

# USNCO Newsletter

U.S. NATIONAL CHEMISTRY OLYMPIAD

NOVEMBER 2015

## USNCO Local Competitions



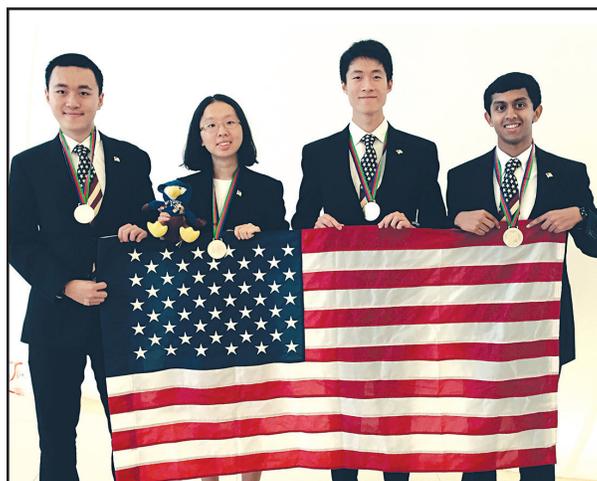
ACS Sacramento Local Section's students during the laboratory part of the National Exam at Sacramento City College, CA.

In 2015, 144 ACS Local Sections and two ACS International Chapters selected their nominees for the 2015 USNCO competition. The competition engaged nearly 16,000 high school students from more than 1,300 high schools in an array of activities and examinations at the school-system level. In April, 1,010 national nominees took the ACS Chemistry Olympiad National Exam. The exam consisted of three parts: 60 multiple-choice questions, eight complex problems, and two practical laboratory exercises. Several Local Sections honored their nominees with gifts, such as monetary prizes, plaques, certificates of recognition, and USNCO pins. High Honors and Honors certificates were awarded to the top-scoring 142 students on the ACS National Exam. ■

## Team ALPHA THETA Wins Gold and Silver Medals in Azerbaijan

**David Wang** named best experimentalist

Since 1984, the American Chemical Society has sponsored the participation of a U.S. team of four high school students in the International Chemistry Olympiad (IChO). This summer, the U.S. team successfully participated in the 47th IChO in Baku, Azerbaijan, earning four medals. **David Wang** of



Left to right: Bryce Cai, Janice Ong, David Wang, Sooraj Nath Boominathan

Monta Vista High School, CA, won a gold medal and the highest score in experimental examination, and **Sooraj Nath Boominathan** of Oklahoma School for Science and Mathematics, OK, **Bryce Cai**, of Barrington High School, IL, and **Janice Ong** of Thomas Jefferson High School for Science and Technology, VA, each earned a silver medal. The members of the U.S. Chemistry Olympiad team were among 290 students from 75 countries that participated in the competition, which awarded 35 gold, 63 silver, and 92 bronze medals.

The 2015 U.S. National Chemistry Olympiad (USNCO) finalists at the study camp were taught and tutored by three mentors, Kelli Slunt (University of Mary Washington, VA), Michael Danahy (Bowdoin College, ME); Patrick Chan (Benjamin N. Cardozo High School, NJ), peer mentor Jacob Sanders (Harvard University, MA); and the faculty of the U.S. Air Force Academy (USAFA). The three mentors accompanied the U.S. team to Azerbaijan. ■



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## Alpha Theta Team at the Study Camp

Twenty of the top-scoring students participated in the USNCO Study Camp at the U.S. Air Force Academy (USAFA) in Colorado, June 2-17, 2015. These students were immersed in lectures and laboratories covering the major branches of chemistry, including biochemistry, analytical, physical, inorganic, and organic chemistry, led by the three mentors and faculty of the USAFA Department of Chemistry. Students' abilities were tested in laboratory experiments, quizzes, problem solving exercises and a final examination. At the end of the camp, six students were selected for the Alpha Theta team:

**Sooraj Nath Boominathan**, Oklahoma Local Section

**Bryce Cai**, Chicago Local Section

**Janice Ong**, Chemical Society of Washington

**David Wang**, Santa Clara Valley Local Section and alternates, **Rueih-Sheng Fu** and **Richard Wang**, both of the Southern California Local Section. ■



M. THATCHER

Standing L to R: Miles Dai, Kevin Tang, Anushka Walia, Shretij Kapoor, Alvin Hsu, Steven Cheng, Jung Ho Gong, Chiho Im, Mideum Park, Yue Zhang, Megan Zhao, Alexander Alabugin, Ethan Curtis, Priscilla Liow

