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48th International Chemistry Olympiad

Tbilisi, Georgia

One Bronze Medal for Switzerland at the 48th International Chemistry Olympiad in Tbilisi, Georgia

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Abstract: Four Swiss high school students participated in the 48th International Chemistry Olympiad (IChO), which took place from July 23 to August 1 in Tbilisi, Georgia. Dominic Egger, Nicolà Gantenbein, Simone Heimgartner and Diego Zenhäusern competed against 260 other students from 71 countries. Dominic Egger brought home a well-deserved bronze medal.

Keywords: Education · High school · International Chemistry Olympiad IChO

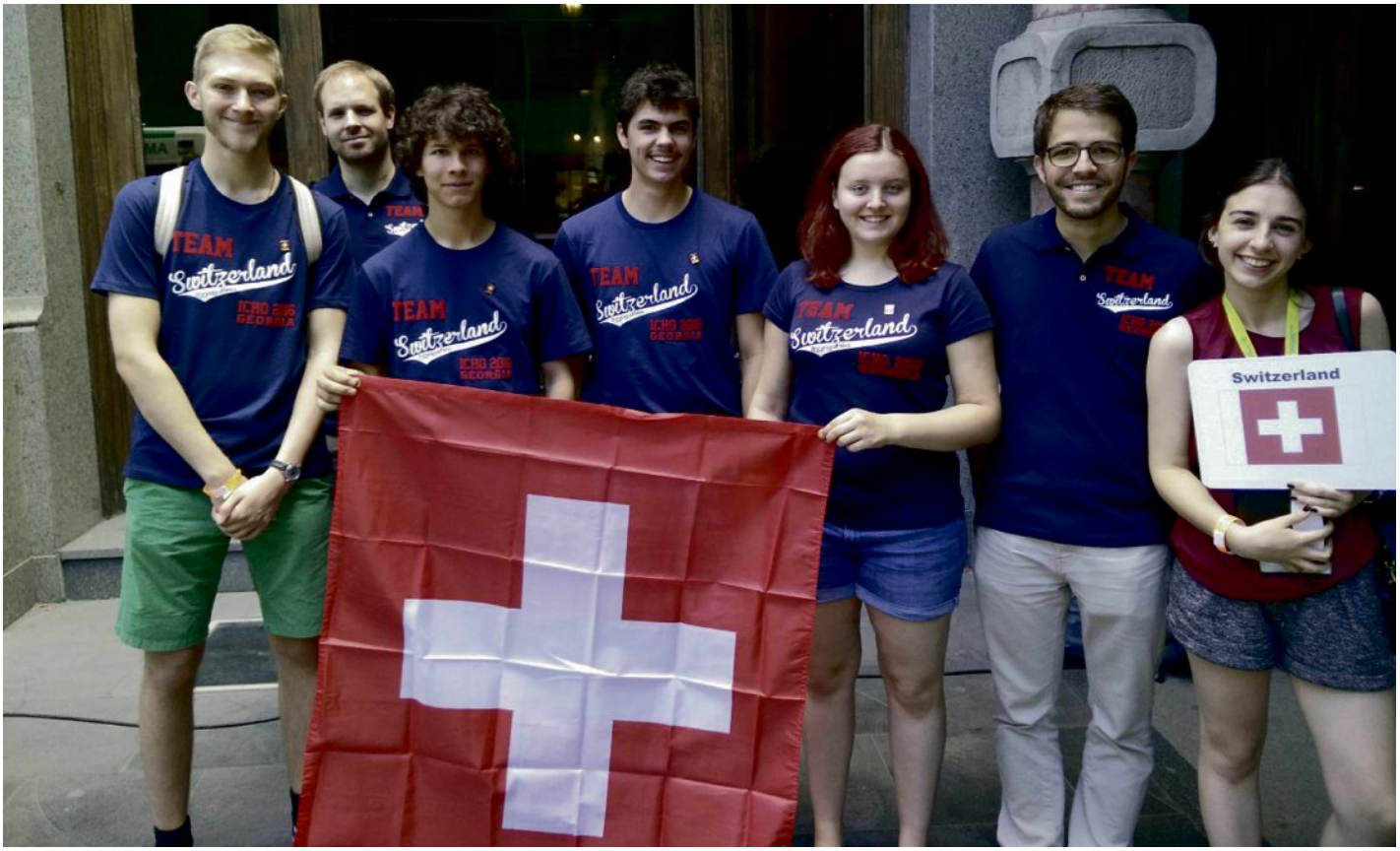
This year's International Chemistry Olympiad (IChO) was held from July 23 to August 1 in Tbilisi, Georgia. Switzerland was represented by Dominic Egger (Kantonsschule Solothurn), Nicolà Gantenbein (previously Kantonsschule Wattwil), Simone Heimgartner (Kantonsschule Baden), and Diego Zenhäusern (Berufsfachschule Oberwallis), who had previously won the Swiss Chemistry Olympiad. They were accompanied by the mentors Alain Vaucher (PhD student at ETH Zurich) and Dustin Hofstetter (chemistry teacher at Kantonsschule Limmattal).

