

USNCO Newsletter

U.S. NATIONAL CHEMISTRY OLYMPIAD

DECEMBER 2018

USNCO Local Competitions



NOVA SOUTHWESTERN UNIVERSITY

ACS South Florida Local Section students during the laboratory portion of the National Exam at Nova Southwestern University, FL.

In 2018, 150 ACS Local Sections, and four ACS International Chemical Sciences Chapters, participated and selected competitors for the USNCO examinations. The competition engaged over 17,000 high school students from more than 1,300 high schools in a range of events and examinations at the school-system level.

In April, 1,025 national nominees in 139 Local Sections 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. Local Sections honored participating students with gifts, such as monetary prizes, plaques, certificates of recognition, and USNCO pins. Students and their teachers were also recognized during award ceremonies and dinners in many Local Sections. Top-scoring students on the National Exam received High Honors and Honors certificates. ■

Team USA Wins Four Gold Medals for the Second Time



C. HERNANDEZ

Left to right: Andrew Wu, Yutong Dai, Michelle Lu, and Jeffrey Shi.

The American Chemical Society sponsored a very successful Chemistry Olympiad program. At the 50th International Chemistry Olympiad (IChO) in Bratislava, Slovakia and Prague, Czech Republic, each member of the U.S. team earned a gold medal. This marks the second year and the highest-performing team in the history of U.S. participation in the IChO event. The members of the team Alpha Lambda are: **Yutong Dai** of Princeton International School of Mathematics and Science, NJ (Princeton Local Section); **Michelle Lu** of Pomperaug High School, CT (New Haven Local Section); **Jeffrey Shi** of Marcellus High School, NY (New York Local Section) and **Andrew Wu** of Park Tudor School, IN (Indiana Local Section). The members of the U.S. team competed among 300 students from 76 countries. The international jury awarded 35 gold, 65 silver, 95 bronze medals, and 10 honorable mentions. The U.S. team was accompanied to the IChO by their mentors: **Christine Saber** (chemistry professor, Gannon University, PA), **Michael Danahy** (chemistry professor, Bowdoin College, ME), and **Silvia Atim** (chemistry professor, University of South Carolina, SC). ■



USNCO Study Camp

Twenty of the highest-scoring students in the USNCO National Exam participated in the USNCO Study Camp at the US Air Force Academy (USAFA), CO, June 10-25, 2018. The students were involved in lectures and laboratories covering the main branches of chemistry, including biochemistry, analytical, physical, inorganic, and organic chemistry. In addition to the three mentors, the study camp was tutored by peer mentor **Derek Wang** (Stanford University, CA), the faculty of the USAFA Department of Chemistry, and chemistry professors from University of CO Colorado Springs, Colorado State University Pueblo, and University of Norte Dame. Students' skills were tested in laboratory experiments, quizzes, problem



CH. SABER

Back left to right: Jeffrey Shi, Andrew Wu, Omar Khan, Albert Liu, David Liu, Anton Ni, Allen Ding, Yajvan Ravan, David Wu, Andrew Chen.

Front left to right: Iris Yan, Alex Li, Mary Dai, Michelle Lu, Jenny Cai, Edward Jin, Albert Zhu, Chanseo Lee, Aniket Dehadrai, Matthew Wang.

solving exercises and a final examination. At the end of the camp, four students were selected for the U.S. team: **Yutong Dai, Michelle Lu, Jeffrey Shi,**

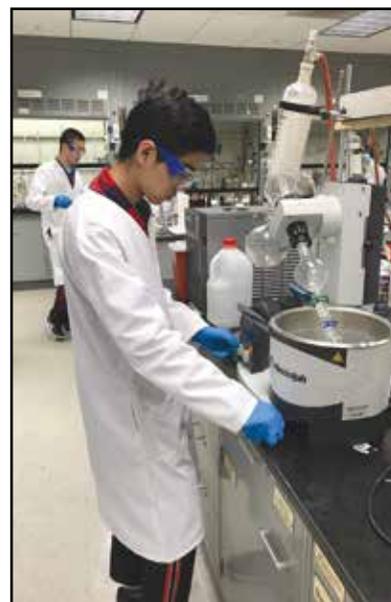
and Andrew Wu; and two alternates: **Aniket Dehadrai,** of Oklahoma Local Section, and **Edward Jin,** of Orange County Local Section. ■

2018 USNCO Statistical Information

Grade in High School	Intended College Major	Ethnicity	Gender
3% Freshmen	18% Chemistry or other Chemistry-related fields	2% African American	26% Female
17% Sophomores	20% Pre-med/Biology	48% Asian	74% Male
56% Juniors	34% Engineering/Physics/Math	2% Hispanic	
24% Seniors	5% Other Science Discipline	40% White	
	23% Undecided	8% Other	



At the laboratory and during class



CH. SABER

Team USA members reflect on the IChO

Yutong (Mary) Dai

From the day I arrived to the last farewell party, the 50th International Chemistry Olympiad was an unforgettable experience. Valéria, the Slovak guide for our team, guided us through all the facilities on campus and let us familiarize ourselves with the university. We met the faculties and the members of the organizing team, and they greeted us with smiles, which really helped me to relax. Five hours each of practical and theoretical exams were both physically and mentally demanding. Outside testing, *I enjoyed the history and culture of Slovakia and Czech Republic and all the fun activities. We went to different castles and learned about the medieval traditions such as fencing, coin making, candle making, archery, through demonstrations and experiencing them directly. Mining was unique there since it was critical to Czechoslovakia's economy, and we had the opportunity to go down to different mines and see how the techniques and instruments functioned.* Before I went to IChO, I thought that the environment there might be intense and competitive but the people were friendly and we had a relaxing and fun time playing card and logic games. The IChO was an incredible experience for me, and I would never had made it to IChO without the support from many people. I would like to thank my parents and friends for their mental support, my chemistry teacher Dr. Qiang (Steven) Chen, for all the efforts for teaching me and guiding me through chemistry competition. I would like to thank all the mentors: Chrissy Saber, Mike Danahy, Silvia Atim, and Derek Wang for their hard work preparing us for the IChO.