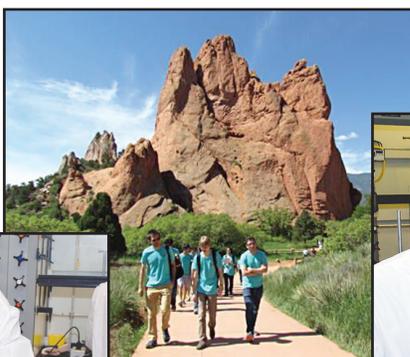
Seated L to R: Sooraj Nath Boominathan, David Wang, Janice Ong, Rueih-Sheng Fu, Bryce Cai, Richard Wang

### Statistical information from 2015 USNCO

Grade in High School	Intended College Major	Ethnicity	Gender
2% Freshmen	17% Chemistry/Science	1% African American	27% Female students
14% Sophomores	19% Pre-med/Biology	47% Asian	73% Male students
56% Juniors	36% Engineering/Physics/Math	3% Hispanic	
28% Seniors	28% Other	46% White	
		3% Other	



At the USAFA Falconry



Hiking in the Garden of the Gods, CO



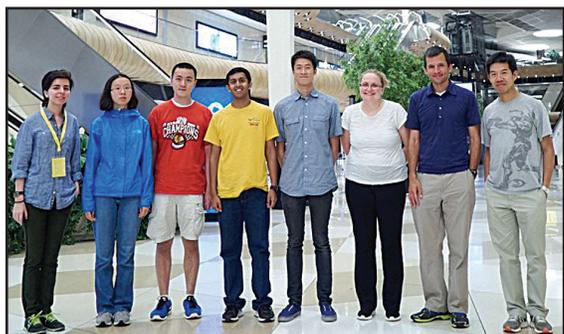
At the laboratory



At the laboratory

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## Team USA members reflect on the IChO



US delegation with Azerbaijani guide Medina Javadli

47TH IChO

### Sooraj Nath Boominathan

*“Perhaps the most amazing thing I learned during my time at IChO was that regardless of our background, our upbringing, or the language we spoke, we were all connected by a unified passion for chemistry, a passion that surpassed any political or cultural boundaries and brought us into a single community.* Our days were packed with events, starting with the spectacular opening ceremony and continuing with numerous excursions into Baku’s museums and the Old City. While I had initially been impressed by Baku’s modernity, I was equally amazed by the respect it gave to its origins. The city was a seamless blend of the future and the past, of Eastern and Western culture, making it the perfect setting for a global event like IChO. I would like to thank the ACS, USAFA, and especially our mentors for the endless hard work they have put in to help Team USA compete successfully at the international level. You have helped my dreams become reality, and without your help, this would never have been possible. Thank you!”

### Bryce Cai

“Throughout the Olympiad, we had the opportunity to see many parts of Azerbaijani culture and life, both old and new. Inside a new museum that happened to be shaped just like a rolled-up carpet, we examined the elaborate carpets that had been a defining symbol of Azerbaijani culture for centuries. We also went on an interesting tour of Baku’s Old City, getting to examine walls that had once guarded the city five hundred years

ago and walking up the Maiden Tower, the ancient symbol of Baku. Through walks over ancient palaces to modern museums and a Ferris wheel ride, we were given a taste of what Baku and Azerbaijan were like: just like the buildings, Baku’s stance in history combined elements from all eras. One could even say that Baku’s ancient and modern

histories and landscapes were interwoven just like the many interlocking designs on an Azerbaijani carpet. *The IChO was more than just ten hours of testing. I’ll never forget the countless memories I made with the hundreds of new friends from all over the world through our shared love of chemistry. From mascot battles to arcades, to surprise disco parties, the shared despair of the tests and the joy of receiving medals, and partaking in this exchange of the world’s cultures, these endless gifts added more to the trinkets that we gave out and received.”*

### Janice Ong

*“The practical and theoretical exams themselves were quite long and challenging. I particularly enjoyed the organic synthesis and vacuum distillation lab, finding it both interesting to set up and engaging in concept. This practical application heightened my appreciation for organic chemistry in a way that a purely theorized process could not, because it put into perspective some of the unpredictable “messiness” that could arise in reactions—that even though a product might be present in high yield, there were always side reactions, solvents, other factors that had to be separated out.* On the theoretical, many of the problems were themed after the host country, such as its oil industry and Baku’s past history of manufacturing air conditioning units, which seamlessly instilled the importance of chemistry in local, everyday uses in addition to the typical titrations and syntheses and almost made us forget about their difficulty. It was truly a once-in-a-

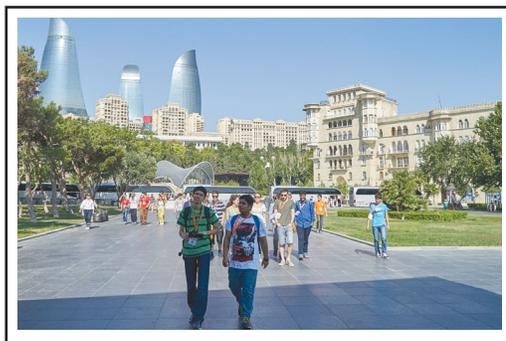
lifetime experience, and I will cherish the memories of the 47th IChO and the amazing people I have met through this. I want to thank our guide and the country of Azerbaijan for the hospitality. I am very grateful to our team mentors, the American Chemical Society, the US Air Force Academy and faculty, my teachers at TJHSST, and my parents and sister for their support, and making Chemistry Olympiad the life-changing experience.”

