



no. 7

July 26, 2012

# Catalyzer

44th International Chemistry Olympiad  
United States of America

## Theoretical Exams and a Reception at the French Embassy

The French Embassy will host the reunion party, where mentors and students will meet again after being separated for four days. The French Ambassador will welcome all the delegations and guests. In addition, some delegations will be welcomed by their home Embassies prior to the reunion party.

The French-American relationship has evolved greatly from the bond established more than two centuries ago through the shared ideals of the French and American Revolutions. France joined the American revolutionary forces in 1778 during the time of the American Revolutionary War. They helped America earn its independence.

The city of Washington, D.C. was designed by French-born architect **Pierre Charles L'Enfant**. The city has a number of memorials

### Past Participants



David Yafte Diaz-Sanchez

Hi everyone! My name is **David Yafte Diaz-Sanchez**, a student from **Mexico City**. I started my training for IChO in 2010 when I was competing for the 42<sup>nd</sup> IChO, which took place in Tokyo, Japan. I could not go, but the next year I went to Turkey to participate at the 43<sup>rd</sup> IChO. Training for this Olympiad was hard, some topics are very advanced and I had to study quantum chemistry, kinetics, thermodynamics, organic chemistry and other topics more.

However, it is not the same solving problems alone at home than to be on the other side of the planet competing against the best high school students of the entire world. Actually I did not get any medal, but IChO taught me that what really everyone can win in the competition beyond a medal are friends, great experiences and emotions!



Maxim Zabilsky

**Maxim Zabilsky**, PhD Student, M.V. Lomonosov Moscow State University, silver medalist of the 36<sup>th</sup> IChO, 2004, Kiel, Germany and the 37<sup>th</sup> IChO, 2005, Taipei, Taiwan; guide at the 39<sup>th</sup> IChO, 2009, Moscow, Russia

It is a long way from a school olympiad to when the IChO is finished on theoretical and practical exams. As I wanted to show at the IChO good results, I tried to study more and more. Sometimes preparation for the IChO was very hard. Even when I slept I studied biochemistry in my dream. The theoretical exam plays a great role in your score, so I tried to have a good rest before it. I participated in the IChO twice. At my second olympiad I expected to meet rather complicated problems, as at the first olympiad. It was a pity to receive very easy tasks.

The knowledge obtained during my preparation for the IChO was a good base for university education and following scientific work.

to key allies including Lafayette Square located across the street from the White House. Lafayette was a general in the American Revolution.

There is perhaps no better universal symbol of freedom, democracy and friendship than the Statue of Liberty Enlightening the World, a gift from the people of France to the people of the United States. The Statue of Liberty was dedicated on October 28, 1886 in New York City Harbor.



Courtesy of the French Embassy

French Embassy

*Celebrating International Excellence in Chemistry*

# Charles Hall Process Metal of the Modern Era

**Aluminum** is one of the most commonly used materials in the world today. It is the third most abundant element in the earth's crust. Yet until the late 1800's aluminum was a rare and precious metal, difficult to extract and make into useful products.

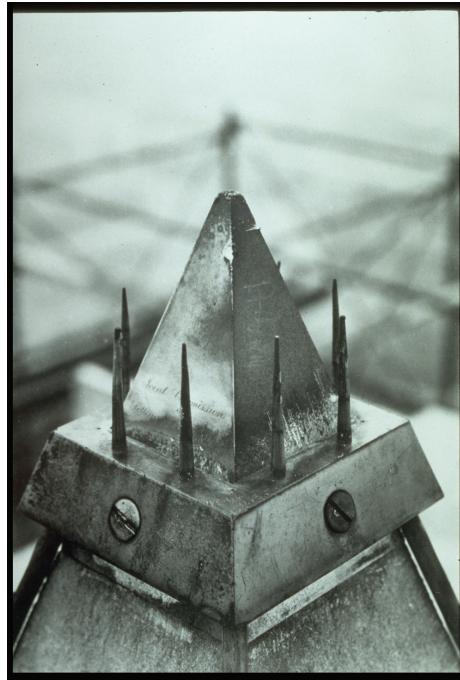
In 1825, Danish chemist **Hans Christian Oersted** was able to produce an impure sample of aluminum, using a potassium-based mixture and heat. Over the next several decades, the process for producing aluminum continued to be refined, and in 1855 at the Paris Exposition, aluminum bars were displayed as "silver from clay." Their value—\$115 per pound—was more expensive than gold.

