

PAGE 2 THIS MONTH IN CHEMICAL HISTORY

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

I now conclude my review of 90- year old chemistry as seen in the "Annual Reports of the Progress of Chemistry" for 1933. I begin with the section on sub-atomic phenomena and radioactivity. The events of 1933 cannot compare in significance with those of 1932 that saw the emergence of both the neutron and deuterium, but they still have great impact particularly the observations of "a particle, apparently the same in mass and charge as the electron but of opposite sign"! The positron as we now know it was easily produced in the laboratory.

The deuterium nucleus, called the diplon or deuton, was being explored as a "powerful projectile against the nuclei of light elements. Further study of cosmic radiation suggests that "radiation" should be replaced by "particles" and even "cosmic" might be a misnomer! (It isn't).

Studies of isotopes continue and new isotopes of Zn, Cd. Te, Nd, Sm, Eu, Gd, and Tb have been identified by mass spectrometry. Much of this work was done by Aston. Surprisingly only one isotope of Terbium, of mass 159, was observed – at odds with the chemical atomic mass of 159.2; a puzzle yet to be resolved. The isotopic compositions of seventy of the ninety-two known elements have now been investigated. Twenty-two of the elements studied have only a single isotope.

Artificial disintegrations of the lighter elements by bombardments with protons, deuterons, neutrons, and alpha-particles have been objects of intensive study, e.g. ⁷Li + H = 2 ⁴He. The kinetic energies of both the bombarding protons and the helium nuclei generated have been explored. Alpha particles are also produced by bombardment of boron with protons: ¹¹B + H = 3 He.

Neutrons are also effective in disintegrating light elements. For example: $n + {}^{14}N = {}^{15}N = {}^{4}He + {}^{11}B$; and $n + {}^{16}O = {}^{4}He + {}^{13}C$. Mme. I. Curie and M. F. Joliot have used the bombardment of light elements with alpha-particles from polonium to generate neutrons. Targets included Be, B, Li etc. In addition to neutrons some light elements also emit gamma rays or protons. This phenomenon has also been studied by L. Meitner.

The positron (positive electron) was discovered independently by Anderson; and by Blackett and Occhialini. Both groups used cloud chambers and observed positrons in cosmic radiation. Positrons can be produced in the laboratory by absorption of high energy gamma rays by lead. Oppenheimer and Plesset have calculated that the observed process should produce a pair of particles simultaneously, an electron and a positron. Extensive studies of cosmic radiation have shown that it may be of unknown terrestrial origin, and consists of both penetrating radiation and particles including positrons.

And now for something completely different – a brief foray into analytical chemistry, and a hint of things to come. Analysis of mixtures of homologous hydrocarbons, especially paraffins is, in 1933, extremely difficult. They cannot be separated chemically, and combustion only gives an average formulation. Gaseous diffusion can give some idea of the nature of the lightest components. The sole exact method in principle, though challenging in practice, is liquefaction of the entire mixture and careful fractional distillation. Components are identified by boiling points and molar mass determinations. A promising new method has been described, separately, by Kuhn and by Schuftan. This depends on selective desorption of the hydrocarbons from cooled charcoal or silica gel. I believe that here we see the germ of a procedure that eventually became gas chromatography.

And so we say farewell to "Annual Reports" for 1933. You can look forward to a wider variety of columns for the rest of this year. But perhaps in early 2024... Have a great summer.

THE INDICATOR

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Indicator

http://www.theindicator.org/

The monthly newsletter of the New York & North Jersey Local Sections of the American Chemical Society. Published jointly by the two sections and distributed to their 6,200 members.

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EDITORIAL DEADLINES

| September 2023 | August 16, 2023 |
|----------------|--------------------|
| October 2023 | September 16, 2023 |
| November 2023 | October 16, 2023 |
| December 2023 | November 16, 2023 |
| | |

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Address advertising correspondence to <u>Advertising Manager</u>. Other correspondence to the <u>Editor</u>.

June 2023 Calendar

NORTH JERSEY SECTION

Saturday, June 3, 2023

Wesr Orange Street Fair / Edison Museum See page 22

Friday, June 9, 2023

Younger Chemist Committee Symposium Middle Atlantic Regional Meeting of the American Chemical Society (MARM2023) See page 6

Monday, June 19, 2023

NJACS Executive Committee Meeting See page 22

NEW YORK SECTION

Monday, June 5, 2023 NYACS Board of Directors Meeting See page 5

Friday, June 9, 2023

Technical Program MARM2023 *See page 6*

Saturday, June 10, 2023

Educational Program MARM2023 *See page 6*



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NEW YORK SECTION MEETINGS

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BOARD MEETING DATES FOR 2023

The dates for the Board Meetings of the ACS New York Section for 2023 are below. The meetings are open to all, but an RSVP for in-person attendance is required 5 days before the meeting.

All members who would like to attend any of the meetings should inform the New York Section office by emailing <u>Ms.</u> <u>Bernadette Taylor</u>. Mary Virginia Orna, Ph.D. will Chair all meetings. The meetings will start at exactly 6:30 PM.

The remaining board meetings dates for 2023 are, as follows:

Monday, June 5, 2023 (hybrid) Monday, September 18, 2023 (hybrid) Monday, November 20, 2023 (hybrid)

Please note that there will also be an in person meeting of the Finance Committee on Wednesday, **November 15, 2023**.

More information will be posted in future monthly issues of *The Indicator* and on the New York ACS <u>website</u>.

The deadline for submitting material for the September issue of The Indicator is August 16th http://www.theindicator.org/



302-998-1184 Wilmington DE micronanalytical@compuserve.com

SEMINAR SPEAKERS WANTED

The New York Section wants to add to add you to our Speakers Bureau database of local speakers who are available for Section-wide seminars and symposia. If you have an area of research or interest that would provide an interesting talk appropriate for our Section. members, and would like to be included in our Speakers Bureau, please send an email to Ms. Bernadette Taylor with the following information that will be posted on the Section's website: your name, affiliation, a seminar title, and 5-6 words briefly summarizing your area of specialty. We look forward to hearing from you about topics that you wish to share with your fellow members!

