade was led by students who proudly held an Earth Day banner and all marchers carried their balloons while wishing all passer-byers a "Happy Earth Day!"



(Photos courtesy of Jaime-Lee Iolani-Rizzo)

North Jersey Meetings

<http://www.njacs.org>

NORTH JERSEY EXECUTIVE COMMITTEE MEETING

There will be no North Jersey Executive Committee Meeting in June.



CAREERS IN TRANSITION MEETINGS

Job Hunting??

Are you aware that the North Jersey Section holds bi-monthly meetings at Students 2 Science, Inc. in East Hanover, NJ to help ACS members? Topics covered at these cost-free workshops are:

- The latest techniques in resume preparation
- Ways for improving a resume
- Answers to frequently asked interview question
- Conducting an effective job search
- Networking to discover hidden jobs

Dates: Mondays, June 4 and 18, 2012

Times: Meeting 5:30 - 9:00 PM
Pizza snack and soda 6:30 PM
Place: Students 2 Science, Inc.
66 Deforest Avenue
East Hanover, NJ

Cost: \$5.00

Reservations: at njacs.org/careers.html

A job board and networking assistance will be offered at all topical groups meetings. Confirm at bill suits@earthlink.net (908) 875-9069 to meet 1 hr. before.

See http://njacs.org/jobs_ifr.html for local jobs and career assistance blogs.



NMR SPECTROSCOPY DISCUSSION GROUP

On the Importance of Solid-state NMR in Pharmaceutical Development

Speaker: Anuji Abraham
Bristol-Myers Squibb

Date: Wednesday, June 13, 2012

Times: Dinner 6.00 PM
Seminar 7.00 PM

Place: Fuji Japanese Sushi & Seafood
1345 US Route 1
North Brunswick, NJ

NORTH JERSEY YOUNGER CHEMIST COMMITTEE

Future Events:

Monday, August 20, 2012

Career Symposium – Philadelphia PA –
Christine McInnis (national YCC),
cmcinnis@dow.com

Monday, September 4, 2012

Poster judging – Seton Hall

Sunday, September 9, 2012

Rain Date Sunday, September 16, 2012

YCC Picnic – Possible Locations: Johnson Park, Piscataway and Rahway River Park

Saturday, October 20, 2012

Mole Day/National Chemistry Week – 10 AM - 2 PM, at Liberty Science Center – science activities for kids.

Other Events this year - TBD

Evolution of a Scientist Lecture Series - now accepting recommendations for future presenters (presentation to be in Oct./Nov.)

Happy Hours – May and Nov. at TBD –

Let us know if you are interested in any of the following:

Mini-golf (who says it is just for kids), Hiking (summer), Bus trip to AC

About us: Membership is Free

The role of the NJACS Younger Chemists Committee is to promote the interests of members under the age of 35 (or close to that age). It provides graduate students, post-doctoral chemists, and young professionals with the opportunity to interact with other chemists in the section, to help them better direct their careers, and to increase their involvement in the ACS. We do it through organizing social events, volunteering, networking and mentor/mentee opportunities, talks, seminars, and generally having a bit of fun.

So what can you do?

If you are under 35 (or just think you are!!) we need your feedback. What events do you want to see? How can we help you? We are here to serve you, so please send us your comments and suggestions. Better still, get involved!

For more information about our group or upcoming events please visit us on the YCC Google group, and post your questions: http://groups.google.com/group/ycc_njacs

Or check us out on the National ACS YCC site: <http://membership.acs.org/Y/YCC/>

NORTH JERSEY CHROMATOGRAPHY GROUP

Please mark your calendars for our upcoming NJCG events for 2012:

Wednesday, September 19th

Evening Seminar at the Crown Plaza, in Somerset, NJ

Wednesday, October 17th

Evening Seminar in conjunction with CPSA, in PA

Monday, November 12th

Evening Seminar at the Crown Plaza, in Somerset, NJ (EAS week)

Please check our website: www.NJCG.org for more information on specific events.



NMR TOPICAL GROUP

Charles Pathirana and Luciano Mueller – Co-Chairs

2012 Spring Activities



Ryan Sasaki from Advanced Chemistry Development, Inc. presented “ACD/Spectrus – A Continuing Evolution of Leveraging Chemical and Analytical Knowledge” at January 18th meeting.

Learn more about the
North Jersey Section at
www.NJACS.org



Professor David Rovnyak from Bucknell University, PA during his presentation on “Enabling Enhanced Sensitivity in nD-NMR by Non-Uniform Sampling and Applications” at February 15th meeting.



