Washington, D.C. • USA
IChO 44
2012 International Chemistry Olympiad

Catalyzer

44th International Chemistry Olympiad | United States of America

no. 2

July 21, 2012

The organizers of the 44th International Chemistry Olympiad (IChO) would like to extend our welcome to the world's most talented chemistry students at the secondary school level. You and your teammates are joining teams from around the world to test your chemistry knowledge and skills in a five-hour laboratory practical and five-hour written theoretical examination.

But beyond that, it is our great hope you will make new friends from different nationalities and learn about their culture and education. Some of the friendships you will form at this Olympiad will last for the rest of your lives.

In addition to the technical program, we have planned an exciting schedule of excursions and events where you can learn about our country and our culture. You will be staying at the **University of Maryland**, one of the most beautiful university campuses in our country. You will have a chance to visit the world famous **Smithsonian museums** and take a trip to **NASA Goddard Space Center** and see the future of space exploration. You will tour our **national monuments and landmarks** in **Washington, D.C.** We also have a full-day excursion to the amazing amusement park at **Kings Dominion**, along with a major league baseball game and even a little time to do some shopping.

We are pleased you are here and together we will make the 44th International Chemistry Olympiad an event you will remember forever.

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University of Maryland

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Top to bottom: ***Skyline view of Washington, D.C., map of Maryland and Washington, D.C. area, University of Maryland campus and students.*** **Far left:** ***The Thomas Jefferson Memorial statue.*** **Left:** ***Tourists and Park Ranger explaining one of the Washington, D.C. memorials.***

Celebrating International Excellence in Chemistry

Herbert H. Dow
Advancing U.S. Chemical Industry

Herbert H. Dow was an industrious youth. While he was still a schoolboy, Dow invented a new method of extracting bromine from the brine deposits that underlie much of the American Midwest. Instead of boiling the treated brine solution, he trickled it over a burlap curtain and blew a current of air through it.

"By passing the bromine-laden air through a body of iron turnings," Dow said in his patent application, *"the bromine and iron will chemically unite, forming a bromide of iron known as ferric bromide."*

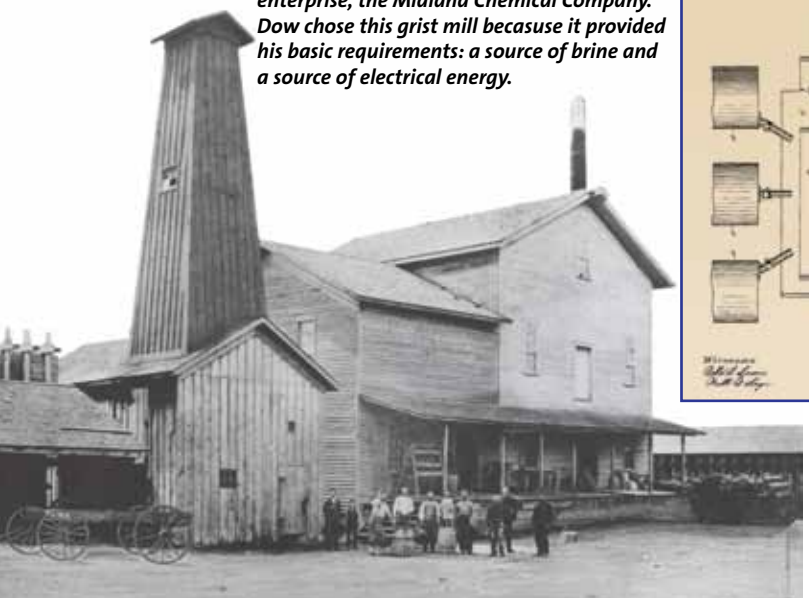
In the late 19th century, the U.S. was highly reliant on European nations for chemicals, medicines and other products. Bromine, a main component of medicines, was largely imported from German and British companies. Dow's innovative process allowed bromine to be produced in the U.S. through the successful application of electrochemistry. The company he founded in1897 quickly became the world's most efficient producer of bromine.

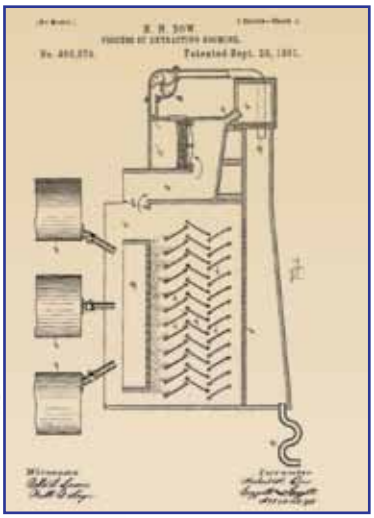
Dow built upon this innovation and was soon extracting chlorine, iodine, potassium salts and other chemicals from brine deposits. Over time, Dow's company worked to develop new products derived from the brine stream, including chloroform, calcium chloride and Epsom salts. As the supply of chemical products expanded, the company grew, and the steady and reasonably-priced supply of chemicals contributed to the rapid development of pharmaceutical and photographic industries in the U.S.