THE INDICATOR – JUNE 2023

MIDDLE ATLANTIC REGIONAL MEETING MARM 2023



The 2023 Middle Atlantic Regional Meeting of the ACS (MARM2023) hosted by the New York ACS is being held on **June 9-10, 2023.** Technical talks and over 200 posters will be presented at the City University of New York Graduate Center on June 9th with educational programming at St. John's University on June 10th. Registration for the technical sessions have closed, but you can still add tickets to the 50-, 60- and 70-year member luncheon, the awards dinner, and the high school teacher's workshop. The New York ACS looks forward to greeting you all in person at MARM 2023.

| Where: | CUNY Graduate Center | & | St. John's University |
|-----------------------|---|------------------------|---|
| Date: | Friday, June 9, 2023 | & | Friday, June 9, 2023 |
| Time: | 9:00AM – 9:00PM | & | 10:00 AM – 2:00 PM |
| | | | |
| The org Society wi | anizers of the 2023 Middle Atlantic Region sh to thank all our exhibitors and sponsors | hal Meeti s shown c | ng of the American Chemical on pages 7-12 for their generous |
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Middle Atlantic Regional Meeting Exhibitors (continued)



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Middle Atlantic Regional Meeting Exhibitors (continued)



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The New York Section honors the following college students for their academic excellence in the field of chemistry. <u>More info online.</u>







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Odelia Johnson Brooklyn College



Mead Lockwood Columbia University





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Hanna Rosenstock Lehman College

Ethan Feng Columbia University



Lehman College

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Thiago Figueiredo SUNY at Old Westbury



Sangjoon Lee Cooper U<mark>nio</mark>n Olivia Kim Cooper Union



Midshipman Sklyer Burnham US Merchant Marine Academy



Matthew Mistretta Adelphi University



Moshe Carroll Yeshiva University



Joyce Ikedife New Jersey City University



Pen Sormani Chang Stony Brook University



Vale<mark>rie N</mark>oelle Malachin Pace University

THE INDICATOR – JUNE 2023 PAGE 19 NEW YORK SECTION AWARDS CERTIFICATES OF EXCELLENCE (continued)



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Nicolas Christopher Oltean New York University



Anthony Paul Kopatsis New York University



Jenna Booth Stevens Institute of Technology



Justyn F. Carollo Fairleigh Dickinson University



CLASS OF 2023

Diana Rodriguez Queens College





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Ob







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Jillian R. Mena Fairleigh Dickinson University



Ela Hoxhaj **Iona University**



Sara M. Hubbi Pace University, Pleasantville



Justin Gabriel **Stevens Institute of** Technology



Alyssa Constantino Adelphi University

ABREAS



Ethan Grimes Pace University

NEW YORK SECTION AWARDS CERTIFICATES OF EXCELLENCE (continued)

Also honored, but not pictured:

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BOTH THE NEW YORK ACS AND NORTH JERSEY ACS NAMED FINALISTS FOR CHEMLUMINARY AWARDS

The New York ACS and North Jersey ACS wish to thank their volunteers for their hard work and dedication. A reflection of their committment is seen in the naming of both local sections as ChemLuminary Award finalists.

The New York ACS has been named a finalist for the following two ChemLuminary Awards:

- Best New Public Relations or Communications Program of a Local Section (Minority Affairs Committee Career Day Video and High School Outreach)
- Outstanding Performance by a Local Section Very Large Size Category

The North Jersey ACS has been names a finalist for six ChemLuminary Awards:

- Best Activity or Program Stimulating Member Involvement (2022 North Jersey ACS Topical Group Symposium Series)
- Outstanding American Association of Chemistry Teachers (AACT) Support Award (Ongoing Activities and Events for K-12 Teachers and Their Students)
- Outstanding Engagement with K-8 Students (Fair for Emerging Researchers: Science Fair)
- Outstanding Ongoing NCW Event (ChemExpo 2022)
- Outstanding Project SEED Program Award Large Site (Project Seed)
- Outstanding Performance by a Local Section Very Large Size Category

The winners will be announced at the ACS Fall 2023 in San Francisco on Tuesday, August 15, at the San Francisco Marriott Marquis, Salon 8-9, located at 780 Mission Street, San Francisco, CA 94103.



NORTH JERSEY SECTION MEETINGS

https://www.njacs.org/

2023 NORTH JERSEY ACS EXECUTIVE COMMITTEE MEETINGS

2023 North Jersey ACS Chair Justyna Sikorska and the Executive Council welcome you to our monthly NJACS meetings. Meetings will be held either virtually or in hybrid mode (virtually with an in-person option at the Merck Kenilworth site). The meetings are normally held on **Mondays from 7 pm to 9 pm once per month.** All members are welcome to attend and become more involved in section activities.

For any additional information including a link to virtual meetings and RSVP deadline for in-person meetings, please <u>click here to email our</u> <u>Communications Chair</u>.

June 19 (hybrid) October 23 (virtual) December - TBD September 18 (hybrid) November 13 (virtual)



JOIN US AT EDISON DAY AT THE EDISON MUSEUM IN WEST ORANGE

Place: Thomas Edison Museum 211 Main Street West Orange, NJ (directions)

- Date: Saturday, June 3, 2023
- **Time:** 11:00 AM 5:00 PM



Scene from last year's Edison Day festivities!

We had loads of fun last year at Edison Day (<u>see for yourself!</u>) – visit us this year on June 3rd to experience an ELECTRICIFYING time at the <u>West Orange Street Fair</u>! We will be at the Thomas Edison Museum, 211 Main Street in West Orange, NJ, along with many other attractions!

Volunteers are welcome to help out but we'd especially love for you to visit with your family and enjoy all the Fair has to offer! For more info, contact <u>Event Chair Miriam Gulotta</u>.

MEETING REPORTS

NEW YORK ACS PARTICIPATES IN 2023 UNITED STATES CHEMISTRY OLYMPIAD

Contributed by Stephen Z. Goldberg, Professor Emeritus, Adelphi University, Chair NYACS Olympiad Committee.

The New York Section participated in the <u>2023 United States National Chemistry</u> <u>Olympiad</u> (USNCO). The local exam was administered online on March 4 and 5 to 323 students from 64 high schools. The New York Section thanks the many people who worked to provide the opportunity for students to participate in the USNCO.

Subject to the USNCO rules the 14 highest scorers took the three part National Exam at Iona College in New Rochelle on April 23. The USNCO only releases the scores for Part I of the exam and students from the New York Section had an average grade of 34.7 out of 60 as compared with the national average 24.8.