Finally, in 1886, American **Charles Martin Hall** and Frenchman **Paul L.T. Héroult** independently discovered a method for producing aluminum economically by electrolysis. As the process improved, the price of aluminum dropped from \$4.86 per pound in 1888 to \$0.78 per pound in 1893.

Today, aluminum is a commonplace material we rely on every day in construction materials, food packaging, components for aircraft and automobiles, and even as coins in some nations. While the aluminum can is a readily identifiable product of aluminum, many uses of the metal are less obvious. Take for example the aluminum apex that sits atop the Washington Monument: It was installed in 1884 for use as a lightning rod.

The American Chemical Society designated the production and commercialization of aluminum as a National Historic Chemical Landmark at Oberlin College in Oberlin, Ohio, in 1997 and at Alcoa Inc. in Pittsburgh, Pennsylvania, in 2001. 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](http://www.acs.org/landmarks).

*Left: The Washington Monument as it stands today. Right: Flag-raising ceremony marking completion of the scaffolding for cleaning and repairing of the Washington Monument in 1934.*



Photos courtesy Alcoa Inc.



*Left: Photo of Charles Martin Hall superimposed onto an aluminum can. Hall discovered an inexpensive method for isolating pure aluminum from its compounds in 1886.*

*Top photo: The top of the Washington Monument's aluminum cap, installed in 1884. Photographed during a cleaning operation in 1934.*



# Photos from D.C. Sightseeing



Photos by Michael Tinnesand and Peter Cutts Photography

## Atoms and Matter Puzzle Answers

ACROSS: 3. Electrons 5. Up 6. Down 7. Quarks

DOWN: 1. Nucleus 2. Protons 4. Neutrons

## Thursday, July 26 Schedule

	Students	Mentors and Observers
morning	Theoretical Exam	Washington, D.C. Tour
afternoon		
night	French Embassy Reunion Party	

Weather Today  
**SUNNY**  
**99° F (37° C)**

Weather Tomorrow  
**SUNNY**  
**96° F (35° C)**



## Do You Know Where Your Mascot Is?



Arash Firouzbakht  
Iran, July 26



Daan van de Weem  
Netherlands, July 26

**Happy  
BIRTHDAY!**



*On the cover masthead: Washington, D.C.'s iconic skyline is recognized around the world. From left: the Lincoln Memorial, Washington Monument and United States Capitol.*

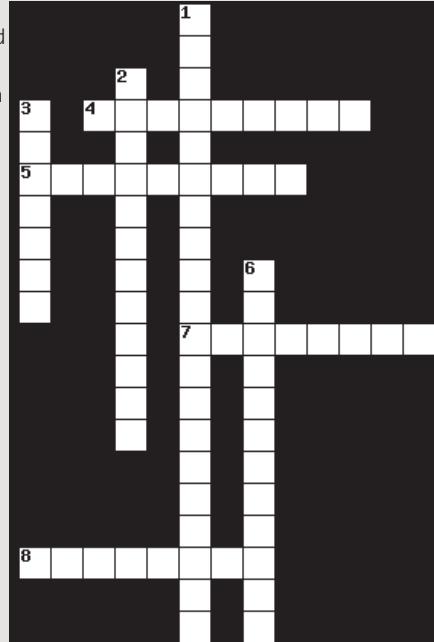
Puzzle  
Cell Structure

## Across

- Proteins are produced here.
- A jellylike fluid within cells.
- This rigid covering is not found in animal cells. (two words)
- Act as storage sacks within cells.

## Down

- Transports materials within the cell. (two words)
- These structures produce energy for the cell.
- The cell's control center.
- In plant cells, these structures contain chlorophyll.



Answers are in issue #8.



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INSTRUMENTS**



 **MERCK**  
Be well



Contact Information  
 Cecilia Hernandez  
 IChO2012@acs.org  
 1.202.872.6169  
 www.IChO2012.org

Editors: Nancy Blount  
 Cecilia Hernandez  
 Keith Lindblom  
 Michael Tinnesand  
 Designer: Cornithia A. Harris

**Emergency Contact Information**  
 Emergency Campus Security: 301. 405. 3333  
 Police/Fire: 911  
 Annapolis Hall Hospitality Desk: 301. 314. 2662  
 Guide and Student Support: 252. 529. 9339

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