Dr. Thomas Williamson (right) from Merck & Co. – assisted by Charles Pathirana – is about to start his presentation on “What’s New in Stereochemical Determination by NMR” at March 14th meeting.

SIXTY-FOURTH ANNUAL UNDERGRADUATE RESEARCH CONFERENCE

The Sixty-fourth Annual Undergraduate Research Conference organized by the Fairleigh Dickinson University Student Chapter of the American Chemical Society was held on Friday April 27, 2012, at FDU in Madison, NJ. Seven undergraduate students from colleges and universities in the area were hosted by the FDU Chem Club as they presented their research to an audience of students, faculty and scientists from the North Jersey area. The three judges, Ms. Jacqueline Erickson an analytical chemist from GlaxoSmithKline, Dr. Alan Cooper a retired medicinal chemist from Merck/Schering Plough and Mr. Bill Suits an ACS Career Consultant from North Jersey Section of the ACS, were presented with a tough decision as they judged the student presentations and selected the top three undergraduate students. Each presenter represented their institution and gave some insight into the remarkable research opportunities students in the North Jersey Section can experience.

First Place and the Jean Asell Duranna Award was given to Tharani Theivakumar a senior at Drew University who's was presentation titled, "Discovery of Anti-tumor Agents Targeting Mutant p53." Her research was conducted under the direction of Dr. Ronald J. Doll and RISE Fellow at Drew University. Ms. Theivakumar's discussion was executed very professionally as she shared with the audience all the amazing medicinal chemistry and organic synthesis that she has been involved with in this project.

The second place award was given to Mr. Timothy J. Barnum, who is a junior at Drew University working with Dr. Mary-Ann Pearsall on the topic, "Molecular Orbital Calculations of Dibridged Triosmium Carbonyl Clusters." Mr. Barnum presented the details of his research in a very confident and professional manner. Because he is a junior, we are very excited to see him continue in his project into his senior year and who knows; maybe we will see him again next year.

The third place award went to the presentation titled, "Investigation of the Nucleic Acid/Cresyl Violet Complex Using Gel Electrophoresis and Solution Studies," that was given by an FDU senior, Ms. Danielle Centrella. Ms. Centrella has worked on this project for three years under the direction of Dr. Amber Flynn Charlebois. Danielle confidently and clearly shared with the audience all the progress she has made on this investigation during those three years.

Conference attendees were invited to partake in the amazing Periodic Table of the Elements Brownies that were synthesized and derivatized (made and decorated) by the FDU Chemistry Club President, Mr. Spyros Mavropoulos. It was interesting to see which element the different attendees were interested in tasting. Carbon was the first brownie element to be devoured with Hydrogen taking a very close second.

The award certificates were formally presented to the top three student presenters at the North Jersey Section's Annual Awards Dinner held on Monday May 14, 2012 in Lenfell Hall on the Fairleigh Dickinson University campus in Madison, NJ.

Pictures on next page



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North Jersey Section student winners and judges (front left) Tharani Theivakumar, Ms. Jackie Erickson, and Danielle Centrella (back) Dr. Alan Cooper, Tim Barnum, and Mr. Bill Suits.

(Photos courtesy of Amber Charlebois)



Undergraduate Student Conference winners (from left) Danielle Centrella (FDU 3rd), Tharani Theivakumar (Drew 1st), and Tim Barnum (Drew 2nd).



NORTH JERSEY REGIONAL SCIENCE FAIR 2012

It is my pleasure to announce the winners of the American Chemical Society Awards at the North Jersey Regional Science Fair 2012.

They are:

First Prize: Structure-Property-Effectiveness Correlation and Novel Mechanism for Amphiphile-Assisted Biofilm Inhibition

Tara L Raj
Hunterdon Central Regional High School



FDU Chem Club's Periodic Table of the Elements Brownies for the Undergraduate Conference.