We congratulate all 14 outstanding students and their teachers. Special congratulations to two students, Joshua Li (The Wheatley School), and Richard Zhuang (William A. Shine Great Neck South High School) who earned high honors and to six students, Samuel Adler (Long Beach High School), Jolene Cao (Smithtown High School East), Chinmayi Goyal (Yorktown High School), Anthony Lin (The Bronx High School of Science), Anna Xing (Ward Melville High School) and Michael Zhang (Ward Melville High School) who earned honors.



<u>Back Row (left to right)</u>: Alex Ha (Herricks High School), Jolene Cao (Smithtown High School East), Kevin Zhang (Stuyvesant High School), Michael Zhang (Ward Melville High School), Paul Wang (New Hyde Park Memorial High School), Victor Zhou (Horace Greeley High School), Jeffrey Louie (The Bronx High School of Science), Anthony Lin (The Bronx High School of Science)

<u>Front Row (left to right)</u>: Samuel Adler (Long Beach High School), Jessica Liu (Stuyvesant High School), Chinmayi Goyal (Yorktown High School), Anna Xing (Ward Melville High School), Richard Zhuang (William A, Shine - Great Neck South High School), Joshua Li (The Wheatley School)

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THE INDICATOR – JUNE 2023 DR. MARIE MAYNARD DALY NATIONAL HISTORIC CHEMICAL LANDMARK

National Historic Chemical Landmark The recognizing Dr. Marie Marie Daly was dedicated on May 19, 2023 at her alma mater of Columbia University (view program booklet here). The leadership of the New York ACS was joined by leaders from the American Chemical Society, the North Jersey ACS, the ACS Division of the History of Chemistry, the Science History Institute, Columbia University, the, National Organization the Professional Advancement for of Black Chemists and Chemical Engineers, Revlon, ExxonMobil and Shell at this festive occasion.

2023 New York ACS Chair Mary Virginia Orna began the program by welcoming the capacity crowd in historic 309 Havemeyer Hall to the photo event (shown in below). Dr Orna recounted how Jeannette Brown's book, African American Women Chemists, was seminal to the genesis of the idea to honor Dr. Daly with a National Historic Chemical Landmark. Under the leadership of 2021 New York ACS Chair Rita Upmacis, the proposal was developed by the Committee on the History of the New York Section and later approved by the American Chemical Society.



American Chemical Society



DR. MARIE MAYNARD DALY NATIONAL HISTORIC CHEMICAL LANDMARK (continued)

Dignitaries Honor Dr. Marie Maynard Daly

Ann McDermott, Chair of the Columbia University Department of Chemistry, welcomed old friends and newcomers to the landmark dedication ceremony. She called it an understatement to say that Dr. Marie Maynard Daly was ahead of her time and remarked on Dr. Daly's foundational research in biochemistry and that while we all greatly benefit from diversity and a culture of belonging in science, our work in not done.

Dr. Carlos Alonso, Dean of the Graduate School of Arts and Sciences, welcomed the attendees and distributed copies of Dr. Daly's dissertation defense card, filed immediately following her thesis defense, and a page from the 1947 commencement program bearing Dr. Calling Dr. Daly a 'trailblazer' and a Daly's name. 'catalyst for change', Dean Alonso reminded us of the enormous human cost, sacrifices and indignities involved with being the first to traverse unknown terrain. He noted that our honorific use of 'trailblazer' hides the adverse and discriminatory circumstances that demanded the perseverance to overcome the adversity thrust upon them in the first place. He called the celebration of Dr. Daly proper and essential as abiding reminders of what still remains to be done.



Dr. Carlos Alonso

Our celebration of her triumphs should not absolve us from recognizing that the burdens and obstacles that she labored under were one's our society imposed on her unnecessarily.

~ Dean Carlos Alonso



DR. MARIE MAYNARD DALY NATIONAL HISTORIC CHEMICAL LANDMARK (continued)

Symposium Honoring Dr. Marie Maynard Daly

Dr. Robert Hoyte presided over the symposium honoring Dr. Marie Maynard Daly. The attendees enjoyed dynamic talks addressing Dr. Daly's life, science and legacy.

Dr. Linda Meade-Tollin, who met Dr. Daly as a graduate student, put Dr. Daly's scientific work on DNA, into historical context in her talk entitled "<u>The Scientific Legacy of Dr. Marie M. Daly</u>, <u>Ph.D</u>." She discussed how Dr. Daly's extremely precise measurements of the purines and pyrimidines content in DNA from various organs and species showed that the tetranucleotide hypothesis was untenable

Dr. Daly's scientific life was, and is, an inspiration and source of pride to all, but especially to those of us who are minority and female and victims of the double bind ~ Dr. Linda Meade-Tollin

Dr. Sibrina Collins' contribution, "Inclusive Stories in Chemistry: Celebrating Dr. Marie M. Dalv", discussed her storytelling in chemical use of education to increase representation. She recounted seeing the movie 'Black Panther' and thinking about where the fictional chemical element vibranium would it be in the periodic table. Her super-hero science research has garnered attention from other researchers as well as the general public on social media and has spurred a national conversation about the importance of people of color and women the science, technology, engineering and mathematics (STEM) fields like Dr. Marie Maynard Daly.



Dr. Sibrina Collins



Dr. Mandë Holford

Dr. Mandë Holford delivered a technical talk entitled "A foot in the door: from Marie Daly to Killer Snails" to the delight of the audience. She recounted learning about Dr. Daly through Jeannette Brown's book, African American Women Chemists, and compared her own career path that of the trailblazer Dr. Daly. She then discussed the role of snake venoms as treatments for hypertension related to Dr. Daly's work in the field and then turned to her work on snail venoms from She discussed the construction of a terebrids. molecular phylogeny of snails to identify venom peptides using a multi-omics approach. She is currently investigating the peptides' uses as nonopioid analgesics and in cancer therapy.

DR. MARIE MAYNARD DALY NATIONAL HISTORIC CHEMICAL LANDMARK (continued)

Dr. Marc Walters contribution, " Dr. Marie Daly, her life and times: A view from today", started with a historical discussion of prevalence the of Indian immigrants in New York who were West professionals prior to the <u>Johnson-Reed Act</u> of 1924. The discussion turned to the opportunity provided to black students by Cornell University, where Dr. Daly's father had matriculated, and the vibrant black middle class of Washington, D.C. where her mother's family lived. Dr. Walters postulated that these were foundational to Dr. Daly's aspiration and achievement as they provided what sociologist have termed 'cultural capital' and that is now recognized as necessary to produce modern M.D.-Ph.D. graduates.