Michelle Lu

From the moment I stepped off the plane, in a new country and surrounded by unfamiliar sights and sounds, I could already feel my excitement stirring as soon as we were greeted by a guy with a shock of blue hair —



Team USA at the closing ceremony

a Copperhead, and one of the official mascots for this year's competition. We settled into our rooms and met our amazing guide, Valéria, whom we bonded with immediately through a game of ultimate frisbee. The opening ceremony was a blaze of color, music and dance; in a single exuberant morning, we were introduced to three hundred students from seventy-six countries. *The competition itself was especially creative. In both the practical and theoretical exams, we were surprised with unique tasks, from the luminol clock reaction with bright blue flashes in practical task 2, to the regioselective reactions of beta- and isocaryophyllene in theoretical question 8. The brilliant orange color of the hydrazone we synthesized awed us, while the question pertaining to the equilibrium of palindromic DNA sequences stimulated our minds.* These tests challenged us to think outside the box and apply our background knowledge to new concepts. IChO was a truly singular opportunity to befriend brilliant students from around the globe and learn about their cultures, schools, and lives. It has been an honor to be a member of Team Alpha Lambda.

Jeffrey Shi

At the IChO, we were given numerous opportunities to explore the Czech and Slovak cultures from excursions to tasting the traditional cuisine. The problems this year were creative and interesting. Slovakia has all types of non-radioactive mineral waters and to

explore this important part of the host country, the practical examination asked us to identify a mineral water sample through complexometric titration and using a cation exchange resin with alkalimetry. In addition, there was a fun organic synthesis and a beautiful glowing clock reaction. On the theoretical examination, there were more tasks related to the host countries, on Bohemian garnet and compounds contained in mushrooms. *The most indispensable part of the IChO was the people. We played Mafia with the teams from Canada and the UK, laser tag with Russia, Tajikistan, and Turkmenistan or ultimate frisbee with Uruguay, Iceland, and the Netherlands.* Throughout the eleven-day competition, every moment was unique because of the nature of the competition — a gathering of three hundred of the top chemistry students differing in their languages and cultures but unified by their passion for chemistry and the natural sciences.

Andrew Wu

The International Chemistry Olympiad was not simply a chance to prove myself on an international scale, nor was it just about properly representing the United States; it was a chance to meet the other amazing, brilliant minds of countries across the world. All of them were open, amicable people whose kindness blew any doubts about my experiences out of my mind. Over the countless excursions to Slovak mining towns, mineral water tastings, and more, these people made the experience amazing. Our amazing guide, Walla, along with the organizers of the events, helped us learn amazing things about both Slovak and Czech culture. I learned that it is customary not to talk at the dinner table in Slovak culture, in contrast to the United States. This was only the small part of the massive amount of knowledge I gained about Slovak and Czech history and culture throughout the amazing excursions. ■

50th IChO Bratislava, Slovakia and Prague, Czech Republic

The opening ceremony of the 50th IChO took place at the Old market Hall in Bratislava. The ceremony was officially opened by Olga Nachtmannová, State Secretary of the Ministry of Education of the Slovak Republic; Karol Mičieta, Rector of Comenius University in Bratislava; Karel Melzoch, Rector of the University of Chemistry and Technology in Prague, and I-Jy Chang, Chair of the IChO Steering Committee. Students were tested during the five-hour laboratory practical and theoretical examinations at the Comenius University in Bratislava. During the remainder of the 10-days students engaged and participated in activities with participants of other countries, including touring historic cities, castles and other attractions planned by the host countries. Members of Team USA made friends with their peers, and learned about different cultures, education systems, food and hobbies. ■



Visiting Slovak quarries.

50TH ICHO AND MICHELLE LU



Playing with other teams.

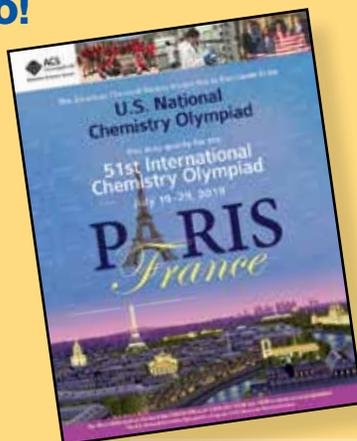
50TH ICHO AND MICHELLE LU

INVITATION FOR STUDENTS TO APPLY FOR THE 2018 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.

FOR MORE INFORMATION, CONTACT THE USNCO OFFICE



American Chemical Society
U.S. National Chemistry Olympiad
1155 Sixteenth Street, NW, Washington, D.C. 20036
1.800.227.5558, ext. 6328 FAX 202.833.7732
USNCO@acs.org



THANK YOU!

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Thank you for supporting the 2018 USNCO program!



ACS Georgia Local Section representatives receiving Chem Luminary Award at the ACS National Meeting in Boston, MA.

PETER CUTTS PHOTOGRAPHY

Congratulations to the ACS Georgia Local Section for winning the 2018 Chemistry Olympiad ChemLuminary Award for its outstanding 2017 program.