Submit photos (remember to include captions and photo credits) for use in *The Indicator* by e-mailing Photos@TheIndicator.org

Second Prize: Microwave Plasma Enhanced Carbon Nanotube Deposition group project: Ajay Ramesh Kashi and Kevin Chen

Ajay Ramesh Kashi and
Kevin Chen
Watchung Hills Regional High School

Third Prize: Olfaction Effects of Salt on Common Food Flavorants
Nicholas John Carmack
Summit High School

Sincerely yours,
Amanda J. Stent

CURRENT PROCESS CHEMISTRY SEMINAR

Friends and Fellow Members of ACS North Jersey Section,

Cambridge Healthtech Institute's "Current Process Chemistry: Successes and Challenges in Drug Substance Process R&D" is taking place **June 13-14** in Princeton, NJ at the Forrester Center (www.healthtech.com/prc) with some extra workshops on **June 12th** and **June 13th** evening that you can either attend separately or add on to your main conference registration.

CHI is offering NJACS members a 20% discount off current registration pricing — use the keycode PRCRSC when you register at their site <http://www.healthtech.com/processchemistry> (Fees and discounts are scaled down by 50% for academics). Registration prices increase after May 4th.

I serve on the advisory board for this meeting and this year I'm also chairing a session. This is an excellent conference for process chemists and offers good networking opportunities. I helped convince the organizers to hold the meeting in Princeton this year so please show your support and register to attend — otherwise it may not be in NJ again next year!

I'd be happy to answer questions about the meeting.

Thank you,
Ambarish Singh
2010-NJ-ACS Chair

Call for Nominations

EDWARD J. MERRILL AWARD FOR OUTSTANDING HIGH SCHOOL CHEMISTRY TEACHER FOR 2012

Now is the time to begin thinking about nominations for the Edward J. Merrill Award, North Jersey Section, for Outstanding High School Chemistry Teacher for the year 2012.

Go to the web site, njacs.org under education and obtain your preliminary nomination form and guidelines. The full packet takes time to do a good job!

We all know an outstanding high school chemistry teacher. Perhaps one from your town, your son's or daughter's teacher or just one that you have heard about or worked with at some point. The award carries \$500 for the teacher, \$500 in supplies

for the teacher's classroom and a plaque to display at home or in the classroom.

Any questions or help needed contact Bettyann Howson,
chemphun@optonline.net.

Call for Volunteers

Come Join Us at the Liberty Science Center

Last year The North Jersey Section of American Chemical Society celebrated National Chemistry Week at the Liberty Science Center. We had a great time and the attendees really appreciated all of our efforts. Why don't you join us this year? On **Saturday, October 20, 2012** the North Jersey Section will be holding its annual **ChemExpo** in celebration of National Chemistry Week. As usual we will have many tables offering all kinds of hands-on activities for budding scientists. You can set up your own table or help out at another table. We need you to help us make a difference!

The theme for this year is "Nanotechnology". Engage visitors in exploring the positive impacts of chemistry as it relates to the emerging field of "Nanotechnology". Check out the National Chemistry Week web page at <http://portal.acs.org/> Click on "Education" and then "National Chemistry Week" to get some ideas for hands-on activities that you might want to present.

Your activities should be geared for 8 to 12 year olds. As usual our first priority is safety. Preferably presenters should use household materials to demonstrate a scientific principle. We would like the students to be able to repeat these experiments at home and at school so it would be very helpful if you had handout instructions to distribute.

To minimize duplication of the presentations, we will need to know by October 1 the activity you would like to conduct at your table. Individuals contacting us first with their idea(s) will be given priority, so please let us hear from you as soon as possible. Contact Bobbi Gorman at rosellerams@yahoo.com or Mita Chaki at mitachaki@gmail.com and let us know what activities you will be doing at your table or if you want to volunteer at the Expo.

We also value and look forward to receiving financial support to help cover many of the expenses associated with the Section's

(continued on page 26)

CALL FOR VOLUNTEERS

(continued from page 25)

NCW activities. If you would contact the appropriate individuals at your company, the Section would be most grateful. A donation of \$500.00 indicates Gold Sponsorship, a \$250.00 gift indicates Silver Sponsorship and a \$100.00 gift indicates a Bronze Sponsorship. Checks should be made out to the North Jersey ACS Section with a memo of "ChemExpo" and sent to Jacqueline Erickson, 33 Ronald Road, Lake Hiawatha, N, 07034-1121.

Please fill out the following forms and return them to Mita Chaki at mitachaki@gmail.com.

Form 1. Count me in.

My name is: _____

I am volunteering to work on: **Saturday, October 20** (Check appropriate box)

- 10:00am-11:30 am,
- 11:30 am – 2:00 pm,
- 10:00am-2:00pm

I can be reached at: (work phone number) _____

My complete address is: _____

I am an employee at: _____

The activities at my table will be: _____

In addition to a table, I also need: _____

I will be bringing handouts on activities that the students can do at home. Yes No

I will need more than one table. Yes No
How many additional tables will you need?