Dr. Marc Walters

Through countless hours spent in laboratories, where sometimes I would watch as a child, conducting meticulous experiments and scrutinizing data, Dr. Daly demonstrated that introversion, womanhood, and Black excellence are not mutually exclusive

~ Carly Rae Reid

Remarks by Dr. Daly's Family



Following the distinguished symposium, Carly Rae step-granddaughter of Dr. Marie Reid, Dalv addressed the audience with an emotional message of inclusion and gratitude (view it on YouTube here). Carly talked about Dr. Daly with love and respect in a way that only family could. She noted Dr. Daly's grace in facing the obstacles of her day and Carly brought Dr. Daly's humanity to the fore by describing her introverted nature, the solitude she sought in gardening, making jam and taking long walks on the beach. She described the love that Vincent, her husband, had for Dr. Daly and how he never asked her to dim her light, but rather let her shine. It was an immensely personal story that added greatly to the event.

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Carly Reid and Mary Virginia Orna

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DR. MARIE MAYNARD DALY NATIONAL HISTORIC CHEMICAL LANDMARK (continued)

Contributions by Dr. Daly's Family

Carly also contributed family heirlooms to a display at Columbia University. Included were all Dr. Daly's diplomas (Hunter College High School, Queens College, New York University and Columbia University), reprints from her research papers, several awards that she has received in her career (membership in Sigma Xi, election as a Fellow of the New York Academy of Sciences, and the National Sojourner Truth Award from the <u>National Association of Negro Business and Professional Women's Clubs</u>) and many personal photos – even her baby picture.



The Reid Family



Dr. Daly's Diplomas



Historical artifacts of Dr. Daly

Following the remarks of Carly Reid, ACS Chair-Elect Ping Furlan closed the distinguished symposium and thanked the speakers, the organizers, and the donors. Dr. Furlan then exhorted the audience to honor Dr. Daly by striving to build a world where diverse voices are valued and heard, where the pursuit of knowledge and discovery are celebrated and where every individual is encouraged to reach their full potential.



Dr. Daly's thesis, reprints and honors



DR. MARIE MAYNARD DALY NATIONAL HISTORIC CHEMICAL LANDMARK (continued)

Premiere of Dr. Marie M. Daly: Chemistry Pioneer

Following the closing of the symposium, the audience was also treated to a movie premiere. Produced by the New York ACS' Committee on Minority Affairs, the film <u>Dr. Marie M. Daly: Chemistry Pioneer</u> highlights the life, scientific contributions and ongoing legacy of Dr. Daly.



Symposium speaker Dr. Sibrina Collins with Dr. Daly's relatives Ari Reid & Carly Reid, and the filmmakers, Salomeya Lomidze & Michael Zhonga, and Maria Contel, New York ACS Committee on Minority Affairs Chair, celebrating the premiere of the film.

ACS Dignitaries Honor Dr. Marie Maynard Daly

ACS President-Elect Mary Carroll delivered greetings to all on behalf of the 161,000 members of the American Chemical Society. In her remarks, she stressed that one way to make chemistry less intimidating to the general public was to tell the stories of great chemists like Lavoisier and Dr. Marie Daly. She congratulated the <u>National Historic</u> <u>Chemical Landmark</u> program that has now told ninety such stories in its thirty-one year history.





Thurgood Marshall Academy for Learning and Social Change High School Students

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DR. MARIE MAYNARD DALY NATIONAL HISTORIC CHEMICAL LANDMARK (continued)

ACS Dignitaries Honor Dr. Marie Maynard Daly

ACS Chief Executive Officer Albert Horvath lauded Dr. Daly for her success in biochemistry at a time when broad access to the sciences did not exist and commended her on her efforts to build programs to diversify the next generation of scientists. The ACS shares Dr. Daly's passion and is working to bolster diversity in the chemical enterprise by supporting students from underrepresented groups across its educational portfolio. At the high school level, ACS's long-standing Project SEED program offers 350 students authentic research experiences each summer in academic and industrial labs. 50 Project SEED students attended the event (shown in the photo



below) and presented posters honoring Dr. Marie Maynard Daly. ACS CEO Horvath also discused the ACS Scholars Program which supports 300 college students in chemistry and chemical engineering. At the graduate level, the ACS Bridge Program, part of the Inclusive Graduate Education Network (IGEN), is endeavoring to increase the number of Ph.D. degrees earned by students from underrepresented groups.



It was only fitting that North Jersey ACS' Jeannette Brown concluded the dedication ceremony since her book, <u>African American Women Chemists</u>, inspired the process that resulted in this National Historical Chemical Landmark for Dr. Marie Maynard Daly. Ms. Brown recounted Dr. Daly's life story with delight, as a fellow New Yorker, and the occasion of meeting her while researching her book. We are all indebted to Jeannette Brown for shining the light on Dr. Marie Maynard Daly and her historic achievements.



Fifty New York ACS Project SEED Students Attended with their coordinators Nadia Makar and Jennifer Donnelly

WESTCHESTER CHEMICAL SOCIETY

DISTINGUISHED SCIENTIST AND STUDENT AWARD DINNER 2023

The 2023 Distinguished Scientist and Student Award Dinner for the Westchester Chemical Society was held on Thursday, April 27, 2023. The event was an in-person lecture and dinner held in the Stephen Friedman Room, Wilcox Hall, at Pace University in Pleasantville, NY, with 32 attendees and an online Zoom event with 6 virtual attendees.

The event began with a reception at 5:30 with appetizers as the awardees and attendees arrived. Dr. Mary Virginia Orna, a board member for the Westchester Chemical Society and the



the current chair of the New York Section, acted as the Master of Ceremonies for the evening since Dr. Rolande Hodel, the chair of Westchester Chemical Society, was abroad in Cameroon working with her Aids Free Africa program. Dr Orna welcomed and thanked everyone for attending. Mary Virginia also introduced several notable attendees at the dinner before she proceeded to present the Distinguished Scientist Award for 2023 as shown above.

The recipient of the 2023 Distinguished Scientist Award is Dr. Ipsita Banerjee, a professor at Fordham University since 2004 and the department chair since 2018. She is a recipient of an Outstanding Research Mentorship award from the National Council of Undergraduate Research, and Outstanding Four-year Undergraduate College and University Chemistry teaching award from the New York Section of the American Chemical Society as well as a recipient of the Faculty Undergraduate Research Mentor award in the Sciences from Fordham University. Dr. Banerjee is also PI on two NSF-MRI funded grants and her students have received several awards at various conferences for their research presentations.