Over the next century, the Dow Chemical Company would become one of the world's largest specialty chemical, advanced materials, agrosciences, and plastics businesses. These successes stem from the ideas and determination of the young inventor, Herbert H. Dow.

Dow's discovery of an electrolytic process for the production of bromine was designated as a National Historic Chemical Landmark by the American Chemical Society in 1997. To date, more than 65 achievements in chemical science and technology in the U.S. and abroad have been recognized by the program. For more information, visit www.acs.org/landmarks.

Above: ***Herbert H. Dow, 1924.***
Below: ***The Evans Mill, rented by Herbert Dow in 1890 as the location of his new enterprise, the Midland Chemical Company. Dow chose this grist mill becasuse it provided his basic requirements: a source of brine and a source of electrical energy.***





Above: Illustration from Herbert Dow's "Process of Extracting Bromine", patented in 1891.

The Dow Company and its Role as a Sponsor

As an advocate for the advancement of STEM education, The Dow Chemical Company is extremely proud to be the sole corporate sponsor of the 44th International Chemistry Olympiad (IChO).

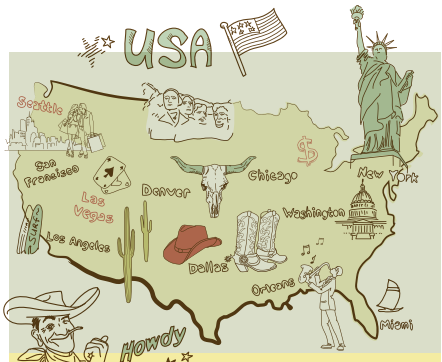
As a global chemical company based in the United States, Dow saw the 44th IChO as a unique opportunity to celebrate the power of chemistry and inspire the next generation of chemists to solve global challenges. This year's competition is particularly special because it marks the second time in history that it has been held in the United States.

Since announcing the commitment in September 2011, Dow has facilitated events leading up to the 44th IChO in several countries including Brazil, France, Russia, and Thailand.

Building on this tremendous opportunity to connect with chemistry students across the globe, Dow launched the **Dow Solutionists in School Facebook page** in March. Since the launch, the page has built a community of more than 14,000 students, educators and influencers around a common interest in chemistry.

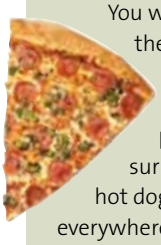
Dow is honored to work with the American Chemical Society to raise public appreciation for the role of chemistry in our lives, and for the future scientists who will help ensure a sustainable future for our planet. Best of luck to all of the competitors!

DOW®



American Culture

The **United States of America** is a multicultural country where our citizens originate from all over the world. We are a nation of native americans and immigrants. Traveling across the country you can experience many cultures. However, there are several things that many Americans enjoy—seasonal sports, literature, going to the theater or a movie. Since the 1920s, America's film industry (*known as Hollywood*) has been the major producer of motion pictures in the world.



You will find food from all over the world in the USA. Regional food like Maine Lobster and Pacific Salmon is transported all over. And don't be surprised to find hamburgers, hot dogs and pizza sold almost everywhere.

Though many Americans drive, we love to ride bikes and walk. You are visiting Washington, D.C. which is one of the largest metropolitan areas in the country. Yet, the USA has hundreds of natural parks and an abundance of open space. The USA has long been a leader in technology, from the invention of the steamship and the light bulb to today's computers and smart phones.

PAST PARTICIPANT

J.L. Kiappes

J.L. Kiappes, USA 2004

As a student in 2004, I remember furiously studying for IChO before leaving the States...trying to cram as much as I could. Even so, I was very nervous about the exams. This year as an author, I am nervous about the exams again, but it is because I hope you will find the chemistry interesting and worth thinking about!

Having been an IChO participant, I can tell you that more important than the exams and medals are the friends you will make while here. Almost a decade later, people I met through the Olympiad are still friends, and some are now colleagues with whom I collaborate. This is truly a once in a lifetime experience to meet people from so many places who share an interest-make the most of it. I hope our chemistry and capital will be the backdrop for memories and friendships that will last a lifetime. Best of luck this week! Welcome to the 44th IChO!