Form 2. My company would like to support these efforts.

The following company/individuals are willing to help defray the costs of these events:

An acknowledgement letter for this contribution should be sent to (name and full address):

Form 3.

I will be joined at my table by the following volunteers.

Complete Name: _____ Institution: _____ Address (snail mail): _____

Activity _____ Time Volunteering _____

Complete Name: _____ Institution: _____ Address (snail mail): _____

Activity _____ Time Volunteering _____

Complete Name: _____ Institution: _____ Address (snail mail): _____

Activity _____ Time Volunteering _____

Acknowledge letters should be sent to: _____

Thanks very much for all of your help. The Section is most appreciative of your efforts. Mita Chaki and Valerie Kuck, American Chemical Society, North Jersey Section

Others

AIChE RELAUNCHES PUBLIC COURSES AND IN-HOUSE TRAINING, WHILE EXPANDING E-LEARNING

Return of these offerings rounds out growing education portfolio

New York – The American Institute of Chemical Engineers (AIChE), which last year launched a new series of online learning courses, will, beginning this July, again offer instructor-led public courses at sites around the county. These courses, and other content, will also be available for customized, in-company presentation.

While some of these courses have been offered through the American Society of Mechanical Engineers for the last few years, AIChE's leadership decided to begin administering live, face-to-face learning again to assure top-quality and consistent chemical engineering content across all delivery channels and platforms. Bette Lawler, AIChE's director of operations, said that the decision was another demonstration of "AIChE's ongoing commitment to building value for members through more and better content."

The initial roster of 12 public, instructor-led courses will run from September through December 2012. Those courses will be held in Houston, Las Vegas, New Orleans, Orlando and San Francisco. Additional courses and cities will be added in 2013.

To oversee this effort, AIChE has named Anne Schaeffer its new director of education. Schaeffer, who built a successful education program for the Direct Marketing Association, said: "With all the offerings under one 'roof,' we're able to provide technically expert, quality education and let members decide what method of training works best for them." She added that some courses, like the popular Essentials of Chemical Engineering for Non-Engineers, are designed for nonmembers, as well.

Denise DeLuca Mallon, who manages global recruitment sales for AIChE, will expand her efforts and work to re-establish AIChE's tradition of providing in-company training. The program now includes recent innovations, like "Process Safety Boot Camp," developed by AIChE's Center for Chemical Process Safety.

For more information, visit <http://www.aiche.org/education/> or email edu@aiche.org

Press Releases

H3+: The Molecule that Made the Universe

This story and photos are online at: <http://uanews.org/node/46088>.

In a study that pushed quantum mechanical theory and research capabilities to the limit, UA researchers have found a way to see the molecule that likely made the universe - or at least the hot and fiery bits of it.

Lurking in the vast, chilly regions between stars, the unassuming molecule known as a tri-atomic hydrogen ion, or H3+, may hold secrets of the formation of the first stars after the Big Bang.

At the University of Arizona, then doctoral candidate Michele Pavanello spent months doing painstaking calculations to find a way to spot H3+ and unveil its pivotal role in astronomy and spectroscopy, supervised by Ludwik Adamowicz, a professor in the UA's department of chemistry and biochemistry.

The groundbreaking results have been published in a recent edition of Physical Review Letters.



New Method to Prevent Undersea Ice Clogs

Surface coatings developed by MIT researchers could inhibit buildup of methane hydrates that can block deep-sea oil and gas wells

CAMBRIDGE, Mass -- During the massive oil spill from the ruptured Deepwater Horizon well in 2010, it seemed at first like there might be a quick fix: a containment dome lowered onto the broken pipe to capture the flow so it could be pumped to the surface and disposed of properly. But that attempt quickly failed, because the dome almost instantly became clogged with frozen methane hydrate.

Methane hydrates, which can freeze upon contact with cold water in the deep ocean, are a chronic problem for deep-sea oil and gas wells. Sometimes these frozen hydrates form inside the well casing, where they can restrict or even block the flow, at enormous cost to the well operators.

"The oil and gas industries currently spend at least \$200 million a year just on chemicals" to prevent such buildups, Varanasi says; industry sources say the total figure for prevention and lost production due to hydrates could be in the billions. His team's new method would instead use passive coatings on the insides of the pipes that are designed to prevent the hydrates from adhering.

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