Dr. Banerjee presented a lecture on "Engineered Peptide-Based Biomaterials for Developing Cell-Scaffold Matrices and Tumor Targeted Drug Delivery". Her lecture covered 3 important areas of the research that has been done and is continuing in her laboratories. One area studied in her lab is tissue engineering which is where a 3D scaffold can be employed for the delivery or recruitment of reparative cells in an organized manner, offering the promise of repair, such as, regrowing cartilage.



WESTCHESTER CHEMICAL SOCIETY (continued)

Dr. Banerjee has also examined the use of these biomaterials to form targeted drug delivery systems that utilize the enhanced permeability and retention effect of cancer cells to accumulate the drug in the cancer cells. Her lab is also investigating how these biomaterials might help to stop aggregates from forming and leading to the misfolded proteins involved in ALS, Alzheimer's and Parkinson's diseases.



NORTH JERSEY ACS AWARDS AND RECOGNITION DINNER

The North Jersey Section hosted its annual Recognition Dinner Awards and on Monday, May 22nd, at the Mansion, Fairleigh Dickinson University, Florham Park Campus. The evening began with a cocktail reception. Following the reception, New Jersey ACS Chair Justyna Sikorska presented certificates to fifteen 50-, 60-, and Members. Among 70-Year the honorees were leaders in pharmacy, industrial preservation, environmental engineering, and higher and K-12 education. Among the group were inventors/co-inventors of more than 550 patents.



Justyna Sikorska, NJACS Chair

Honoring 50-, 60-, 70-Year Members of the American Chemical Society



50-, 60-, and 70-Year ACS Members

Bottom Row: Ali Shaikh, Al Glatz, Bill Hagman, Walter Korfmacher, Matthew Wyvratt 2nd row: Deger Tunc, Walter Blenderman, Johm Tegeler, Paul Yarmchuck 3rd row: Diane Krone, Justyna Sikorska, Izzy Colon, David Vickroy Top Row: Alan Cooper, Anil Saksena, Girish Shah

Chemistry Olympiad Honors

Following the award dinner, fifteen Chemistry Olympiad Scholars and their teachers were recognized. Andy Xu, John P. Stevens High School, and Arjun Sharma, Montgomery High School, earned high honors and Ishan Mungikar, Montgomery High School, Lawrence Ma, Ridge High School, Victor Peng, South Brunswick High School, Edward Sun, Union County Magnet High School, and Benjamin Lin, West-Windsor-Plainsboro North High School earned honors recognition.



Chemistry Olympiad Scholars and Teachers

| Gracelynne | Нао | | Bridgewater Raritan High School | Cheryl Pieroni |
|------------|----------|-------------|---|---------------------|
| Henry | Bilton | | Highland Park High School | Keisha Stephen |
| Noah | Shapiro | | Highland Park High School | Keisha Stephen |
| Andy | Xu | High Honors | John P. Stevens High School | Michele Tujague |
| Ishan | Mungikar | Honors | Montgomery High School | Rama Bulusu |
| Arjun | Sharma | High Honors | Montgomery High School | Rama Bulusu |
| Mehmet | Acikel | | Newark Academy | William Hobson |
| Mekhmet | Pektas | | Pioneer Academy | Yerbol Mukhamadiyev |
| Lawrence | Ma | Honors | Ridge High School | Michael Amendola |
| Ryan Zhao | Zhao | | Ridge High School | Michael Amendola |
| Victor | Peng | Honors | South Brunswick High School | Roberto DeBari |
| Edward | Sun | Honors | Union County Magnet High School | |
| Nathan | Zhang | | Watchung Hills Regional High School | Michael Gangluff |
| Benjamin | Lin | Honors | West Windsor-Plainsboro High School North | Kerry Pross |
| Julia | Huang | | West-Windsor Plainsboro High School North | Kerry Pross |

Sanrda Keyser recognized as 2023 Outreach Volunteer of the Year

Sandra Keyser was awarded the 2023 Outreach Volunteer of the Year Award for her leadership with National Chemistry Week activities and the Fair for Emerging Researchers Program for middle school students. Kathleen Gilbert was recognized as the 2022 Outreach Volunteer of the Year for her leadership with the Communications Committee.

ACS Fellows

North Jersey ACS members Rebecca Ruck, Ruth Wexler, and Steven Silverman were recognized at the awards dinner for their selection as ACS Fellows.

Huixen He receives Pro-Bono Award

Huixen He, a professor at Rutgers University, Newark and a Project SEED Mentor received the Pro-Bono Award for her service to the North Jersey section.



Sandra Keyser, 2023 Outreach Volunteer of the Year and Justyna Sikorska, NJACS Chair



Bill Hobson and Kathleen Gilbert, 2022 Volunteer of the Year.

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EDWARD J. MERRILL AWARD PRESENTED TO KAREN RANDAZZO

The Edward J. Merrill Award is presented each year to a high school chemistry teacher in the North Jersey Section ACS who has demonstrated excellence in the art of teaching chemistry. The candidate must have distinguished him or herself in the areas of professionalism, dedication to students, technological expertise, professional development, community outreach and continual support and advancement of chemical education. The 2023 recipient is Karen Randazzo from Hillsborough High School. Presenting the award to Karen is Bettyann Howson, education committee chairperson. Congratulating Karen is Bobbi Gorman, nominator of the award and Jonathan Gross, Hillsborough High School (right photo).



Susan Fahrenholtz receives the Burton C. Belden Distinguished Service Award

Susan Fahrenholtz was recognized for her service that includes Chair (1999), Coordinator of Project SEED for more than 40 years, and a leader in the Metro Women's Chemists.



Diane Krone, Dinner co-chair; Sue Fahrenholtz, Burton C. Belden Awardee; Bettyann Howson, Dinner co-chair and Justyna Sikorska, NJACS Chair

NORTH JERSEY YOUNGER CHEMISTS COMMITTEE

April Meeting

The North Jersey ACS Younger Chemists Committee held another eventful Spring 2023 Seminar Series featuring Dr. Ritwika Ray a Senior Scientist in at Discovery Process Chemistry at Merck on April 13, 2023, via Zoom. Dr. Ray shared her journey on how she landed her role at Merck. They had a mix of undergraduates, graduate, and international students! Be on the lookout for more events they have planned (website) and follow their social media pages for upcoming events!