PAST PARTICIPANT

Jason Chen

Assistant Professor, Department of Chemistry, Iowa State University

Jason Chen

Chemistry is often referred to as "the central science" since it is so broadly applicable. Chemistry is critical to advances in medicine, agriculture, energy, and materials (to name but a few uses). I remember being overwhelmed by the broad range of topics (spanning organic, inorganic, physical, and analytical chemistry) that I had to study while preparing for the Chemistry Olympiad. However, this whirlwind tour gave me a strong appreciation for the wonders of chemistry. I found the combination of logic and creativity in organic chemistry to be particularly appealing. This led to my decision to study chemistry in college, where I decided to specialize in organic synthesis. Now a professor of organic chemistry, I look back at my participation in the Chemistry Olympiad as the key event that started me down this road.

PAST PARTICIPANT

Ísak Sigurjón Bragason,

Iceland IChO: Greece 2003

Ísak Sigurjón Bragason

Since my first contact with chemistry in grade school it has been my favorite subject, so getting to participate in the 35th IChO in Athens was an incredible adventure. We had some excellent training at home, both informative and fun, but in truth I didn't know much about what to expect from the exams. It was only the second time Iceland participated in the Olympiad, so our mentors were still learning as well! On the whole it was a great experience, further invigorating my interest in the field. Since then I've attained a bachelor's degree in chemistry and spent a couple of years teaching the subject before moving on to my master's studies. In 2010 I had the privilege of revisiting the IChO, in Tokyo, Japan, this time as a mentor. I have many fond memories of the Olympiads and sincerely hope I'll get the chance to acquire some more in the future!

10 Day Schedule

		Students	Mentors and Observers
July 21 Sat	whole day	**Arrivals and Registration**	
July 22 Sun	morning	**Opening Ceremony/Clarice Smith Performing Arts Center UM**	
	afternoon	Washington, D.C. Tour	Lab Inspections
	night	Evening Activites	1st Jury Meeting
July 23 Mon	whole day	NASA Annapolis, MD Tour	Translation – Practical Exam
July 24 Tue	morning	**Safety Instruction / Practical Exam**	Washington, D.C. Tour
	afternoon		Meeting with Authors
	night	ACS Pres. Demonstration	2nd Jury Meeting
July 25 Wed	whole day	Washington, D.C. Tour	Translation – Theoretical Exam
			Potomac River Cruise
July 26 Thu	morning	**Theoretical Exam**	Washington, D.C. Tour
	afternoon		
	night	**French Embassy Reunion Party**	
July 27 Fri	morning	Baltimore Harbor Camden Yards Baseball Game	Score Marking
	afternoon		Free Time
	night		3rd Jury Meeting
July 28 Sat	morning	Kings Dominion Amusement Park	Arbitration
	afternoon		
	night		4th Jury Meeting
July 29 Sun	morning	Free Time	Free Time
	afternoon	**Closing Ceremony/Gaston Hall Georgetown University**	
	night	**Banquet – Farewell Party/ National Building Museum**	
July 30 Mon	whole day	**All Day Departures**	

Weather Today
Partly Cloudy
82 °F (27 °C)

Weather Tomorrow
Partly Cloudy
88 °F (31 °C)

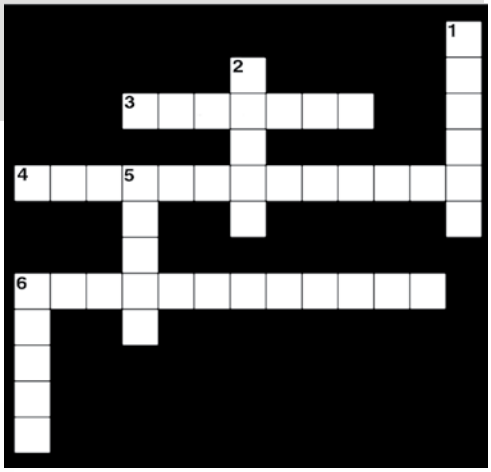
Puzzle
Simple Machines

Across

3. The point about which 5 down pivots.
4. A ramp. *(two words)*
6. This simple machine lets cars and bicycles roll.

Down

1. A wheel over which a rope or belt is passed.
2. A spiral version of 4 across.
5. There are three basic types of this simple machine.
6. A modified version of 4 across, it can be found in the blade of a knife or an axe. *(three words)*



Sebastian Gogg,
Austria, July 21

HAppY BiRtHDay!

A neutron walks into a shop and says, *"I'd like a coke."* The shopkeeper serves up the coke. *"How much will that be?"* asks the neutron. *The shopkeeper replies, "For you? No charge."*

ITS A JOKE

SUPPORTERS

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ACS A division of the American Chemical Society
TEXAS INSTRUMENTS
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MERCK Be well

On the cover masthead: *Testudo, a Diamondback terrapin, is the official mascot for the University of Maryland. Statues of the lucky turtles, known as Terps, can be found throughout the campus. Rubbing his nose before an exam is one of Maryland's most enduring traditions.*

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