### David Wang

*“Transcending language, culture, and circumstance, we all seek to improve on our problems and strive towards a better future. This universal endeavor cannot be achieved without experimentation and perseverance. During our ten days in Baku, this became more apparent than ever, as the 47th IChO captured this essential truth in its motto: “Life is a huge lab”. It was remarkable to see the immense preparation put in to make the theoretical and practical exams the best of their kind.* Members of the scientific committee worked persistently for the past year to create challenging yet solvable tasks to stretch our academic capabilities. I was personally ecstatic about the lab tasks, as the state of the art equipment and advanced facilities culminated the skills which we trained at the USNCO Study Camp. With every student given a laptop and spectrophotometer to run kinetic experiments, a complete vacuum distillation set-up for organic synthesis. The organizers of the Olympiad truly displayed their utmost dedication to the event. My favorite aspect of the Olympiad was the rich cultural exchange with new friends. With nearly 300 students from 75 different countries united by the science of chemistry, this event provided an indescribably precious opportunity for young chemistry enthusiasts to meet other top chemistry students of the world. At the conclusion of the Olympiad, we all went our separate ways. Yet, no matter how many miles apart we end up we will always be connected by this one phenomenal event.” ■

# 47th IChO — Baku, Azerbaijan

Upon arrival in Baku IChO participants were astounded by the modernity of its buildings, including the Heydar Aliyev International Airport, Flame Towers, Azerbaijan Carpet Museum and Heydar Aliyev Center, intertwined with its ancient Old Town surrounded by old city walls and filled with stone houses. The opening ceremony featured a



47TH IChO

IChO students sightseeing in Baku

vibrant display of traditional dances and music. Deputy Prime Minister of Azerbaijan Ismat Abbasov, Chair of the IChO Steering Committee Duckhwan Lee, and President of the 47th IChO, rector of the Baku Branch



47TH IChO

Theoretical examination

of Moscow State University Nargiz Pashayeva, gave welcoming remarks. Two days devoted to the laboratory and theoretical exams tested students' knowledge and impressed them with the complexity and state of the art equipment necessary for the kinetic experiment and organic synthesis and

vacuum distillation lab. The rest of the 10 days students spent sightseeing and participating in fun activities planned by organizers such as a trip to an amuse-

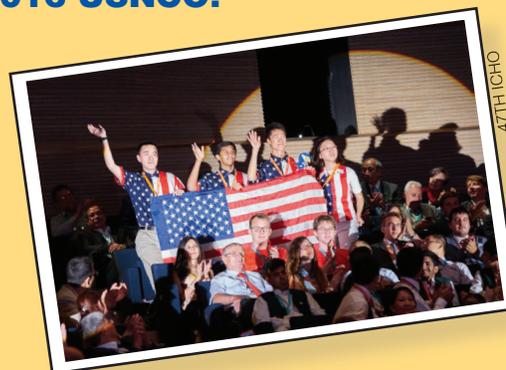
ment park, sightseeing tours in Old Town and disco parties. U.S. students quickly made friends with representatives of other countries, engaging in discussions about similarities and differences of their homelands and shared passion for chemistry. ■

## INVITATION FOR STUDENTS TO APPLY FOR THE 2016 USNCO!

The U.S. National Chemistry Olympiad Program provides opportunities to establish social and intellectual ties among students.

To participate in the USNCO, you must be a high school student and qualify at the local level to take the ACS National Exam.

Students must be U.S. citizens or Green Card holders of the United States to take the ACS National Exam.



47TH IChO

FOR MORE INFORMATION, USE THE CONTACT INFORMATION BELOW

## THANK YOU!

The ACS Donald F. and Mildred Topp Othmer Chemistry Olympiad Endowment has been the primary sponsor of the U.S. National Chemistry Olympiad program. Additional support is received from:

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*Thank you for supporting the 2015 USNCO program!*



PETER CUITTS PHOTOGRAPHY

*Congratulations to the ACS North Jersey Local Section for winning the first Chemistry Olympiad ChemLuminary Award for its outstanding 2014 program.*



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