Email: <u>njacs.youngerchemistscommittee@gmail.com</u> Facebook: NJACS YCC Public Group Twitter: NJACSYCC Instagram: @njacsycc



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NORTH JERSEY YOUNGER CHEMISTS COMMITTEE (continued)

ACS Spring 2023 Meeting

The North Jersey ACS Younger Chemists Committee Co-Chair, Mary Chioma Okorie attended the ACS Spring 2023 National Meeting in Indianapolis, IN from March 26-30, 2023. While at the meeting Mary was able to take part in the annual YCC Fun Run! If you are going to the ACS Fall 2023 National Meeting in San Francisco, CA you should sign up and enjoy the fun!



THE 35TH IN-PERSON NEW JERSEY CHEMISTRY OLYMPICS WAS A SUCCESS!



Figure 1: All the competitors and their coaches!

For the first time since 2019, the New Jersey Chemistry Olympics (NJCO) ran as an in-person competition. Like many things going back to "normal" was harder than anyone expected. Everyone remembered how much fun the events are but technical things like safety forms and insurance certificates took awhile to figure out and new problems like the 2-3x increase in the cost of buses hampered preparation for and participation in the competition. In addition, the 3 years of virtual NJCOs meant that high school students couldn't get the added help of having older classmates



with in-person NJCO experience. But the desire for high school students to have a meaningful hands-on competition and the dedication of the students themselves rose above the hurdles and on Friday May 12, twenty-one teams from fourteen high schools across New Jersey came to NJIT to compete. In round numbers over 200 high school students and their coaches came to NJIT from as far south as Ocean County.

This year's event offered students a choice of 11 different events to participate in. For students who participated in one or more of the virtual competitions the research events, webpage design, and the nomenclature test were all familiar. But the lab events and demo show were completely new to these students. Also included was a Debate event. During the pandemic NJIT's own Michael Bonchonsky devised a high school level debate event that gave students a chance to argue both sides of highly contested environmental issues. It was such a success that it was added to the original 10 events. For the uninitiated, Table 1 on the following page gives a complete list of the events, the specific topics for 2023, and the judges who volunteered their time to help inspire and rate the high school competitors.

The three Research Events (1-3) ask students to investigate a topic through primary sources and to synthesize or create something central to the topic using protocols adapted from the literature. Designing experiments from primary sources is never part of high school science classes and only occurs in upper-level undergraduate classes if at all.

THE 35TH IN-PERSON NEW JERSEY CHEMISTRY OLYMPICS WAS A SUCCESS! (continued)

| 2023 NJCO Events & Judges | | | | | | |
|---------------------------|-------------------------------------|--|---|--|--|--|
| # | Event | Topic | Judge(s) | | | |
| 1 | Chemistry Research | Polymorphism of Chocolate | *Dr. Sandra Keyser, *Ms. Mary C. Okorie | | | |
| 2 | Environmental Research | Nuclear Waste | <u>Dr. Alexei Khalizov</u> , <u>Mr. Egor Demidov</u> | | | |
| 3 | Chemical Engineering Research | Fuel Cell | <u>Dr. Reginald Tomkin</u> s (virtual), <u>Dr.</u> <u>Mirko Schoenitz, Dr. Xianyang</u> Meng | | | |
| 4 | Website Design | Alternate Energy Sources | Dr. Farnaz Shakib, Mr. Sumeet Agarwall (virtual site evaluation, Zepplin-USA) | | | |
| 5 | Demonstration Show | Polymerization | <u>Dr. Joseph Bozzelli</u> | | | |
| 6 | Nomenclature Test | | <u>Dr. Chaudhery Mustansar Hussain</u> , Dr. Ara Kahyaoglu | | | |
| 7 | Information Search | Flavors | Dr. Christopher DeSantis, Ms. Sumona Paul | | | |
| 8 | Analytical Lab | How much copper is in a penny? | Prof. Hao Chen, Mr. Mario T. Da Costa (BASF) | | | |
| 9 | Instrumentation Lab | How much food dye is in a sports drink? | Dr. Joseph Bozzelli, Dr. Mieke Peels | | | |
| 10 | Microscale Lab | How much iron is in iron pills? | <u>Dr. Bhavani Balasubramanian</u> , *Ms. Diane Krone | | | |
| 11 | Debate | Should CRISPR-edited agriculture be banned? | <u>Mr. Michael Bonchonsky</u> , <u>Mr. Dan Khorazian</u> | | | |

Table 1:NJIT Faculty and Graduate students are underlined, *NJACS members.

<u>Event 1: Chemistry Research</u> was on the *Polymorphism of Chocolate*. Competitors had to create the three types of chocolate (only one is usually eaten), characterize their similarities and differences and present the judges samples of each. Long time judge, Dr. Sandra Keyser (NJACS chair elect) and new judge Ms. Mary C. Okarie (chair of the Young Chemists Committee, NJACS) awarded both first place (team A) and third place (team B) to the Marine Academy of Technology and Environmental Science (MATES). Second place went to Watchung Hills Regional High School's team A (WHRHS A).



Figure 2: Competitors discuss their results with judge Dr. Alexei Khalazov while Egor Demidov listens in.

<u>Event 2: Environmental Science Research</u>, asked students to investigate nuclear reactors and the use of ceramics to embed radioactive metals as a way of minimizing the toxicity of used nuclear waste. Students had to try to embed a metal (nonlethal and nontoxic) into a ceramic and present their product to judges Dr. Alexei Khalizov (Associate Professor of Environmental Science at NJIT) and his graduate student, Mr. Egor Demidov. Watchung Hills (WHRHS) captured both first place (team A) and second place (team B) while Tenafly team B (THS B) took home third place.

THE 35TH IN-PERSON NEW JERSEY CHEMISTRY OLYMPICS WAS A SUCCESS! (continued)



Figure 3: Chemical Engineering Research - team with judges

<u>Event 3: Chemical Engineering Research</u> had competitors build a working fuel cell. Teams submitted videos of their devices but also had to run their fuel cells and allow event judges to investigate them on event day. We were thrilled that long time judge Dr. Mirko Schoenitz (Professor of Mechanical and Industrial Engineering at NJIT) joined his long time partner and one of the NJCO founding fathers, Dr. Reginald Tomkins (Professor emeritus Otto H. York Department of Chemical and Materials Engineering) who came to the competition virtually from his home in England. The pair were joined by new judge Dr. Xianyang Meng (Department of Chemistry and Environmental Science at NJIT) who is the department's expert on instrumentation with an expertise in electrochemistry. Watchung Hills team A (WHRHS A) took home first place, their third medal. Pascack Hills team A (PHHS A) picked up their first medal, second place and Tenafly team A (THS A) took the bronze (the second medal for the school).



