

no. 9

July 28, 2012

Catalyzer

44th International Chemistry Olympiad

United States of America

All day fun! Kings Dominion

What is better than spending a day at an amusement park? And what better park to visit than Kings Dominion, which features 15 roller coasters, numerous thrill rides, live entertainment and a 20-acre waterpark? Kings Dominion offers the coolest array of rides and attractions in the Mid-Atlantic states.

The name given to the park is derived from the name of its sister park, Kings Island located near Cincinnati, Ohio, and the nickname for the state of Virginia, "Old Dominion".

Today we explore the coolest way to beat the heat this summer at **WaterWorks in Kings Dominion**. WaterWorks is one of the premier waterparks in the region and features water activities for guests of all ages, including water slides, rushing rivers, surfable waves and an awesome 650,000-gallon wave pool, featuring giant 4-foot waves, which is guaranteed to give everyone a thrill.

DID YOU KNOW?

It doesn't take much salt to make water "salty." If one-thousandth (or more) of the weight of water is from salt, then the water is "saline."



Photos courtesy of Kings Dominion

Exciting rides at Kings Dominion in Doswell, Virginia.

The park is about two hours south of the University of Maryland, so grab your swimsuit and get ready for a great day.

Celebrating International Excellence in Chemistry

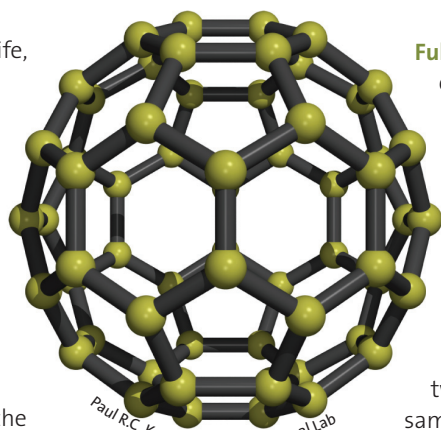
Mysteries in Space and the Origins of Nanoscale Science

Carbon, the basis of life, is one of the most common elements and one of the most studied; it comprises the whole discipline of organic chemistry. A study of pure carbon would not seem all that exciting to most chemists, but British chemist **Harry Kroto** identified a mystery in the well-studied field: an unknown chain of carbon molecules that he, together with Canadian radio astronomers, had discovered in interstellar space.

In 1985, Kroto and Americans **Robert Curl and Richard Smalley**, along with a team of students, began an investigation into Kroto's carbon molecule. Within the first ten days of their experiments, two significant results emerged: First, the team found Kroto's carbon chains, and second, they observed a previously unknown carbon molecule composed of 60 carbon atoms.

The molecule, dubbed C_{60} , formed readily and was extraordinarily stable. It did not react with other molecules, suggesting it had no dangling bonds. But the structure of the molecule was unknown to the scientists.

Kroto thought back to architect **Buckminster**



Fuller and his famous geodesic dome at Expo 67 in Montreal. Smalley, using Kroto's inspiration, worked into the night to build a model of a sphere that would have exactly 60 vertices. He succeeded with a form made of twenty hexagons and twelve pentagons—the same shape as a soccer ball.

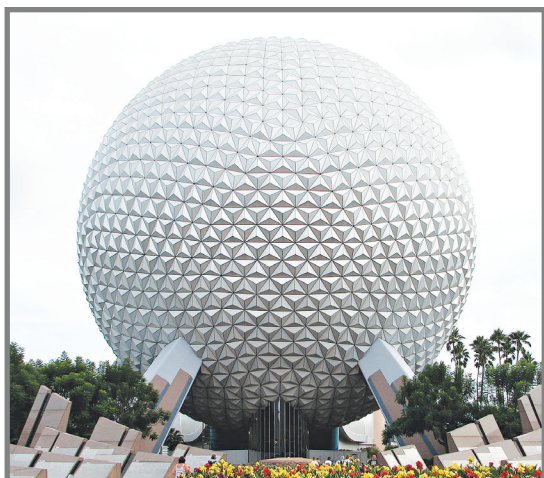
The new carbon allotrope was

named buckminsterfullerene, shortened to fullerene or buckyball. In 1996, Curl, Kroto, and Smalley shared the Nobel Prize in Chemistry for their discovery. Continued research on fullerenes and carbon nanotubes

—the cylindrical cousins of buckyballs—has provided abundant research opportunities in pure chemistry, materials science, pharmaceutical chemistry and nanotechnology.

The discovery of fullerenes was designated a National Historic Chemical Landmark at Rice University in Houston, Texas, on October 11, 2010. 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.



Walt Disney World Epcot Center Florida

PAST PARTICIPANT

Taivo Pungas, Estonia
2011 Chemistry Olympiad
Bronze Medalist



Taivo Pungas

As I had prepared for the olympiad beforehand both individually and with my national team, I felt I had most of the necessary knowledge and that everything

was up to myself—that created a healthy pressure under which the olympiad becomes a true challenge, rather than being just another 5-hour period of time spent on chemistry...

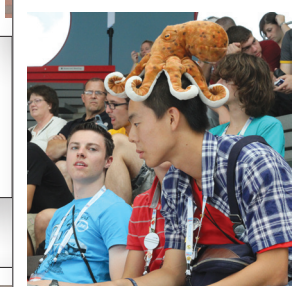
When I first participated (in 2011) the problems were not as hard as I had expected, although I ran into difficulties with managing time since there was not much. Had I spent the whole time on intensive problem-solving, I barely would have finished the tasks.

Most of the subjects in the 2011 theoretical problems I have not really encountered elsewhere since I will finish secondary school this year. However, parts of it were quite interesting to me, especially those concerning fuel cells.

The practical exam was not difficult, it rather demanded a steady hand, good planning and confidence. Before the olympiad, I had not really thought about the practical part per se. I guess I had imagined it would be similar to what I had already done and most of it was. To be honest, the main challenge was not in setting up or conducting the experiments—for me, it was being careful and keeping a calm head.

After the olympiad I have not really put the skills and knowledge acquired in the experiments to use with the exception of experiments in the pre-ICHO olympiads in chemistry (national round, qualification, etc).

Photos from the Baltimore Aquarium, O's and A's game, and the Maryland Science Center



Photos by Peter Cutts Photography

Life Science Puzzle Answers

ACROSS: 3. Cell Membrane 5. Mold 6. Photosynthesis
DOWN: 1. Chlorophyll 2. Respiration 3. Osmosis

Saturday, July 28 Schedule

	Students	Mentors and Observers
morning	Kings Dominion Amusement Park	Arbitration
afternoon		
night		4th Jury Meeting

Weather Today
Sunny
93 °F (33 °C)

Weather Tomorrow
Mostly Sunny
91 °F (32 °C)

Thursday Night at the French Embassy

You cannot teach a man anything; you can only help him discover it in himself.

-Galileo



'And then we danced all night!'



Photos by Peter Cutts Photography

On the cover masthead: Denim jeans, also known as blue jeans, were invented by Jacob Davis and Levi Strauss in the 1870s and are an iconic American fashion.

SUPPORTERS



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