The International Chemistry Olympiad is a competition for high school students under 20 years old. It takes place every summer and gathers chemistry enthusiasts from all over the world. The first IChO was held in 1968 and Switzerland's first participation goes back to 1986. 264 participants from 72 countries were present this year in Tbilisi.

This year's IChO took place under special circumstances. Due to exceptional reasons, no host could be found until February this year, at which point it was still unsure whether there would be an IChO 2016 at all. Then, fortunately, Georgia came forward and was able to organize the event in record time. The Olympiad was by no means less of a success, quite to the contrary.

Competition is but one of the aspects of IChO. For the participants, the Olympiad week is a once-in-a-lifetime experience in which they meet chemistry enthusiasts from the whole world and are given the opportunity to discover a new country.

Accordingly, the 10 days of the Olympiad were filled with a program comprising the competition itself as well as a variety of social events and excursions. This year, the participants enjoyed amongst others a visit of the Old Town of the capital Tbilisi and day trips to the cities of Mtskheta, Sighnaghi, and Akhaltsikhe.



The Swiss team at the opening ceremony of the 48th IChO. From left to right: Dominic Egger, Dustin Hofstetter, Nicolà Gantenbein, Diego Zenhäusern, Simone Heimgartner, Alain Vaucher, Natalia Ghudushauri (Georgian guide for the Swiss team).

The competition comprised one practical exam and one theoretical exam, both of which were to be solved in five hours. Due to the short time to prepare the competition, this year's exams were written up by an international committee and reviewed by the international jury of the mentors during the IChO. The competition was won by the Romanian Andrei Iliescu, and the Swiss delegation is happy to announce one bronze medal by Dominic Egger.

The next IChO will be held in July 2017 in Nakhon Pathom, Thailand.

Example of a Question at the 48th IChO

Practical Task 1

You have 5 unknown solutions, containing a total of 10 different compounds dissolved in water. Each numbered unknown solution contains two of the following compounds in aqueous solution (every compound is used, and each compound is used only once):

$AgNO_3$, $Al_2(SO_4)_3$, $Ba(NO_3)_2$, $Fe(NO_3)_3$, KI, KIO_3, Na_2CO_3, Na_2SO_3, $MgCl_2$, NH_3

You are given HNO_3 solution, NaOH solution, hexane and the aqueous solutions of the 10 pure compounds listed above.

You may use empty test tubes and any of the liquids provided (including the unknowns themselves) to identify the unknown samples. A funnel and filter paper may be used for separation.

Identify the compounds in unknown solutions **1**–**5**. Give the number of the unknown solution that contains each individual compound on the answer sheet. For each individual compound in your unknown mixtures, indicate two observations caused by a chemical reaction by giving the letter code of the appropriate observation (choose one or more from the list), and write appropriate balanced ionic equation(s) that explain this observation. At least one of the reactions has to be specific for clearly differentiating the compound from the rest of unknowns.

Letter codes for the observations:
A – Formation of white precipitate
B – Formation of colored precipitate (red, brown, yellow, black *etc.*)
C – Dissolution of precipitate
D – Color change in the solution
E – Formation of colored solution
F – Brown color in the organic phase
G – Purple color in the organic phase
H – Formation of colored gas
I – Formation of colorless and odorless gas
J – Formation of colorless and odorous gas
K – Change in the color of precipitate

Links

Competition website (for access to the full exam and detailed results): *http://www.icho2016.chemistry.ge/*

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