Figure 3: Judge Dr. Farnaz Shakib evaluates competitors at the Website Design event

THE 35TH IN-PERSON NEW JERSEY CHEMISTRY OLYMPICS WAS A SUCCESS! (continued)

<u>Event 4: Webpage Design</u> was one of the most subscribed events (13 teams participated) in part because the event ran in all three virtual NJCOs. In this event students build their own websites. They are judged on design, informativeness as well as usability. This year's topic: Alternative Energy Sources. ADr. Farnaz Shakib (assistant professor of Chemistry, shown on previous page) was the lone in person judge in this her first NJCO due to the late withdrawal of another judge. But she did a wonderful job (see photo) and awarded Academy of Law and Public Safety (ALPS) first place. There were a lot of first for this team: first place, first medal, in their first NJCO! Hunterdon County Regional High School, Team A took second and South Brunswick High School, Team A went home with third place.



Figure 4: ALPS takes the gold in the Website Design event

<u>Event 5: Demonstration Show</u> returned after a 3-year hiatus. Students in this event had to demonstrate a working polymerization reaction. Dr. Joe Bozzelli (emeritus professor, Department of Chemistry and Environmental Science at NJIT) returned to NJIT to judge both this event as well as one of the lab events. The two teams signed up for this event submitted very different protocols but Dr. Bozzelli was able to clearly award ALPS its second first place medal and MATES A took second place, their second metal (the school's third)



THE 35TH IN-PERSON NEW JERSEY CHEMISTRY OLYMPICS WAS A SUCCESS! (continued)

<u>Event 6: Nomenclature Test</u>: Teams of 3 students battle with our computer generated nomenclature test. The scores of the three are combined and winners chosen by the combined score. Dr. Chaudhery Mustansar Hussain (Department of Chemistry and Environmental Science at NJIT) was joined by Dr. Ara Kahyaoglu (former coach and current department chair of Bergen County College). The current program was developed by NJIT faculty to allow for virtual testing during the virtual years so it was familiar to anyone who competed in the virtual NJCOs. The Woodbridge Academy Magnet School (WA) was awarded first place. This was their first in-person NJCO but they competed in the 2022 vNJCO. Tenafly Team A (THS A) took second and Hunterdon team A (HCHRS A) took third.

<u>Event 7: Information Search on flavors</u>. Students had to build an accurate model of a flavor using Styrofoam balls and wooden dowels. Models are graded on everything from appropriate relative size of the atoms, bond angles, and bond lengths. In addition, each team of 3 is handed a set of questions and a computer. They need to research the answers and present their findings to the judges before the clock runs out. While the event ran in the vNJCOs, materials used for the models had to be relaxed and judges did not get a close up view so model building was much different this year. Organic chemist and judge Dr. Chris DeSantis was joined by former organic chemistry TA and senior graduate student Ms. Sumona Paul (both Department of Chemistry and Environmental Science at NJIT). The judges gave Pascack Valley High School (PVHS) first place and their first medal, Woodbridge Academy was awarded second place (their second medal) and Tenafly team A took third place (their third medal).

Events 8 - 10 are the lab events. Prior to event day students find a protocol for experimentally determining the objective of the event. On event day each team has 75 minutes to run their analysis, analyze their data, and turn in their results to the judges who rate them on result accuracy, lab technique, and safety.



Figure 4: Dr. Chris DeSantis and Sumona Paul examine a model during the Information Search event.

THE 35TH IN-PERSON NEW JERSEY CHEMISTRY OLYMPICS WAS A SUCCESS! (continued)

<u>Event 9: Instrumentation Lab</u> – determination of the amount of food dye in a sports drink. Veteran judge Dr. Joe Bozelli moved over from judging the demonstration event and was joined by Dr. Mieke Peels (both are from the Department of Chemistry and Environmental Science at NJIT). This was Dr. Peels first NJCO after having started at NJIT in the Fall. First place went to Pascack Valley team B (team's first medal, 2nd for the school). Summit High School (SHS) took second place. This was the team's first medal as well as their first NJCO competition. Watchung Hills team B tooK home the third place medal (team's 2nd medal, school's 5th).



Figure 6: Judge Michael Bonchonsky gives directions to two teams before their debate begins.



Figure 5: Students determining the amount of food color in their sports drink.

Event 10: Microscale Lab - determination of the amount of iron in iron pills. Veteran judging team, Dr. Bhavani Balasubramanian (Department of Chemistry and Environmental Science at NJIT) and Ms. Diane Krone (NJACS) awarded Pascack Valley HS teams both first place (team A) and second place (team B). South Brunswick (team B) took the bronze.

<u>Event 11: Debate</u> - *Should CRISPR-edited agriculture be banned*? This was the only event to evolve from the virtual competition. Event designer, Mr. Michael Bonchonsky (Department of Chemistry and Environmental Science at NJIT) had to cut the debate time by 50% in order to get all the pairs of teams in during the much more time constrained in-person event but the teams were still able to have a meaningful competition. He was joined in judging by NJIT graduate student, Mr. Dan Khorazian. They awarded South Brunswick (team A) their first medal, first place (medal #2 for the school), Hunterdon County (team A) received its second medal, second place (medal #2 for the school too), and Pascack Valley (team A) took third place (the second medal for the team and the school).

The awards ceremony was opened by Dr. Omowunmi Sadik, head of the Department of Chemistry and Environmental Science at NJIT. Dr. Jingjun Yin (Merck) spoke to the students as both a pharmaceutical scientist and the father of a 2022 competitor.

All told, the 32 medals from the 35th annual NJCO were distributed between 18 of the 21 teams that competed on event day. Two of the schools competing for the first time, ALPS and Summit HS (SHS), each won medals. The Woodbridge Academy (WA) won two medals in its first in-person event.

THE 35TH IN-PERSON NEW JERSEY CHEMISTRY OLYMPICS WAS A SUCCESS! (continued)

The winning teams are all well known NJCO competitors. South Brunswick High School Team A (SBHS A) coached by Michael Poot and Pascack Valley team A (PVHS A) coached by Chris Nilsen tied for third place. There was also a second place tie between Watchung Hills Regional High School (WHRHS A) coached by Michelle Nunez & Amanda Prybella and Hunterdon County Regional High School coached by Leon Copeland. The first place winner was Pascack Hills High School team A (PHHS A) coached by Jim Soltmann and Leslie Pugliese. PHHS A is the current holder of the Platinum Crucible until next year's NJCO!



Figure 7: First place Platinum Crucible winners Pascack Hills High School Team A

DRUG METABOLISM SPRING SYMPOSIUM SUCCESS

The Drug Metabolism Discussion Group held the first post-pandemic Spring Symposium on May 4, 2023, at the Palace at Somerset Park, Somerset NJ. The one-day symposium was attended by approximately 100 academia and pharma attendees. The presentations explored evolving paradigm for dose selection and emerging predictive models and technologies delivered by leading industry and academic researchers including one talk by a Rutgers University graduate student.



Picture legend: Top row (left to right): Rajesh Krishna, Keroles Nakhla, Yiming Cheng, Jianwei Zhao, Imad Hanna (NJ-DMDG chairperson), Ken Brouwer, Arash Hatefi, Libo Xu, Matthew Hoffmann (NJ-DMDG-treasurer). Bottom row (left to right): Bonnie Brennan, Anshu Marathe, Anima Ghosal, Holly Maw, Naiyu Zheng, Lauren Aleksunes.

OPPORTUNITIES

GRANT OPPORTUNITIES

LOCAL SECTION INNOVATIVE PROJECT GRANT

Local Sections may request up to \$3,500 to implement innovative projects to strengthen the functioning of the local section

> DUE JUNE 30, 2023 Learn more

WOMEN CHEMISTS

WOMEN CHEMISTS COMMITTEE RISING STAR AWARD

Recognizes mid-career chemists who have demonstrated outstanding promise for contributions to their field.

DUE JUNE 15, 2023 Learn more

HIGH SCHOOL TEACHER GRANT

CCS HIGH SCHOOL CHEMICAL SAFETY GRANT

Provides a K-12 educator with up to \$3,000 to promote safety excellence in secondary education

DUE AUGUST 1, 2023 Learn more



PRIMARILY UNDERGRADUATE INSTITUTION – COMMUNITY COLLEGE FACULTY FELLOWSHIP

TEACHING GREEN FELLOWSHIP

Provides \$15,000 plus travel expenses to recognize a faculty member's achievements in innovative and creative development of curricular materials infused with green chemistry and/or sustainability concepts.

DUE SEPTEMBER 1, 2023 Learn more

POSTDOCTORAL

EARLY CAREER POSTDOCTORAL-FACULTY BRIDGE GRANT

Provides a postdoctoral scholar with \$125,000 to support a postdoctoral fellow in their independent lab once the new research group is launched.

DUE SEPTEMBER 15, 2023

Learn more



ACS FALL MEETING

The 2023 Fall <u>ACS Meeting & Exposition</u> is being held in San Francisco on August 13-17. Housing and registration are now open.

FOR UNDERGRADUATES

ACS Division of Inorganic Chemistry Student Travel Award

Nomination due by June 10

ACS Division of Inorganic Chemistry Undergraduate Award in Inorganic Chemistry <u>Nomination due by June 30</u>

ACS Graduate Student and Postdoctoral Scholars recognition Program

Nomination due by June 30

After School STEM Mentoring Program at the New York Academy of Sciences Applications due August 20

FOR GRADUATE STUDENTS & POSTDOCS

Dr. Mow Shiah Lin Scholarship

<u>Due June 7</u>

ACS Graduate Student and Postdoctoral Scholars recognition Program

Nominate by June 30

After School STEM Mentoring Program at the New York Academy of Sciences Applications due August 20

FOR PROFESSIONALS

ACS Graduate Student and Postdoctoral Scholars recognition Program

Nominate by June 30

2023 Henry Dreyfus Teacher-Scholar Awards Program

Nomination due August 3

<u>After School STEM Mentoring Program</u> at the New York Academy of Sciences

Applications due August 20





Dr. Mow Shiah Lin





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JOB BOARD

Starting your career or looking for the next challenge? Review these and other postings at the New York ACS Job Board. Email your job postings to Jobs@NewYorkACS.org for inclusion.

| Research Associate, Scientific Research – The Metropolitan Museum of Art | Apply here |
|--|-------------------|
| Assistant Professor, Contract Organic Chemistry – St. John's University | Apply here |
| Chemistry Teacher – NYC Board of Education | Apply here |
| Laboratory Technician, Evening Stockroom Manager – St. John's University | <u>Apply here</u> |
| Senior Scientist, Analytical Chemistry - Regeneron | Apply here |
| Scientific Laison / Clinical Chemist - Roche | Apply here |
| Process Engineer – Johnson Matthey | Apply here |
| Inhalation Chemist - Cipla | Apply here |
| Chemist, Raw Material Development - Shiseido | Apply here |
| Senior Research Chemist – Church & Dwight Co. Inc. | Apply here |
| R&D Chemist – NJ Bio, Inc. | Apply here |

ACS Virtual Office Hours – 1st Thursday of Each Month at Noon ET

July 6th August 3rd September 7th October 5th <u>Is Grad School right for me?</u> <u>Careers in Government</u> <u>The Basics of Building Resilience</u> Skydiving into Retirement

RUTGERS UNIVERSITY | NEWARK School of Arts and Sciences

Rutgers University – Newark Fall 2023 Graduate Courses

- 590. Special Topics in Materials Chemistry: Templated Materials & Solid State Chemistry Science
 Prof. Tomokazu Iyoda, Prof. Georgiy Akopov
 Tuesday 6:00 - 9:00 PM, Smith Hall Room 240
- 564. Organic Reaction Mechanisms
 Prof. Michal Szostak
 Wednesday 6:00 9:00 PM, Smith Hall Room 240
- 564. Special Topics in Inorganic Chemistry: Coordination Chemistry Applied to Catalysis Prof. Demyan Prokopchuk Thursday 6:00 - 9:00 PM, Smith Hall Room 240

For more information, see <u>http://sasn.rutgers.edu/academics-admissions/academic-departments/chemistry/ms-phd-chemistry</u> or contact <u>Ms. Sophia Bautista Chinchay</u>.

We welcome Masters, PhD, and non-degree students. Up to 2 graduate courses can be taken on a non-degree basis.